

# AVX High Reliability Tantalum Capacitors



Version 15.6

www.avx.com



**MIL-PRF-55365 • MIL-PRF-39006 • MIL-STD-790  
AS 9100 • ISO 13485 • ISO 9001 • ISO 14001**



**ESCC 3012 • ESCC 3012/001 • ESCC 3012/004  
CECC 30801 • ISO 9001 • ISO 14001 • TS 16949**



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### INTRODUCTION

The Biddeford facility within the AVX Tantalum Division is the leading supplier of high reliability tantalum chips to the medical, military and aerospace industry.

As tantalum technology continues to develop, we are able to offer extended ratings providing more downsizing opportunities, higher capacitance ratings, new case sizes and Low ESR options for critical output filtering applications. Combining this with in-line reliability grading capability for all chip capacitor series, we are able to supply these products to the most demanding applications.

Based on the core qualifications maintained for CWR09, CWR19/29, CWR11 and CWR15 product families, new products are now available utilizing the latest advances in tantalum technology, which enable PCB downsizing and component count reduction, yet which incorporate manufacture & test in accordance with MIL-PRF-55365.

A special facility within the plant enables the production of application specific modules and arrays, providing custom solutions for specialized requirements.

AVX facility in Lanskroun, Czech Republic is manufacturing location with production of high end SMD & Wet tantalum capacitors including automotive, industrial, medical, aerospace and specialty applications. Lanskroun is European Space Agency (ESA) approved facility for manufacturing of ESCC 3012 SMD tantalum capacitors including detail specification ESCC 3012/001 TAJ-ESA series and ESCC 3012/004 low ESR and High CV SMD tantalum capacitors. Specialty applications are including industry unique hermetically sealed SMD tantalum capacitors THH with continuous operation temperature up to 230°C and TCH series of low ESR hermetically sealed SMD polymer capacitors for mission critical applications.

### WET TANTALUM

A new axial leaded wet tantalum series named TWA has been introduced. This utilizes a unique cathode system that enables the manufacture of high capacitance / voltage ratings. The TWA series is qualified to DSCC 93026, which has been updated to include some of the new high capacitance ratings available.

The AVX proprietary cathode system TWA-E is also used on wet tantalum capacitors manufactured in Lanskroun facility in accordance with CECC 30202 standard.

In addition the TWC series, which corresponds to the conventional wet tantalum capacitors, has been launched with COTS-Plus and MIL-PRF-39006 options available. These wet tantalums are also available in 200°C versions or modular configurations (TWM) for the most demanding applications.

This catalog provides details for the latest product families and provides the necessary part numbering information to allow users to tailor any of these products to their own requirements.

### COTS-PLUS TANTALUM CHIP – WEIBULL GRADE: EXTENDED RANGE/LOW ESR SERIES

These series have been developed in response to the “Commercial Off The Shelf” initiative taken by many military users to enable cost effective procurement of current technologies.

They are based on TAZ (CWR09/19/29), TBJ (CWR11) & TBC (CWR15) form factors. Leadership in tantalum technology has enabled the introduction of extended capacitance/voltage ratings for all standard case sizes, giving the designer scope for downsizing existing

assemblies and reducing component count. To reduce time to market for the introduction of extended CV ratings into military applications, these parts are supplied with Weibull grading and Group A / surge options in accordance with MIL-PRF-55365 Rev. G, but are not JAN branded. These parts can also be supplied to Source Control Drawings for specific military requirements. A standard non-established reliability level is available, together with the options of 100% testing to Weibull “B”, “C” or “D” grade. Other options include ambient or high/low temperature surge, additional Group A conformance testing (to MIL-PRF-55365 or alternative) and Low ESR ratings below current MIL-PRF-55365 specification limits.

Extended case sizes beyond the CWR standards are also available, especially targeted to high capacitance power supply filtering applications.

For TBJ series family case sizes, the new DSCC drawing 07016, superceding 95158, lists all available Low ESR ratings with full Weibull Grading and MIL-PRF-55365 Rev. G surge test options.

New additions to the AVX COTS-Plus portfolio are NBS & NBM series OxiCap®. Based on niobium oxide technology these series offer ideal solutions for lower voltage applications required by DSP and IC / ASIC bulk decoupling. This technology has the added advantage of a benign failure mode if ever subjected to forward overvoltage conditions.

### MIL QPL - ESTABLISHED RELIABILITY

The new CWR19 & CWR29 TAZ series offer widely extended capacitance / voltage ratings. While the CWR09 remains available for all legacy programs with no planned obsolescence, CWR19 / 29 are recommended for all new designs, due to the opportunity to use a higher voltage rating in a given application or downsize a design to achieve real estate savings and weight reduction. CWR 19/29 are also available for ratings from 4 - 50V. Reliability levels up to and including “D” Weibull grading are available along with ambient and high/low temperature surge options. A new case size (X case) has been added to extend capacitance ratings to 470µF; for the larger case size (G, H and X case) low ESR options (to sub-100 mOhm levels) are available for critical power supply designs.

The new CWR15 series offers maximum capacitance / voltage ratings in micro miniature L (0603 equivalent), R (0805 equivalent) & A (1206 equivalent) sizes. These provide a unique opportunity for the designer to upgrade commercial designs using X5R ceramic to an equivalent capacitance / voltage / size rating in tantalum technology, with the additional benefits of established reliability, wider operating temperature range, improved temperature coefficient, no voltage coefficient, and elimination of piezo noise.

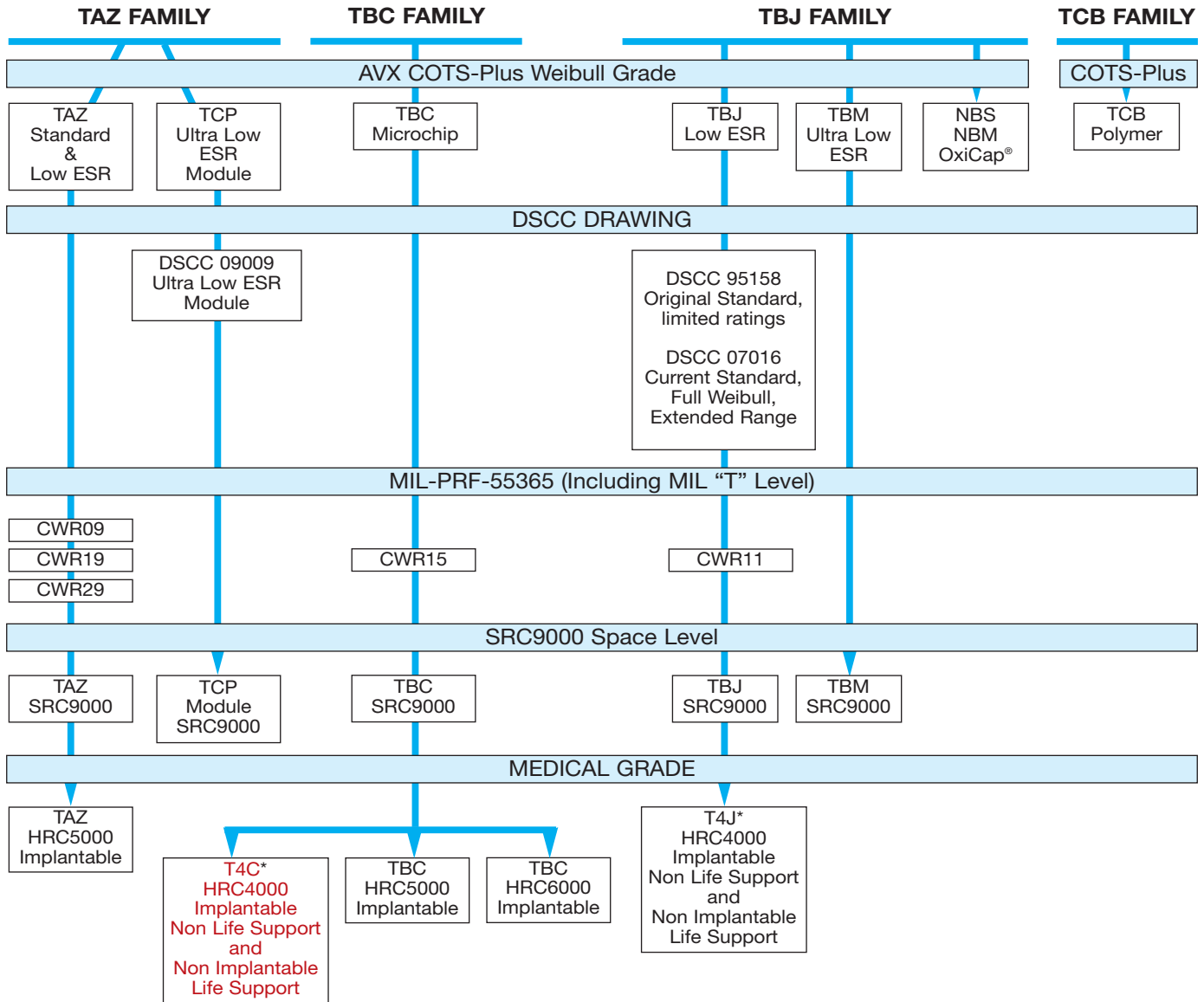
All Established Reliability series are MIL QPL listed ratings with both Group A & Group C tests maintained for MIL-PRF-55365 approval.

### SPACE LEVEL, AVX SRC9000 & MIL T- LEVEL

For Space applications, additional testing is available with full details listed in our SRC9000 specification for Space Level products. As a minimum, SRC9000 requires both Weibull level voltage conditioning (“C” & “D” Level) and surge test (option “C”). Additional tests include DPA, 100% Real Time X-Ray, surge voltage, hot DCL test, 3 sigma parametric test limits and additional Lot Conformance Test protocols.

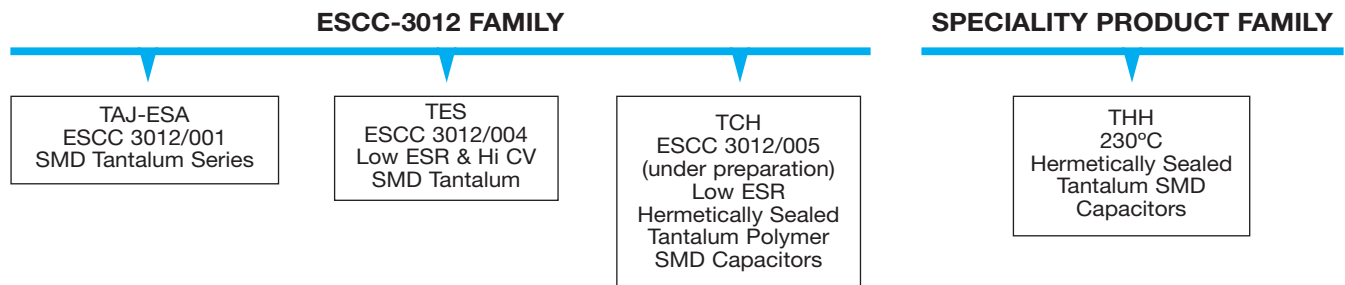
While AVX SRC9000 remains the standard for Space Level, MIL-PRF-55365 now defines a new “T” level, which specifies C Weibull grade reliability minimum, “C” surge and also includes DPA, X-ray and 3-sigma test limits common to SRC9000.

### BIDDEFORD HIGH RELIABILITY TANTALUM CHIP SPECIFICATIONS

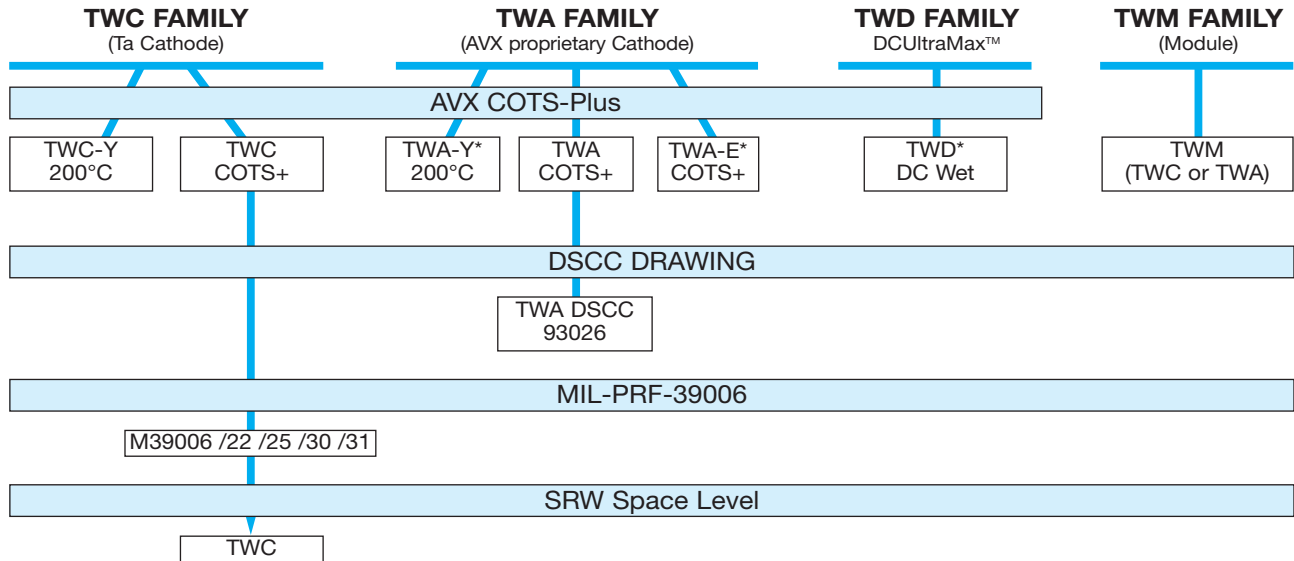


Under Development  
\*Czech Republic

### CZECH REPUBLIC HIGH RELIABILITY TANTALUM CHIP SPECIFICATIONS



### HIGH RELIABILITY WET TANTALUM SPECIFICATIONS



\*Czech Republic

# AVX Tantalum Division

## Surface Mount Military/Aerospace Products



### GROUP A TEST OPTIONS

TEST	Group A Testing comparison			
	AVX COTS-Plus	MIL-PRF-55365 QPL		AVX SRC9000 Space Level
		MIL Weibull B, C, D	MIL T Level	
100% Reflow	✓	✓	✓	✓
100% Thermal Shock	✓	✓	✓	✓
100% Weibull	Optional	Mandatory	Mandatory-Grade C min	Mandatory-Grade C min
100% Surge Current	Optional	Optional	Mandatory - C Level	Mandatory - C Level
100% Electrical Testing	Custom Test Limits Available	To Specification Limits Only	+3 Sigma Limits	+3 Sigma Limits or Custom
Visual & Mechanical	Sample	Sample	100% - 20X	100% - 20X
Simulated Mounting, Rework and Lot Conformance (Sample)	Optional			✓
Solderability Test* (Sample)	Optional 75% Coverage	Mandatory 95% Coverage	Mandatory 95% Coverage	Mandatory 95% Coverage
100% X-Ray	Optional		✓	✓
DPA - 1580 Destructive Physical Analysis	Optional		✓	✓
Surge Voltage (Sample)	Optional			✓
Hot DC Leakage (Sample)	Optional			✓
Temperature Stability (Sample)	Optional	Mandatory	Mandatory	Mandatory

\*Only Mil QPL ratings receive the steam age portion of solderability testing unless otherwise specified by the customer

### HIGH RELIABILITY SPECIFICATION REQUIREMENTS COMPARISON CHART

TEST		AVX Series	100% Reflow	Vibration	Shock or Bump	100% Thermal Shock	Resistance to Soldering Heat	Moisture Resistance	Operating Life	100% Weibull	100% Surge Current	100% Electrical Testing	Visual & Mechanical	Simulated Mounting, Rework and Accelerated Life	Solderability Test*	100% X-Ray	DPA - 1580 Destructive Physical Analysis	Surge Voltage	Hot DC Leakage	Temperature Stability	Burn-in 168hrs	Adhesion (shear)	Climatique Sequence ***
MIL PRF 55365 QPL	Standard MIL	CWR09, 11, 15, 19, 29	0 ■	■ X		0 ■	■ X	■ X	■ X	0 ■	▲	0 ■	0 ■ X		■ X ▲			■ X		0 ■ X			
	New "T" level	CWR09, 11, 15, 19, 29	0 ■	■ X		0 ■	■ X	■ X	0 ■ X	0 ■	0 ■	0 ■	0 ■		■ X ▲	0 ■	0 X	■ X		0 ■ X			
Space Level	AVX SRC9000**	TBJ/TBM (COTS)	0	▲ X	▲ X	0	▲ X	▲ X	(*) 0 ▲ X	0	0	0 ▶	0	0 X	0 X	0	0 X	0 X	0 X	0 X		▲ X	
	AVX SRC9000**	TAZ/TBC/TBJ (MIL)	0 ■	▲ ■ X	▲ X	0 ■	▲ ■ X	▲ ■ X	▲ ■ X	0 ■	0 ■	0 ■ ▶	0 ■	0 X	0 ■ X	0 ■	0 X	0 ■ X	0 ■ X	0 ■ X	0 ■ X		▲ X
AVX COTS-Plus	COTS-Plus**	TBJ/TBM/TAZ	0			0				0	▲	0	0 X		▲ X						▲ X		
	DSCC 07016	TBJ	0	▲ X		0	▲ X	▲ X	▲ X	▲	▲	0	0 X		▲ X			▲ X		▲ X			
	DSCC 95158		0			0																	
	COTS-Plus	TCB	0						■ X		0	0 ▲	0 X		0 X	0 X		0	0 ▲	■ X			
ESA-ESCC3012	LAT 1	TAJ-ESA, TES	0 ●	0	0	0 ●			0		●	0 ●	0	0	0 ●	level B ●		0	0	0	0	0	0
	LAT 2		0 ●			●			0		●	0 ●	0	0	0 ●	level B ●		0	0	0	0	0	0
	LAT 3		●			●					●	0 ●	0		0 ●	level B ●		0	0	0	0	0	0
	NO LAT		●			●					●	●			●	level B ●							

\*Only Mil QPL ratings receive the steam age portion of solderability testing unless otherwise specified by the customer

\*\*Testing of low ESR components requiring a mounted sample shall allow a 2X increase in catalog ESR for post measurements

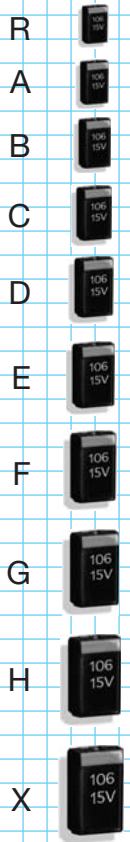
\*\*\* = Dry Heat, Damp Heat, Storage, Low Air Pressure, Damp Heat

- 0 Standard Test
- ▲ Optional Test
- Qualification and or GRP C
- X Sample Test
- ★ COTS Upscreen 1000Hr 125°C
- ▶ AVX Standard DCL/ESR/DF 3 SIGMA
- ◆ DLA Standard DCL/ESR 3 SIGMA
- Part of Manufacturing Flow (PID)
- ▲ AVX Standard DCL 3 SIGMA



### HIGH RELIABILITY TANTALUM CHIP PRODUCT FAMILY - DESIGN GUIDE

#### TAZ Series Case Size



TCP Module

#### TAZ FAMILY SIZES:

##### CWR09, CWR19, CWR29 and TCP Modules

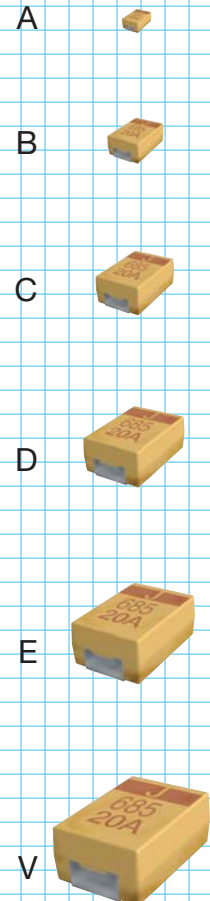
The TAZ family boasts the widest range of case sizes and fullest range of MIL-QPL qualifications of any tantalum chip family, making it the ideal choice for the MIL-Aerospace designer.

This family represents the most flexible of surface mount form factors. The case sizes originate from the original MIL chip sizes, enabling support for all legacy programs, but have been extended to include both smaller and larger case size options. There are ten case sizes covering the full Capacitance/Voltage range. Parts are suited to hybrid or PCB assembly, with case sizes A to E designed as low profile (.050" nom).

The Low ESR versions of the larger case sizes are ideally suited to power applications, and the H case is also footprint compatible with TBJ D / E case sizes.

This family is also the ideal replacement for conformal coated CWR06 styles in mechanically demanding applications.

#### TBJ Series Case Size



#### TBJ FAMILY SIZES:

##### DSCC 95158, 07016 & CWR11;

##### TBM Ultra-Low ESR;

##### NBS & NBM Low ESR OxiCap®.

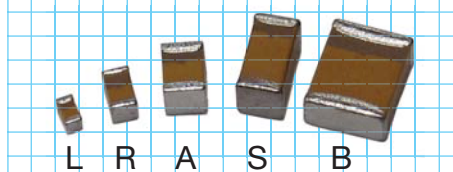
The TBJ family is based on EIA / Industrial standard sizes. While this series offers a more limited range of form factors (only 4 QPL case sizes, A through D, with an additional 2 case sizes (E & V) available to DSCC drawing), it does enable commercial designs / prototypes to be upgraded from commercial to COTS-Plus or even SRC9000 Space level for flight applications.

#### TBC FAMILY SIZES:

##### CWR15

TBC represents the world's smallest military approved tantalum chip capacitors technology. The case sizes are based on existing small case ceramic chip / resistor chip sizes; L, R & A case are equivalent to 0603, 0805 & 1206 sizes respectively, but with capacitance/voltage combinations significantly higher than available in 125°C rated ceramic devices. TBC represents a significant enabling technology for downsizing and reduced payload circuits for military and aerospace PCB, hybrid & flex circuit applications.

#### TBC Series Case Sizes





### PART NUMBERING, TEST & PACKAGING OPTIONS

#### Part Numbering:

AVX part numbers have 19 character fields. Standard characters are used to denote AVX series, case size, capacitance code, capacitance tolerance, voltage code and standard / Low ESR designator.

#### Test Designators:

The following table is a cross-reference between AVX and MIL designators for the various termination, test and inspection options available:

Symbol	Parameter	Condition	Designator	
			MIL	AVX
^	Termination Finish	Hot Solder Dip	C	8
		Solder Fused	K	0
		Solder Plated	H	H
		Gold	B	9
		Matte Sn	-	7
#	Lot inspection Conformance Level	MIL QPL (JAN brand)	-	M
		DSCC Dwg	-	D
		Lab/SCD/SRC9000	-	L
		Standard	-	S
++	Surge Current Test (also used for custom requirements)	No Surge	Z	00
		10 Cycles Ambient	A	23
		10 Cycles -55°C & +85°C	B	24
		10 Cycles -55°C & +85°C Pre-Weibull	C	45
@	Voltage Conditioning (Reliability) Grade	Non ER	A	Z
		B Weibull	B	B
		C Weibull	C	C
		D Weibull	D	D
*	Capacitance Tolerance	±5%	J	J
		±10%	K	K
		±20%	M	M
0	AVX SCD Designator	0 = N/A	N/A	0
		9 = SRC9000	N/A	9

#### Packaging Designators:

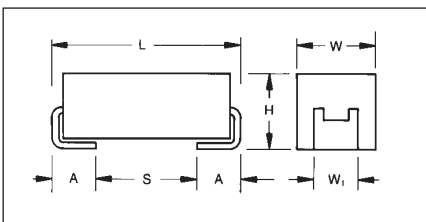
Due to the wide range of mounting processes that can be used for these products, there are many packaging options including bulk, tape / reel and waffle pack. Full dimensional information and packaging quantities are available in the packaging section (Applications Guide). Custom packaging is available for some product series (e.g. non-modular reel quantities, inverted in waffle (for wire bonding), special bar coding requirements, etc.). Please contact factory for custom requirements.

Symbol	Parameter	Condition	Designator	
			MIL	AVX
□	Bulk	Bulk	Default	B
		Bulk - ESD Packaging	-	K
	Tape & Reel	4" Reel	TR\4	X
		7" Reel	TR\7	R
		13" Reel	TR\13	S
	Waffle Pack	Waffle Pack	W	W
		Waffle - ESD Packaging	-	L

# TAZ Series



## CWR09 - MIL-PRF-55365/4 Established Reliability, COTS-Plus & Space Level



### MARKING

(White marking on black body)



**Polarity Stripe (+)**

**Capacitance Code  
Rated Voltage**

This is the original high reliability molded tantalum chip series and the case sizes still represent the most flexible of surface mount form factors. TAZ offers nine case sizes, eight of which (A through H) are fully qualified to MIL-PRF-55365/4, and also includes the original sub-miniature R case (non-QPL).

This series is fully interchangeable with CWR06 conformal types, while offering the advantages of molded body/compliant termination construction (ensuring no TCE mismatch with any substrate). This construction is compatible with a wide range of SMT board assembly processes including wave or reflow solder, conductive epoxy or compression bonding techniques.

The parts also carry full polarity and capacitance / voltage marking. The five smaller cases are characterized by their low profile construction, with the A case being the world's smallest molded military tantalum chip.

All 4V to 50V ratings are qualified to MIL-PRF-55365 Weibull "B", "C", "D" and "T" levels, with all surge options ("A", "B" & "C") available.

For Space Level applications, AVX SRC 9000 qualification is recommended (see ratings table for part number availability).

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these are "H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365). In addition, the molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

### CASE DIMENSIONS:

millimeters (inches)

Case Code	Length (L) ±0.38 (0.015)	Width (W) ±0.38 (0.015)	Height (H) ±0.38 (0.015)	Term. Width (W <sub>t</sub> )	Term. Length (A) +0.25/-0.13 (+0.010/-0.005)	S min	Typical Weight (g)
A	2.54 (0.100)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	0.38 (0.015)	0.016
B	3.81 (0.150)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	1.65 (0.065)	0.025
C	5.08 (0.200)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	2.92 (0.115)	0.035
D	3.81 (0.150)	2.54 (0.100)	1.27 (0.050)	2.41+0.13/-0.25 (0.095+0.005/-0.010)	0.76 (0.030)	1.65 (0.065)	0.045
E	5.08 (0.200)	2.54 (0.100)	1.27 (0.050)	2.41+0.13/-0.25 (0.095+0.005/-0.010)	0.76 (0.030)	2.92 (0.115)	0.065
F	5.59 (0.220)	3.43 (0.135)	1.78 (0.070)	3.30±0.13 (0.130±0.005)	0.76 (0.030)	3.43 (0.135)	0.125
G	6.73 (0.265)	2.79 (0.110)	2.79 (0.110)	2.67±0.13 (0.105±0.005)	1.27 (0.050)	3.56 (0.140)	0.205
H	7.24 (0.285)	3.81 (0.150)	2.79 (0.110)	3.68+0.13/-0.51 (0.145+0.005/-0.020)	1.27 (0.050)	4.06 (0.160)	0.335
R	2.05 (0.081) ±0.20 (0.008)	1.30 (0.051) +0.20 (0.008) -0.10 (0.004)	1.20 (0.047) max	1.0±0.10 (0.039±0.004)	0.50 (0.020) +0.30 (0.012) -0.20 (0.008)	0.71 (0.028)	0.010

### CWR09 MIL-PRF-55365/4

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) at 85°C							
µF	Code	4V (C)	6V (D)	10V (F)	15V (H)	20V (J)	25V (K)	35V (M)	50V (N)
0.10	104								A
0.15	154								A
0.22	224							A	B
0.33	334	R		R		A	A	B	B
0.47	474			R		A	B	B	C
0.68	684				A	B	B	C	D
1.0	105			A/R		B	C	D	E
1.5	155		A		B	C	D	E	F
2.2	225	A/R		B	C	D	E	F	F
3.3	335		B	C	D	E		F	G
4.7	475	B	C	D	E		F	G	H
6.8	685	C	D	E		F	G	H	
10	106	D	E		F		G		
15	156	E		F	G	G	H		
22	226		F		G	H			
33	336	F		G	H				
47	476		G	H					
68	686	G	H						
100	107	H							



### HOW TO ORDER

#### COTS-PLUS & MIL QPL (CWR09):

TAZ	H	686	*	006	C	□	#	@	0	^	++
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance M = ±20% K = ±10% J = ±5%	Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	Standard or Low ESR Range C = Std ESR L = Low ESR	Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	Inspection Level S = Std. Conformance L = Group A  M = MIL (JAN) CWR09	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER	Qualification Level 0 = N/A T = T Level 9 = SRC9000	Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	Surge Test Option 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

LEAD-FREE LEAD-FREE COMPATIBLE COMPONENT  
 RoHS COMPLIANT  
For RoHS compliant products, please select correct termination style.

#### CWR09 P/N CROSS REFERENCE:

CWR09	D	^	686	*	@	+	□
Type	Voltage Code C = 4Vdc D = 6Vdc F = 10Vdc H = 15Vdc J = 20Vdc K = 25Vdc M = 35Vdc N = 50Vdc	Termination Finish H = Solder Plated K = Solder Fused C = Hot Solder Dipped B = Gold Plated	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance M = ±20% K = ±10% J = ±5%	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. T = T Level A = Non-ER	Surge Test Option A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull  If blank, None required	Packaging Bulk = Standard TR = 7" T&R TR13 = 13" T&R W = Waffle  See page 7 for additional packaging options.

LEAD-FREE LEAD-FREE COMPATIBLE COMPONENT  
 RoHS COMPLIANT  
For RoHS compliant products, please select correct termination style.

#### SPACE LEVEL OPTIONS TO SRC9000\*:

TAZ	H	686	*	006	C	□	L	@	9	^	++
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance M = ±20% K = ±10% J = ±5%	Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	Standard or Low ESR Range C = Std ESR L = Low ESR	Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	Inspection Level L = Group A	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf.	Qualification Level 9 = SRC9000	Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	Surge Test Option 45 = 10 cycles, -55°C & +85°C before Weibull

LEAD-FREE LEAD-FREE COMPATIBLE COMPONENT  
 RoHS COMPLIANT  
For RoHS compliant products, please select correct termination style.

\*Contact factory for AVX SRC9000 Space Level SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	0.10 µF to 100 µF									
Capacitance Tolerance:	±5%; ±10%; ±20%									
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	4	6	10	15	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ 125°C:	2.7	4	6.7	10	13.3	16.7	23.3	33.3	
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	5.3	8	13.3	20	26.7	33.3	46.7	66.7	
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	3.5	5.3	8.7	13.3	17.8	22.2	31.1	44.5	
Temperature Range:	-55°C to +125°C									

# TAZ Series

## CWR09 - MIL-PRF-55365/4 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/4									Power Dissipation W	25°C Ripple A (100kHz)	Typical 8 Ri
				Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
CWR09 P/N	AVX MIL & COTS-Plus P/N	AVX SRC9000 P/N	Case				+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)			
	TAZ R 334 * 004 C □ # @ 0 ^ ++		R	0.33	4	45	1	10	12	6	8	8	0.030	0.03	0
	TAZ R 225 * 004 C □ # @ 0 ^ ++		R	2.2	4	12	1	10	12	6	8	8	0.030	0.05	0
	TAZ A 225 * 004 C □ # @ 0 ^ ++	TAZ A 225 * 004 C □ L @ 9 ^ ++	A	2.2	4	8	1	10	12	6	8	8	0.050	0.08	0
CWR09C^475^@+	TAZ B 475 * 004 C □ # @ 0 ^ ++	TAZ B 475 * 004 C □ L @ 9 ^ ++	B	4.7	4	8	1	10	12	6	8	8	0.070	0.09	0
CWR09C^685^@+	TAZ C 685 * 004 C □ # @ 0 ^ ++	TAZ C 685 * 004 C □ L @ 9 ^ ++	C	6.8	4	5.5	1	10	12	6	8	8	0.075	0.12	0
CWR09C^106^@+	TAZ D 106 * 004 C □ # @ 0 ^ ++	TAZ D 106 * 004 C □ L @ 9 ^ ++	D	10	4	4	1	10	12	8	8	10	0.080	0.14	0
CWR09C^156^@+	TAZ E 156 * 004 C □ # @ 0 ^ ++	TAZ E 156 * 004 C □ L @ 9 ^ ++	E	15	4	3.5	1	10	12	8	10	12	0.090	0.16	0
CWR09C^336^@+	TAZ F 336 * 004 C □ # @ 0 ^ ++	TAZ F 336 * 004 C □ L @ 9 ^ ++	F	33	4	2.2	2	20	24	8	10	12	0.100	0.21	0
CWR09C^686^@+	TAZ G 686 * 004 C □ # @ 0 ^ ++	TAZ G 686 * 004 C □ L @ 9 ^ ++	G	68	4	1.1	3	30	36	10	12	12	0.125	0.34	0
CWR09C^107^@+	TAZ H 107 * 004 C □ # @ 0 ^ ++	TAZ H 107 * 004 C □ L @ 9 ^ ++	H	100	4	0.9	4	40	48	10	12	12	0.150	0.41	0
CWR09D^155^@+	TAZ A 155 * 006 C □ # @ 0 ^ ++	TAZ A 155 * 006 C □ L @ 9 ^ ++	A	1.5	6	8	1	10	12	6	8	8	0.050	0.08	0
CWR09D^335^@+	TAZ B 335 * 006 C □ # @ 0 ^ ++	TAZ B 335 * 006 C □ L @ 9 ^ ++	B	3.3	6	8	1	10	12	6	8	8	0.070	0.09	0
CWR09D^475^@+	TAZ C 475 * 006 C □ # @ 0 ^ ++	TAZ C 475 * 006 C □ L @ 9 ^ ++	C	4.7	6	5.5	1	10	12	6	8	8	0.075	0.12	0
CWR09D^685^@+	TAZ D 685 * 006 C □ # @ 0 ^ ++	TAZ D 685 * 006 C □ L @ 9 ^ ++	D	6.8	6	4.5	1	10	12	6	8	8	0.080	0.13	0
CWR09D^106^@+	TAZ E 106 * 006 C □ # @ 0 ^ ++	TAZ E 106 * 006 C □ L @ 9 ^ ++	E	10	6	3.5	1	10	12	8	10	12	0.090	0.16	0
CWR09D^226^@+	TAZ F 226 * 006 C □ # @ 0 ^ ++	TAZ F 226 * 006 C □ L @ 9 ^ ++	F	22	6	2.2	2	20	24	8	10	12	0.100	0.21	0
CWR09D^476^@+	TAZ G 476 * 006 C □ # @ 0 ^ ++	TAZ G 476 * 006 C □ L @ 9 ^ ++	G	47	6	1.1	3	30	36	10	12	12	0.125	0.34	0
CWR09D^686^@+	TAZ H 686 * 006 C □ # @ 0 ^ ++	TAZ H 686 * 006 C □ L @ 9 ^ ++	H	68	6	0.9	4	40	48	10	12	12	0.150	0.41	0
	TAZ R 334 * 010 C □ # @ 0 ^ ++		R	0.33	10	50	1	10	12	6	8	8	0.030	0.02	0
	TAZ R 474 * 010 C □ # @ 0 ^ ++		R	0.47	10	50	1	10	12	6	8	8	0.030	0.02	0
	TAZ R 105 * 010 C □ # @ 0 ^ ++		R	1	10	10	1	10	12	6	8	8	0.030	0.05	0
CWR09F^105^@+	TAZ A 105 * 010 C □ # @ 0 ^ ++	TAZ A 105 * 010 C □ L @ 9 ^ ++	A	1	10	10	1	10	12	6	8	8	0.050	0.07	0
CWR09F^225^@+	TAZ B 225 * 010 C □ # @ 0 ^ ++	TAZ B 225 * 010 C □ L @ 9 ^ ++	B	2.2	10	8	1	10	12	6	8	8	0.070	0.09	0
CWR09F^335^@+	TAZ C 335 * 010 C □ # @ 0 ^ ++	TAZ C 335 * 010 C □ L @ 9 ^ ++	C	3.3	10	5.5	1	10	12	6	8	8	0.075	0.12	0
CWR09F^475^@+	TAZ D 475 * 010 C □ # @ 0 ^ ++	TAZ D 475 * 010 C □ L @ 9 ^ ++	D	4.7	10	4.5	1	10	12	6	8	8	0.080	0.13	0
CWR09F^685^@+	TAZ E 685 * 010 C □ # @ 0 ^ ++	TAZ E 685 * 010 C □ L @ 9 ^ ++	E	6.8	10	3.5	1	10	12	6	8	8	0.090	0.16	0
CWR09F^156^@+	TAZ F 156 * 010 C □ # @ 0 ^ ++	TAZ F 156 * 010 C □ L @ 9 ^ ++	F	15	10	2.5	2	20	24	8	10	12	0.100	0.20	0
CWR09F^336^@+	TAZ G 336 * 010 C □ # @ 0 ^ ++	TAZ G 336 * 010 C □ L @ 9 ^ ++	G	33	10	1.1	3	30	36	10	12	12	0.125	0.34	0
CWR09F^476^@+	TAZ H 476 * 010 C □ # @ 0 ^ ++	TAZ H 476 * 010 C □ L @ 9 ^ ++	H	47	10	0.9	5	50	60	10	12	12	0.150	0.41	0
CWR09H^684^@+	TAZ A 684 * 015 C □ # @ 0 ^ ++	TAZ A 684 * 015 C □ L @ 9 ^ ++	A	0.68	15	12	1	10	12	6	8	8	0.050	0.06	0
CWR09H^155^@+	TAZ B 155 * 015 C □ # @ 0 ^ ++	TAZ B 155 * 015 C □ L @ 9 ^ ++	B	1.5	15	8	1	10	12	6	8	8	0.070	0.09	0
CWR09H^225^@+	TAZ C 225 * 015 C □ # @ 0 ^ ++	TAZ C 225 * 015 C □ L @ 9 ^ ++	C	2.2	15	5.5	1	10	12	6	8	8	0.075	0.12	0
CWR09H^335^@+	TAZ D 335 * 015 C □ # @ 0 ^ ++	TAZ D 335 * 015 C □ L @ 9 ^ ++	D	3.3	15	5	1	10	12	6	8	8	0.080	0.13	0
CWR09H^475^@+	TAZ E 475 * 015 C □ # @ 0 ^ ++	TAZ E 475 * 015 C □ L @ 9 ^ ++	E	4.7	15	4	1	10	12	6	8	8	0.090	0.15	0
CWR09H^106^@+	TAZ F 106 * 015 C □ # @ 0 ^ ++	TAZ F 106 * 015 C □ L @ 9 ^ ++	F	10	15	2.5	2	20	24	6	8	8	0.100	0.20	0
CWR09H^226^@+	TAZ G 226 * 015 C □ # @ 0 ^ ++	TAZ G 226 * 015 C □ L @ 9 ^ ++	G	22	15	1.1	4	40	48	6	8	8	0.125	0.34	0
CWR09H^336^@+	TAZ H 336 * 015 C □ # @ 0 ^ ++	TAZ H 336 * 015 C □ L @ 9 ^ ++	H	33	15	0.9	5	50	60	8	10	12	0.150	0.41	0
CWR09J^474^@+	TAZ A 474 * 020 C □ # @ 0 ^ ++	TAZ A 474 * 020 C □ L @ 9 ^ ++	A	0.47	20	14	1	10	12	8	8	10	0.050	0.06	0
CWR09J^684^@+	TAZ B 684 * 020 C □ # @ 0 ^ ++	TAZ B 684 * 020 C □ L @ 9 ^ ++	B	0.68	20	10	1	10	12	6	8	8	0.070	0.08	0
CWR09J^105^@+	TAZ B 105 * 020 C □ # @ 0 ^ ++	TAZ B 105 * 020 C □ L @ 9 ^ ++	B	1	20	12	1	10	12	6	8	8	0.070	0.08	0
CWR09J^155^@+	TAZ C 155 * 020 C □ # @ 0 ^ ++	TAZ C 155 * 020 C □ L @ 9 ^ ++	C	1.5	20	6	1	10	12	6	8	8	0.075	0.11	0
CWR09J^225^@+	TAZ D 225 * 020 C □ # @ 0 ^ ++	TAZ D 225 * 020 C □ L @ 9 ^ ++	D	2.2	20	5	1	10	12	6	8	8	0.080	0.13	0
CWR09J^335^@+	TAZ E 335 * 020 C □ # @ 0 ^ ++	TAZ E 335 * 020 C □ L @ 9 ^ ++	E	3.3	20	4	1	10	12	6	8	8	0.090	0.15	0
CWR09J^685^@+	TAZ F 685 * 020 C □ # @ 0 ^ ++	TAZ F 685 * 020 C □ L @ 9 ^ ++	F	6.8	20	2.4	2	20	24	6	8	8	0.100	0.20	0
CWR09J^156^@+	TAZ G 156 * 020 C □ # @ 0 ^ ++	TAZ G 156 * 020 C □ L @ 9 ^ ++	G	15	20	1.1	3	30	36	6	8	8	0.125	0.34	0
CWR09J^226^@+	TAZ H 226 * 020 C □ # @ 0 ^ ++	TAZ H 226 * 020 C □ L @ 9 ^ ++	H	22	20	0.9	4	40	48	6	8	8	0.150	0.41	0
CWR09K^334^@+	TAZ A 334 * 025 C □ # @ 0 ^ ++	TAZ A 334 * 025 C □ L @ 9 ^ ++	A	0.33	25	15	1	10	12	6	8	8	0.050	0.06	0
CWR09K^684^@+	TAZ B 684 * 025 C □ # @ 0 ^ ++	TAZ B 684 * 025 C □ L @ 9 ^ ++	B	0.68	25	7.5	1	10	12	6	8	8	0.070	0.10	0
CWR09K^105^@+	TAZ C 105 * 025 C □ # @ 0 ^ ++	TAZ C 105 * 025 C □ L @ 9 ^ ++	C	1	25	6.5	1	10	12	6	8	8	0.075	0.11	0
CWR09K^155^@+	TAZ D 155 * 025 C □ # @ 0 ^ ++	TAZ D 155 * 025 C □ L @ 9 ^ ++	D	1.5	25	6.5	1	10	12	6	8	8	0.080	0.11	0
CWR09K^225^@+	TAZ E 225 * 025 C □ # @ 0 ^ ++	TAZ E 225 * 025 C □ L @ 9 ^ ++	E	2.2	25	3.5	1	10	12	6	8	8	0.090	0.16	0
CWR09K^475^@+	TAZ F 475 * 025 C □ # @ 0 ^ ++	TAZ F 475 * 025 C □ L @ 9 ^ ++	F	4.7	25	2.5	2	20	24	6	8	8	0.100	0.20	0
CWR09K^685^@+	TAZ G 685 * 025 C □ # @ 0 ^ ++	TAZ G 685 * 025 C □ L @ 9 ^ ++	G	6.8	25	1.2	2	20	24	6	8	8	0.125	0.32	0
CWR09K^106^@+	TAZ G 106 * 025 C □ # @ 0 ^ ++	TAZ G 106 * 025 C □ L @ 9 ^ ++	G	10	25	1.4	3	30	36	6	8	8	0.125	0.30	0
CWR09K^156^@+	TAZ H 156 * 025 C □ # @ 0 ^ ++	TAZ H 156 * 025 C □ L @ 9 ^ ++	H	15	25	1	4	40	48	6	8	8	0.150	0.39	0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TAZ Series

## CWR09 - MIL-PRF-55365/4 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/4									Power Dissipation W	25°C Ripple A (100kHz)	Type 8 Ri (10
				Cap @ 120Hz μF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
							+25°C (μA)	+85°C (μA)	+125°C (μA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)			
CWR09M^224^@+	TAZ A 224 * 035 C □ # @ 0 ^ ++	TAZ A 224 * 035 C □ L @ 9 ^ ++	A	0.22	35	18	1	10	12	6	8	8	0.050	0.05	C
CWR09M^474^@+	TAZ B 474 * 035 C □ # @ 0 ^ ++	TAZ B 474 * 035 C □ L @ 9 ^ ++	B	0.47	35	10	1	10	12	6	8	8	0.070	0.08	C
CWR09M^684^@+	TAZ C 684 * 035 C □ # @ 0 ^ ++	TAZ C 684 * 035 C □ L @ 9 ^ ++	C	0.68	35	8	1	10	12	6	8	8	0.075	0.10	C
CWR09M^105^@+	TAZ D 105 * 035 C □ # @ 0 ^ ++	TAZ D 105 * 035 C □ L @ 9 ^ ++	D	1	35	6.5	1	10	12	6	8	8	0.080	0.11	C
CWR09M^155^@+	TAZ E 155 * 035 C □ # @ 0 ^ ++	TAZ E 155 * 035 C □ L @ 9 ^ ++	E	1.5	35	4.5	1	10	12	6	8	8	0.090	0.14	C
CWR09M^335^@+	TAZ F 335 * 035 C □ # @ 0 ^ ++	TAZ F 335 * 035 C □ L @ 9 ^ ++	F	3.3	35	2.5	1	10	12	6	8	8	0.100	0.20	C
CWR09M^475^@+	TAZ G 475 * 035 C □ # @ 0 ^ ++	TAZ G 475 * 035 C □ L @ 9 ^ ++	G	4.7	35	1.5	2	20	24	6	8	8	0.125	0.29	C
CWR09M^685^@+	TAZ H 685 * 035 C □ # @ 0 ^ ++	TAZ H 685 * 035 C □ L @ 9 ^ ++	H	6.8	35	1.3	3	30	36	6	8	8	0.150	0.34	C
CWR09N^104^@+	TAZ A 104 * 050 C □ # @ 0 ^ ++	TAZ A 104 * 050 C □ L @ 9 ^ ++	A	0.1	50	22	1	10	12	6	8	8	0.050	0.05	C
CWR09N^154^@+	TAZ A 154 * 050 C □ # @ 0 ^ ++	TAZ A 154 * 050 C □ L @ 9 ^ ++	A	0.15	50	17	1	10	12	6	8	8	0.050	0.05	C
CWR09N^224^@+	TAZ B 224 * 050 C □ # @ 0 ^ ++	TAZ B 224 * 050 C □ L @ 9 ^ ++	B	0.22	50	14	1	10	12	6	8	8	0.070	0.07	C
CWR09N^334^@+	TAZ B 334 * 050 C □ # @ 0 ^ ++	TAZ B 334 * 050 C □ L @ 9 ^ ++	B	0.33	50	12	1	10	12	6	8	8	0.070	0.08	C
CWR09N^474^@+	TAZ C 474 * 050 C □ # @ 0 ^ ++	TAZ C 474 * 050 C □ L @ 9 ^ ++	C	0.47	50	8	1	10	12	6	8	8	0.075	0.10	C
CWR09N^684^@+	TAZ D 684 * 050 C □ # @ 0 ^ ++	TAZ D 684 * 050 C □ L @ 9 ^ ++	D	0.68	50	7	1	10	12	6	8	8	0.080	0.11	C
CWR09N^105^@+	TAZ E 105 * 050 C □ # @ 0 ^ ++	TAZ E 105 * 050 C □ L @ 9 ^ ++	E	1	50	6	1	10	12	6	8	8	0.090	0.12	C
CWR09N^155^@+	TAZ F 155 * 050 C □ # @ 0 ^ ++	TAZ F 155 * 050 C □ L @ 9 ^ ++	F	1.5	50	4	1	10	12	6	8	8	0.100	0.16	C
CWR09N^225^@+	TAZ F 225 * 050 C □ # @ 0 ^ ++	TAZ F 225 * 050 C □ L @ 9 ^ ++	F	2.2	50	2.5	2	20	24	6	8	8	0.100	0.20	C
CWR09N^335^@+	TAZ G 335 * 050 C □ # @ 0 ^ ++	TAZ G 335 * 050 C □ L @ 9 ^ ++	G	3.3	50	2	2	20	24	6	8	8	0.125	0.25	C
CWR09N^475^@+	TAZ H 475 * 050 C □ # @ 0 ^ ++	TAZ H 475 * 050 C □ L @ 9 ^ ++	H	4.7	50	1.5	3	30	36	6	8	8	0.150	0.32	C

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TAZ Series



## CWR19 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level



An extended range of capacitor ratings beyond CWR09 that is fully qualified to MIL-PRF-55365/11, this series represents the most flexible of surface mount form factors, offering nine case sizes (the original A through H of CWR09) and adds the new X case size.

The molded body / compliant termination construction ensures no TCE mismatch with any substrate. This construction is compatible with a wide range of SMT board assembly processes including wave or reflow solder, conductive epoxy or compression bonding techniques. The parts also carry full polarity and capacitance / voltage marking.

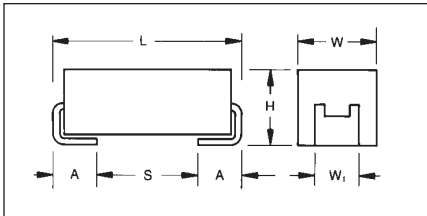
The four smaller cases are characterized by their low profile construction, with the A case being the world's smallest molded military tantalum chip.

The series is qualified to MIL-PRF-55365 Weibull "B", "C", "D" and "T" levels, with all surge options ("A", "B" & "C") available.

For Space Level applications, AVX SRC 9000 qualification is recommended (see ratings table for part number availability).

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these are "H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365). In addition, the molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.



### MARKING

(White marking on black body)



**Polarity Stripe (+)**

**Capacitance Code**  
**Rated Voltage**

### CASE DIMENSIONS:

millimeters (inches)

Case Code	Length (L) ±0.38 (0.015)	Width (W) ±0.38 (0.015)	Height (H) ±0.38 (0.015)	Term. Width (W <sub>t</sub> )	Term. Length (A) +0.25/-0.13 (+0.010/-0.005)	S min	Typical Weight (g)
A	2.54 (0.100)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	0.38 (0.015)	0.016
B	3.81 (0.150)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	1.65 (0.065)	0.025
C	5.08 (0.200)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	2.92 (0.115)	0.035
D	3.81 (0.150)	2.54 (0.100)	1.27 (0.050)	2.41+0.13/-0.25 (0.095+0.005/-0.010)	0.76 (0.030)	1.65 (0.065)	0.045
E	5.08 (0.200)	2.54 (0.100)	1.27 (0.050)	2.41+0.13/-0.25 (0.095+0.005/-0.010)	0.76 (0.030)	2.92 (0.115)	0.065
F	5.59 (0.220)	3.43 (0.135)	1.78 (0.070)	3.30±0.13 (0.130±0.005)	0.76 (0.030)	3.43 (0.135)	0.125
G	6.73 (0.265)	2.79 (0.110)	2.79 (0.110)	2.67±0.13 (0.105±0.005)	1.27 (0.050)	3.56 (0.140)	0.205
H	7.24 (0.285)	3.81 (0.150)	2.79 (0.110)	3.68+0.13/-0.51 (0.145+0.005/-0.020)	1.27 (0.050)	4.06 (0.160)	0.335
X	6.93 Max (0.273)	5.41 Max (0.213)	2.74 Max (0.108)	3.05±0.13 (0.120±0.005)	1.19 (0.047)	N/A	0.420

### CWR19-MIL-PRF 55365/11

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated voltage DC (V <sub>R</sub> ) at 85°C						
µF	Code	4V (C)	6V (D)	10V (F)	15V (H)	20V (J)	25V (K)	35V (M)
0.33	334							A
0.47	474						A	
0.68	684							
1.0	105				A	A	B	
1.5	155				A	B		
2.2	225			A	A	B	D	
3.3	335	A	A	A	B	D	E	
4.7	475	A	A	B/C	B/C/D	E		
6.8	685	A	B	B/C/D	D/E	E	F	G
10	106	B	B	B/C/D/E	D/E	E/F		H
15	156	B	B/D/E	D/E	E/F	F	G	
22	226	B/D	D/E	E	F	G	G/H	
33	336	D/E	E	F	F/G	H	H	
47	476	E	F	F/G	G/H	H/X		
68	686	E	F/G	G	G/H			
100	107	F	G	G/H	H			
150	157	G	G	H/X				
220	227	H	H	H				
330	337	H	H					



# TAZ Series



## CWR19 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level

### HOW TO ORDER

#### COTS-PLUS & MIL QPL (CWR19):

<b>TAZ</b>	<b>H</b>	<b>227</b>	<b>*</b>	<b>006</b>	<b>C</b>	<b>□</b>	<b>#</b>	<b>@</b>	<b>0</b>	<b>^</b>	<b>++</b>
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10% J = ±5%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc	<b>Standard or Low ESR Range</b> C = Std ESR L = Low ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	<b>Inspection Level</b> S = Std. Conformance L = Group A  M = MIL (JAN) CWR19	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER	<b>Qualification Level</b> 0 = N/A T = T Level 9 = SRC9000	<b>Termination Finish</b> H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	<b>Surge Test Option</b> 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

LEAD-FREE LEAD-FREE COMPATIBLE COMPONENT  
RoHS COMPLIANT  
For RoHS compliant products, please select correct termination style.

#### CWR19 P/N CROSS REFERENCE:

<b>CWR19</b>	<b>D</b>	<b>^</b>	<b>227</b>	<b>*</b>	<b>@</b>	<b>H</b>	<b>+</b>	<b>□</b>
<b>Type</b>	<b>Voltage Code</b> C = 4Vdc D = 6Vdc F = 10Vdc H = 15Vdc J = 20Vdc K = 25Vdc M = 35Vdc	<b>Termination Finish</b> H = Solder Plated K = Solder Fused C = Hot Solder Dipped B = Gold Plated	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10% J = ±5%	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. T = T Level A = Non-ER	<b>Case Size</b>	<b>Surge Test Option</b> A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull Z = None required	<b>Packaging</b> Bulk = Standard T&R = 7" T&R T&R13 = 13" T&R W = Waffle  See page 7 for additional packaging options.

LEAD-FREE LEAD-FREE COMPATIBLE COMPONENT  
RoHS COMPLIANT  
For RoHS compliant products, please select correct termination style.

#### SPACE LEVEL OPTIONS TO SRC9000\*:

<b>TAZ</b>	<b>H</b>	<b>227</b>	<b>*</b>	<b>006</b>	<b>C</b>	<b>□</b>	<b>L</b>	<b>@</b>	<b>9</b>	<b>^</b>	<b>++</b>
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10% J = ±5%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc	<b>Standard or Low ESR Range</b> C = Std ESR L = Low ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	<b>Inspection Level</b> L = Group A	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf.	<b>Qualification Level</b> 9 = SRC9000	<b>Termination Finish</b> H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	<b>Surge Test Option</b> 45 = 10 cycles, -55°C & +85°C before Weibull

LEAD-FREE LEAD-FREE COMPATIBLE COMPONENT  
RoHS COMPLIANT  
For RoHS compliant products, please select correct termination style.

\*Contact factory for AVX SRC9000 Space Level SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C								
Capacitance Range:	0.33 µF to 330 µF								
Capacitance Tolerance:	±5%; ±10%; ±20%								
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	4	6	10	15	20	25	35	
Category Voltage (V <sub>C</sub> )	≤ 125°C:	2.7	4	6.7	10	13.3	16.7	23.3	
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	5.3	8	13.3	20	26.7	33.3	46.7	
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	3.5	5.3	8.7	13.3	17.8	22.2	31.1	
Temperature Range:	-55°C to +125°C								



# TAZ Series

## CWR19 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/11									Power Dissipation W	25°C Ripple A (100kHz)	Typical Ripple A (100kHz)
				Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
							+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)			
CWR19 P/N	AVX MIL & COTS-Plus P/N	AVX SRC9000 P/N	Case	µF @ 25°C	V @ +85°C	Ohms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	A (100kHz)	(100kHz)
CWR19C^335^@A+□	TAZ A 335 * 004 C □ # @ 0 ^ ++	TAZ A 335 * 004 C □ L @ 9 ^ ++	A	3.3	4	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR19C^475^@A+□	TAZ A 475 * 004 C □ # @ 0 ^ ++	TAZ A 475 * 004 C □ L @ 9 ^ ++	A	4.7	4	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR19C^685^@A+□	TAZ A 685 * 004 C □ # @ 0 ^ ++	TAZ A 685 * 004 C □ L @ 9 ^ ++	A	6.8	4	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR19C^106^@B+□	TAZ B 106 * 004 C □ # @ 0 ^ ++	TAZ B 106 * 004 C □ L @ 9 ^ ++	B	10	4	8	1	10	12	8	10	10	0.070	0.09	0.09
CWR19C^156^@B+□	TAZ B 156 * 004 C □ # @ 0 ^ ++	TAZ B 156 * 004 C □ L @ 9 ^ ++	B	15	4	8	1	10	12	8	10	10	0.070	0.09	0.09
CWR19C^226^@B+□	TAZ B 226 * 004 C □ # @ 0 ^ ++	TAZ B 226 * 004 C □ L @ 9 ^ ++	B	22	4	8	1	10	12	8	10	10	0.070	0.09	0.09
CWR19C^226^@D+□	TAZ D 226 * 004 C □ # @ 0 ^ ++	TAZ D 226 * 004 C □ L @ 9 ^ ++	D	22	4	4	1	10	12	8	10	12	0.080	0.14	0.14
CWR19C^336^@D+□	TAZ D 336 * 004 C □ # @ 0 ^ ++	TAZ D 336 * 004 C □ L @ 9 ^ ++	D	33	4	4	2	20	24	8	10	12	0.080	0.14	0.14
CWR19C^336^@E+□	TAZ E 336 * 004 C □ # @ 0 ^ ++	TAZ E 336 * 004 C □ L @ 9 ^ ++	E	33	4	3	2	20	24	8	10	12	0.090	0.17	0.17
CWR19C^476^@E+□	TAZ E 476 * 004 C □ # @ 0 ^ ++	TAZ E 476 * 004 C □ L @ 9 ^ ++	E	47	4	3	2	20	24	8	10	12	0.090	0.17	0.17
CWR19C^686^@E+□	TAZ E 686 * 004 C □ # @ 0 ^ ++	TAZ E 686 * 004 C □ L @ 9 ^ ++	E	68	4	3	3	30	36	8	10	12	0.090	0.17	0.17
CWR19C^107^@F+□	TAZ F 107 * 004 C □ # @ 0 ^ ++	TAZ F 107 * 004 C □ L @ 9 ^ ++	F	100	4	2	4	40	48	10	12	12	0.100	0.22	0.22
CWR19C^157^@G+□	TAZ G 157 * 004 C □ # @ 0 ^ ++	TAZ G 157 * 004 C □ L @ 9 ^ ++	G	150	4	1	6	60	72	10	12	12	0.125	0.35	0.35
CWR19C^227^@H+□	TAZ H 227 * 004 C □ # @ 0 ^ ++	TAZ H 227 * 004 C □ L @ 9 ^ ++	H	220	4	1	8	80	96	10	12	12	0.150	0.39	0.39
CWR19C^337^@H+□	TAZ H 337 * 004 C □ # @ 0 ^ ++	TAZ H 337 * 004 C □ L @ 9 ^ ++	H	330	4	0.9	10	100	120	10	12	12	0.150	0.41	0.41
CWR19D^335^@A+□	TAZ A 335 * 006 C □ # @ 0 ^ ++	TAZ A 335 * 006 C □ L @ 9 ^ ++	A	3.3	6	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR19D^475^@A+□	TAZ A 475 * 006 C □ # @ 0 ^ ++	TAZ A 475 * 006 C □ L @ 9 ^ ++	A	4.7	6	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR19D^685^@B+□	TAZ B 685 * 006 C □ # @ 0 ^ ++	TAZ B 685 * 006 C □ L @ 9 ^ ++	B	6.8	6	8	1	10	12	6	8	8	0.070	0.09	0.09
CWR19D^106^@B+□	TAZ B 106 * 006 C □ # @ 0 ^ ++	TAZ B 106 * 006 C □ L @ 9 ^ ++	B	10	6	8	1	10	12	6	8	8	0.070	0.09	0.09
CWR19D^156^@B+□	TAZ B 156 * 006 C □ # @ 0 ^ ++	TAZ B 156 * 006 C □ L @ 9 ^ ++	B	15	6	8	1	10	12	8	10	10	0.070	0.09	0.09
CWR19D^156^@D+□	TAZ D 156 * 006 C □ # @ 0 ^ ++	TAZ D 156 * 006 C □ L @ 9 ^ ++	D	15	6	5	1	10	12	8	10	12	0.080	0.13	0.13
CWR19D^226^@D+□	TAZ D 226 * 006 C □ # @ 0 ^ ++	TAZ D 226 * 006 C □ L @ 9 ^ ++	D	22	6	5	1	10	12	6	8	8	0.080	0.13	0.13
CWR19D^156^@E+□	TAZ E 156 * 006 C □ # @ 0 ^ ++	TAZ E 156 * 006 C □ L @ 9 ^ ++	E	15	6	3	1	10	12	8	10	12	0.090	0.17	0.17
CWR19D^226^@E+□	TAZ E 226 * 006 C □ # @ 0 ^ ++	TAZ E 226 * 006 C □ L @ 9 ^ ++	E	22	6	3.5	2	20	24	8	10	12	0.090	0.16	0.16
CWR19D^336^@E+□	TAZ E 336 * 006 C □ # @ 0 ^ ++	TAZ E 336 * 006 C □ L @ 9 ^ ++	E	33	6	3.5	2	20	24	6	8	8	0.090	0.16	0.16
CWR19D^476^@F+□	TAZ F 476 * 006 C □ # @ 0 ^ ++	TAZ F 476 * 006 C □ L @ 9 ^ ++	F	47	6	3.5	3	30	36	8	10	12	0.100	0.17	0.17
CWR19D^686^@F+□	TAZ F 686 * 006 C □ # @ 0 ^ ++	TAZ F 686 * 006 C □ L @ 9 ^ ++	F	68	6	1.5	4	40	48	10	12	12	0.100	0.26	0.26
CWR19D^686^@G+□	TAZ G 686 * 006 C □ # @ 0 ^ ++	TAZ G 686 * 006 C □ L @ 9 ^ ++	G	68	6	1	4	40	48	10	12	12	0.125	0.35	0.35
CWR19D^107^@G+□	TAZ G 107 * 006 C □ # @ 0 ^ ++	TAZ G 107 * 006 C □ L @ 9 ^ ++	G	100	6	1.1	6	60	72	10	12	12	0.125	0.34	0.34
CWR19D^157^@G+□	TAZ G 157 * 006 C □ # @ 0 ^ ++	TAZ G 157 * 006 C □ L @ 9 ^ ++	G	150	6	1.1	10	100	120	10	12	12	0.125	0.34	0.34
CWR19D^227^@H+□	TAZ H 227 * 006 C □ # @ 0 ^ ++	TAZ H 227 * 006 C □ L @ 9 ^ ++	H	220	6	0.9	10	100	120	10	12	12	0.150	0.41	0.41
CWR19D^337^@H+□	TAZ H 337 * 006 C □ # @ 0 ^ ++	TAZ H 337 * 006 C □ L @ 9 ^ ++	H	330	6	0.9	20	200	240	10	12	12	0.150	0.41	0.41
CWR19F^225^@A+□	TAZ A 225 * 010 C □ # @ 0 ^ ++	TAZ A 225 * 010 C □ L @ 9 ^ ++	A	2.2	10	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR19F^335^@A+□	TAZ A 335 * 010 C □ # @ 0 ^ ++	TAZ A 335 * 010 C □ L @ 9 ^ ++	A	3.3	10	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR19F^475^@B+□	TAZ B 475 * 010 C □ # @ 0 ^ ++	TAZ B 475 * 010 C □ L @ 9 ^ ++	B	4.7	10	8	1	10	12	6	8	8	0.070	0.09	0.09
CWR19F^685^@B+□	TAZ B 685 * 010 C □ # @ 0 ^ ++	TAZ B 685 * 010 C □ L @ 9 ^ ++	B	6.8	10	8	1	10	12	6	8	8	0.070	0.09	0.09
CWR19F^106^@B+□	TAZ B 106 * 010 C □ # @ 0 ^ ++	TAZ B 106 * 010 C □ L @ 9 ^ ++	B	10	10	8	1	10	12	8	10	10	0.070	0.09	0.09
CWR19F^475^@C+□	TAZ C 475 * 010 C □ # @ 0 ^ ++	TAZ C 475 * 010 C □ L @ 9 ^ ++	C	4.7	10	5.5	1	10	12	6	8	8	0.075	0.12	0.12
CWR19F^685^@C+□	TAZ C 685 * 010 C □ # @ 0 ^ ++	TAZ C 685 * 010 C □ L @ 9 ^ ++	C	6.8	10	5.5	1	10	12	6	8	8	0.075	0.12	0.12
CWR19F^106^@C+□	TAZ C 106 * 010 C □ # @ 0 ^ ++	TAZ C 106 * 010 C □ L @ 9 ^ ++	C	10	10	5.5	1	10	12	6	8	8	0.075	0.12	0.12
CWR19F^685^@D+□	TAZ D 685 * 010 C □ # @ 0 ^ ++	TAZ D 685 * 010 C □ L @ 9 ^ ++	D	6.8	10	5	1	10	12	6	8	8	0.080	0.13	0.13
CWR19F^106^@D+□	TAZ D 106 * 010 C □ # @ 0 ^ ++	TAZ D 106 * 010 C □ L @ 9 ^ ++	D	10	10	4	1	10	12	6	8	8	0.080	0.14	0.14
CWR19F^156^@D+□	TAZ D 156 * 010 C □ # @ 0 ^ ++	TAZ D 156 * 010 C □ L @ 9 ^ ++	D	15	10	5	2	20	24	6	8	8	0.080	0.13	0.13
CWR19F^106^@E+□	TAZ E 106 * 010 C □ # @ 0 ^ ++	TAZ E 106 * 010 C □ L @ 9 ^ ++	E	10	10	3.5	1	10	12	6	8	8	0.090	0.16	0.16
CWR19F^156^@E+□	TAZ E 156 * 010 C □ # @ 0 ^ ++	TAZ E 156 * 010 C □ L @ 9 ^ ++	E	15	10	3	2	20	24	8	10	10	0.090	0.17	0.17
CWR19F^226^@E+□	TAZ E 226 * 010 C □ # @ 0 ^ ++	TAZ E 226 * 010 C □ L @ 9 ^ ++	E	22	10	2	3	30	36	8	10	10	0.090	0.21	0.21
CWR19F^336^@F+□	TAZ F 336 * 010 C □ # @ 0 ^ ++	TAZ F 336 * 010 C □ L @ 9 ^ ++	F	33	10	1.5	3	30	36	8	10	10	0.100	0.26	0.26
CWR19F^476^@F+□	TAZ F 476 * 010 C □ # @ 0 ^ ++	TAZ F 476 * 010 C □ L @ 9 ^ ++	F	47	10	1.5	4	40	48	10	12	12	0.100	0.26	0.26
CWR19F^476^@G+□	TAZ G 476 * 010 C □ # @ 0 ^ ++	TAZ G 476 * 010 C □ L @ 9 ^ ++	G	47	10	1	4	40	48	10	12	12	0.125	0.35	0.35
CWR19F^686^@G+□	TAZ G 686 * 010 C □ # @ 0 ^ ++	TAZ G 686 * 010 C □ L @ 9 ^ ++	G	68	10	1.1	6	60	72	10	12	12	0.125	0.34	0.34
CWR19F^107^@G+□	TAZ G 107 * 010 C □ # @ 0 ^ ++	TAZ G 107 * 010 C □ L @ 9 ^ ++	G	100	10	1.1	10	100	120	10	12	12	0.125	0.34	0.34
CWR19F^107^@H+□	TAZ H 107 * 010 C □ # @ 0 ^ ++	TAZ H 107 * 010 C □ L @ 9 ^ ++	H	100	10	0.9	10	100	120	10	12	12	0.150	0.41	0.41
CWR19F^157^@H+□	TAZ H 157 * 010 C □ # @ 0 ^ ++	TAZ H 157 * 010 C □ L @ 9 ^ ++	H	150	10	0.9	15	150	180	10	12	12	0.150	0.41	0.41
CWR19F^227^@H+□	TAZ H 227 * 010 C □ # @ 0 ^ ++	TAZ H 227 * 010 C □ L @ 9 ^ ++	H	220	10	0.9	20	200	240	10	12	12	0.150	0.41	0.41
CWR19F^157^@X+□	TAZ X 157 * 010 C □ # @ 0 ^ ++	TAZ X 157 * 010 C □ L @ 9 ^ ++	X	150	10	0.9	15	150	180	10	12	12	0.200	0.47	0.47

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.





# TAZ Series

## CWR19 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/11									Power Dissipation W	25°C Ripple A (100kHz)	Typical 8 Ri
				Cap @ 120Hz μF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
CWR19 P/N	AVX MIL & COTS-Plus P/N	AVX SRC9000 P/N	Case				+25°C (μA)	+85°C (μA)	+125°C (μA)	+25°C (%)	+ (85/125)°C (%)	-55°C (%)			
CWR19H <sup>105</sup> @A+□	TAZ A 105 * 015 C □ # @ 0 ^ ++	TAZ A 105 * 015 C □ L @ 9 ^ ++	A	1	15	15	1	10	12	6	8	8	0.050	0.06	0
CWR19H <sup>155</sup> @A+□	TAZ A 155 * 015 C □ # @ 0 ^ ++	TAZ A 155 * 015 C □ L @ 9 ^ ++	A	1.5	15	15	1	10	12	6	8	8	0.050	0.06	0
CWR19H <sup>225</sup> @A+□	TAZ A 225 * 015 C □ # @ 0 ^ ++	TAZ A 225 * 015 C □ L @ 9 ^ ++	A	2.2	15	15	1	10	12	6	8	8	0.050	0.06	0
CWR19H <sup>335</sup> @B+□	TAZ B 335 * 015 C □ # @ 0 ^ ++	TAZ B 335 * 015 C □ L @ 9 ^ ++	B	3.3	15	9	1	10	12	6	8	8	0.070	0.09	0
CWR19H <sup>475</sup> @B+□	TAZ B 475 * 015 C □ # @ 0 ^ ++	TAZ B 475 * 015 C □ L @ 9 ^ ++	B	4.7	15	5	1	10	12	6	8	8	0.070	0.12	0
CWR19H <sup>475</sup> @C+□	TAZ C 475 * 015 C □ # @ 0 ^ ++	TAZ C 475 * 015 C □ L @ 9 ^ ++	C	4.7	15	5.5	1	10	12	6	8	8	0.075	0.12	0
CWR19H <sup>475</sup> @D+□	TAZ D 475 * 015 C □ # @ 0 ^ ++	TAZ D 475 * 015 C □ L @ 9 ^ ++	D	4.7	15	6	1	10	12	6	8	8	0.080	0.12	0
CWR19H <sup>685</sup> @D+□	TAZ D 685 * 015 C □ # @ 0 ^ ++	TAZ D 685 * 015 C □ L @ 9 ^ ++	D	6.8	15	6	1	10	12	6	8	8	0.080	0.12	0
CWR19H <sup>106</sup> @D+□	TAZ D 106 * 015 C □ # @ 0 ^ ++	TAZ D 106 * 015 C □ L @ 9 ^ ++	D	10	15	6	2	20	24	6	8	8	0.080	0.12	0
CWR19H <sup>685</sup> @E+□	TAZ E 685 * 015 C □ # @ 0 ^ ++	TAZ E 685 * 015 C □ L @ 9 ^ ++	E	6.8	15	3	1	10	12	8	10	12	0.090	0.17	0
CWR19H <sup>106</sup> @E+□	TAZ E 106 * 015 C □ # @ 0 ^ ++	TAZ E 106 * 015 C □ L @ 9 ^ ++	E	10	15	4	2	20	24	6	8	8	0.090	0.15	0
CWR19H <sup>156</sup> @E+□	TAZ E 156 * 015 C □ # @ 0 ^ ++	TAZ E 156 * 015 C □ L @ 9 ^ ++	E	15	15	4	2	20	24	6	8	8	0.090	0.15	0
CWR19H <sup>156</sup> @F+□	TAZ F 156 * 015 C □ # @ 0 ^ ++	TAZ F 156 * 015 C □ L @ 9 ^ ++	F	15	15	3	2	20	24	8	10	10	0.100	0.18	0
CWR19H <sup>226</sup> @F+□	TAZ F 226 * 015 C □ # @ 0 ^ ++	TAZ F 226 * 015 C □ L @ 9 ^ ++	F	22	15	3	3	30	36	8	10	10	0.100	0.18	0
CWR19H <sup>336</sup> @F+□	TAZ F 336 * 015 C □ # @ 0 ^ ++	TAZ F 336 * 015 C □ L @ 9 ^ ++	F	33	15	3	5	50	60	6	8	8	0.100	0.18	0
CWR19H <sup>336</sup> @G+□	TAZ G 336 * 015 C □ # @ 0 ^ ++	TAZ G 336 * 015 C □ L @ 9 ^ ++	G	33	15	1.1	6	60	72	8	10	10	0.125	0.34	0
CWR19H <sup>476</sup> @G+□	TAZ G 476 * 015 C □ # @ 0 ^ ++	TAZ G 476 * 015 C □ L @ 9 ^ ++	G	47	15	1.1	10	100	120	8	10	10	0.125	0.34	0
CWR19H <sup>686</sup> @G+□	TAZ G 686 * 015 C □ # @ 0 ^ ++	TAZ G 686 * 015 C □ L @ 9 ^ ++	G	68	15	1.1	10	100	120	8	10	10	0.125	0.34	0
CWR19H <sup>476</sup> @H+□	TAZ H 476 * 015 C □ # @ 0 ^ ++	TAZ H 476 * 015 C □ L @ 9 ^ ++	H	47	15	0.9	10	100	120	8	10	10	0.150	0.41	0
CWR19H <sup>686</sup> @H+□	TAZ H 686 * 015 C □ # @ 0 ^ ++	TAZ H 686 * 015 C □ L @ 9 ^ ++	H	68	15	0.9	10	100	120	8	10	10	0.150	0.41	0
CWR19H <sup>107</sup> @H+□	TAZ H 107 * 015 C □ # @ 0 ^ ++	TAZ H 107 * 015 C □ L @ 9 ^ ++	H	100	15	0.9	15	150	180	10	12	12	0.150	0.41	0
CWR19J <sup>684</sup> @A+□	TAZ A 684 * 020 C □ # @ 0 ^ ++	TAZ A 684 * 020 C □ L @ 9 ^ ++	A	0.68	20	15	1	10	12	6	8	8	0.050	0.06	0
CWR19J <sup>105</sup> @A+□	TAZ A 105 * 020 C □ # @ 0 ^ ++	TAZ A 105 * 020 C □ L @ 9 ^ ++	A	1	20	15	1	10	12	6	8	8	0.050	0.06	0
CWR19J <sup>155</sup> @B+□	TAZ B 155 * 020 C □ # @ 0 ^ ++	TAZ B 155 * 020 C □ L @ 9 ^ ++	B	1.5	20	9	1	10	12	6	8	8	0.070	0.09	0
CWR19J <sup>225</sup> @B+□	TAZ B 225 * 020 C □ # @ 0 ^ ++	TAZ B 225 * 020 C □ L @ 9 ^ ++	B	2.2	20	9	1	10	12	6	8	8	0.070	0.09	0
CWR19J <sup>335</sup> @D+□	TAZ D 335 * 020 C □ # @ 0 ^ ++	TAZ D 335 * 020 C □ L @ 9 ^ ++	D	3.3	20	6	1	10	12	6	8	8	0.080	0.12	0
CWR19J <sup>475</sup> @E+□	TAZ E 475 * 020 C □ # @ 0 ^ ++	TAZ E 475 * 020 C □ L @ 9 ^ ++	E	4.7	20	6	1	10	12	6	8	8	0.090	0.12	0
CWR19J <sup>685</sup> @E+□	TAZ E 685 * 020 C □ # @ 0 ^ ++	TAZ E 685 * 020 C □ L @ 9 ^ ++	E	6.8	20	5	2	20	24	6	8	8	0.090	0.13	0
CWR19J <sup>106</sup> @E+□	TAZ E 106 * 020 C □ # @ 0 ^ ++	TAZ E 106 * 020 C □ L @ 9 ^ ++	E	10	20	5	2	20	24	6	8	8	0.090	0.13	0
CWR19J <sup>106</sup> @F+□	TAZ F 106 * 020 C □ # @ 0 ^ ++	TAZ F 106 * 020 C □ L @ 9 ^ ++	F	10	20	3	2	20	24	6	8	8	0.100	0.18	0
CWR19J <sup>156</sup> @F+□	TAZ F 156 * 020 C □ # @ 0 ^ ++	TAZ F 156 * 020 C □ L @ 9 ^ ++	F	15	20	3	3	30	36	6	8	8	0.100	0.18	0
CWR19J <sup>226</sup> @G+□	TAZ G 226 * 020 C □ # @ 0 ^ ++	TAZ G 226 * 020 C □ L @ 9 ^ ++	G	22	20	2.5	4	40	48	6	8	8	0.125	0.22	0
CWR19J <sup>336</sup> @H+□	TAZ H 336 * 020 C □ # @ 0 ^ ++	TAZ H 336 * 020 C □ L @ 9 ^ ++	H	33	20	0.9	6	60	72	8	10	10	0.150	0.41	0
CWR19J <sup>476</sup> @H+□	TAZ H 476 * 020 C □ # @ 0 ^ ++	TAZ H 476 * 020 C □ L @ 9 ^ ++	H	47	20	0.9	10	100	120	8	10	10	0.150	0.41	0
CWR19J <sup>476</sup> @X+□	TAZ X 476 * 020 C □ # @ 0 ^ ++	TAZ X 476 * 020 C □ L @ 9 ^ ++	X	47	20	0.9	10	100	120	8	10	10	0.200	0.47	0
CWR19K <sup>474</sup> @A+□	TAZ A 474 * 025 C □ # @ 0 ^ ++	TAZ A 474 * 025 C □ L @ 9 ^ ++	A	0.47	25	15	1	10	12	6	8	8	0.050	0.06	0
CWR19K <sup>105</sup> @B+□	TAZ B 105 * 025 C □ # @ 0 ^ ++	TAZ B 105 * 025 C □ L @ 9 ^ ++	B	1	25	10	1	10	12	6	8	8	0.070	0.08	0
CWR19K <sup>225</sup> @D+□	TAZ D 225 * 025 C □ # @ 0 ^ ++	TAZ D 225 * 025 C □ L @ 9 ^ ++	D	2.2	25	6	1	10	12	6	8	8	0.080	0.12	0
CWR19K <sup>335</sup> @E+□	TAZ E 335 * 025 C □ # @ 0 ^ ++	TAZ E 335 * 025 C □ L @ 9 ^ ++	E	3.3	25	4	1	10	12	6	8	8	0.090	0.15	0
CWR19K <sup>685</sup> @F+□	TAZ F 685 * 025 C □ # @ 0 ^ ++	TAZ F 685 * 025 C □ L @ 9 ^ ++	F	6.8	25	3	2	20	24	6	8	8	0.100	0.18	0
CWR19K <sup>156</sup> @G+□	TAZ G 156 * 025 C □ # @ 0 ^ ++	TAZ G 156 * 025 C □ L @ 9 ^ ++	G	15	25	1.4	4	40	48	6	8	8	0.125	0.30	0
CWR19K <sup>226</sup> @G+□	TAZ G 226 * 025 C □ # @ 0 ^ ++	TAZ G 226 * 025 C □ L @ 9 ^ ++	G	22	25	1.4	6	60	72	6	8	8	0.125	0.30	0
CWR19K <sup>226</sup> @H+□	TAZ H 226 * 025 C □ # @ 0 ^ ++	TAZ H 226 * 025 C □ L @ 9 ^ ++	H	22	25	0.9	6	60	72	6	8	8	0.150	0.41	0
CWR19K <sup>336</sup> @H+□	TAZ H 336 * 025 C □ # @ 0 ^ ++	TAZ H 336 * 025 C □ L @ 9 ^ ++	H	33	25	0.9	10	100	120	8	10	10	0.150	0.41	0
CWR19M <sup>334</sup> @A+□	TAZ A 334 * 035 C □ # @ 0 ^ ++	TAZ A 334 * 035 C □ L @ 9 ^ ++	A	0.33	35	22	1	10	12	6	8	8	0.050	0.05	0
CWR19M <sup>685</sup> @G+□	TAZ G 685 * 035 C □ # @ 0 ^ ++	TAZ G 685 * 035 C □ L @ 9 ^ ++	G	6.8	35	1.5	3	30	36	6	8	8	0.125	0.29	0
CWR19M <sup>106</sup> @H+□	TAZ H 106 * 035 C □ # @ 0 ^ ++	TAZ H 106 * 035 C □ L @ 9 ^ ++	H	10	35	0.9	4	40	48	8	10	10	0.150	0.41	0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

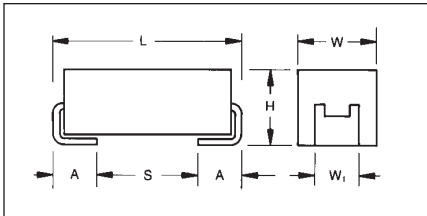
**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TAZ Series



## CWR29 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level



### MARKING

(White marking on black body)



**Polarity Stripe (+)**

**Capacitance Code  
Rated Voltage**

A low ESR version of CWR09 and CWR19 that is fully qualified to MIL-PRF-55365/11, the CWR29 series represents the most flexible of surface mount form factors and the optimum power handling for all filtering applications. It is offered in nine case sizes (the original A through H of CWR09 and adding the new X case size).

The molded body / compliant termination construction ensures no TCE mismatch with any substrate. This construction is compatible with a wide range of SMT board assembly processes including wave or reflow solder, conductive epoxy or compression bonding techniques. The parts also carry full polarity and capacitance / voltage marking.

The five smaller cases are characterized by their low profile construction, with the A case being the world's smallest molded military tantalum chip.

The series is qualified to MIL-PRF-55365 Weibull "B", "C", "D" and "T" levels, with all surge options ("A", "B" & "C") available.

For Space Level applications, AVX SRC 9000 qualification is recommended (see ratings table for part number availability).

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these are "H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365). In addition, the molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

### CASE DIMENSIONS:

millimeters (inches)

Case Code	Length (L) ±0.38 (0.015)	Width (W) ±0.38 (0.015)	Height (H) ±0.38 (0.015)	Term. Width (W <sub>t</sub> )	Term. Length (A) +0.25/-0.13 (+0.010/-0.005)	S min	Typical Weight (g)
A	2.54 (0.100)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	0.38 (0.015)	0.016
B	3.81 (0.150)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	1.65 (0.065)	0.025
C	5.08 (0.200)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	2.92 (0.115)	0.035
D	3.81 (0.150)	2.54 (0.100)	1.27 (0.050)	2.41+0.13/-0.25 (0.095+0.005/-0.010)	0.76 (0.030)	1.65 (0.065)	0.045
E	5.08 (0.200)	2.54 (0.100)	1.27 (0.050)	2.41+0.13/-0.25 (0.095+0.005/-0.010)	0.76 (0.030)	2.92 (0.115)	0.065
F	5.59 (0.220)	3.43 (0.135)	1.78 (0.070)	3.30±0.13 (0.130±0.005)	0.76 (0.030)	3.43 (0.135)	0.125
G	6.73 (0.265)	2.79 (0.110)	2.79 (0.110)	2.67±0.13 (0.105±0.005)	1.27 (0.050)	3.56 (0.140)	0.205
H	7.24 (0.285)	3.81 (0.150)	2.79 (0.110)	3.68+0.13/-0.51 (0.145+0.005/-0.020)	1.27 (0.050)	4.06 (0.160)	0.335
X	6.93 Max (0.273)	5.41 Max (0.213)	2.74 Max (0.108)	3.05±0.13 (0.120±0.005)	1.19 (0.047)	N/A	0.420

### CWR29-MIL-PRF 55365/11

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated voltage DC (V <sub>R</sub> ) at 85°C							
µF	Code	4V (C)	6V (D)	10V (F)	15V (H)	20V (J)	25V (K)	35V (M)	50V (N)
0.10	104								A
0.15	154								A
0.22	224							A	B
0.33	334						A	A	B
0.47	474					A	A	B	C
0.68	684				A	A/B	B	C	D
1.0	105			A	A	A/B	B/C	D	E
1.5	155		A		A/B	B/C	D	E	F
2.2	225	A		A/B	A/C	B/D	D/E		F
3.3	335	A	A/B	A/C	B/D	D/E	E	F	G
4.7	475	A/B	A/C	B/C/D	B/C/D/E	D/E	E	F	G
6.8	685	A/C	B/D	B/C/D/E	D/E	E/F	F/G	G/H	H
10	106	B/D	B/E	B/C/D/E	D/E/F	E/F	G	H	
15	156	B/E	B/D/E	D/E/F	E/F	F/G	G/H		
22	226	B/D	D/E/F	E	F/G	G/H	G/H		
33	336	D/E/F	E	F/G	F/G/H	H	H		
47	476	E	F/G	F/G/H	G/H	H/X			
68	686	E/G	F/G/H	G	G/H				
100	107	F/H	G	G/H	H				
150	157	G	G	H/X					
220	227	H	H	H					
330	337	H	H						



# TAZ Series



## CWR29 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level

### HOW TO ORDER

#### COTS-PLUS & MIL QPL (CWR29):

TAZ	H	227	*	006	C	□	#	@	0	^	++
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance M = ±20% K = ±10% J = ±5%	Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	Standard or Low ESR Range C = Std ESR L = Low ESR	Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	Inspection Level S = Std. Conformance L = Group A  M = MIL (JAN) CWR29	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER	Qualification Level 0 = N/A T = T Level 9 = SRC9000	Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	Surge Test Option 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

#### CWR29 P/N CROSS REFERENCE:

CWR29	D	^	227	*	@	H	+	□
Type	Voltage Code C = 4Vdc D = 6Vdc F = 10Vdc H = 15Vdc J = 20Vdc K = 25Vdc M = 35Vdc N = 50Vdc	Termination Finish H = Solder Plated K = Solder Fused Dipped C = Hot Solder B = Gold Plated	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance M = ±20% K = ±10% J = ±5%	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. T = T Level A = Non-ER	Case Size	Surge Test Option A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull Z = None required	Packaging Bulk = Standard TR = 7" T&R TR13 = 13" T&R W = Waffle  See page 7 for additional packaging options.

#### SPACE LEVEL OPTIONS TO SRC9000\*:

TAZ	H	227	*	006	C	□	L	@	9	^	++
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance M = ±20% K = ±10% J = ±5%	Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	Standard or Low ESR Range C = Std ESR L = Low ESR	Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	Inspection Level L = Group A	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf.	Qualification Level 9 = SRC9000	Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	Surge Test Option 45 = 10 cycles, -55°C & +85°C before Weibull

\*Contact factory for AVX SRC9000 Space Level SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	0.10 µF to 330 µF									
Capacitance Tolerance:	±5%; ±10%; ±20%									
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	4	6	10	15	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ 125°C:	2.7	4	6.7	10	13.3	16.7	23.3	33.3	
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	5.3	8	13.3	20	26.7	33.3	46.7	66.7	
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	3.5	5.3	8.7	13.3	17.8	22.2	31.1	44.5	
Temperature Range:	-55°C to +125°C									



# TAZ Series

## CWR29 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/11									Power Dissipation W	25°C Ripple A (100kHz)	Temp. Rise °C (100kHz)
				Cap @ 120Hz μF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
CWR29 P/N	AVX MIL & COTS-Plus P/N	AVX SRC9000 P/N	Case				+25°C (μA)	+85°C (μA)	+125°C (μA)	+25°C (%)	+85/125°C (%)	-55°C (%)			
CWR29C^225^@A+□	TAZ A 225 * 004 L □ # @ 0 ^ ++	TAZ A 225 * 004 L □ L @ 9 ^ ++	A	2.2	4	4	1	10	12	6	8	8	0.050	0.11	0
CWR29C^335^@A+□	TAZ A 335 * 004 L □ # @ 0 ^ ++	TAZ A 335 * 004 L □ L @ 9 ^ ++	A	3.3	4	6	1	10	12	6	8	8	0.050	0.09	0
CWR29C^475^@A+□	TAZ A 475 * 004 L □ # @ 0 ^ ++	TAZ A 475 * 004 L □ L @ 9 ^ ++	A	4.7	4	6	1	10	12	6	8	8	0.050	0.09	0
CWR29C^475^@B+□	TAZ B 475 * 004 L □ # @ 0 ^ ++	TAZ B 475 * 004 L □ L @ 9 ^ ++	B	4.7	4	3.2	1	10	12	6	8	8	0.070	0.15	0
CWR29C^685^@A+□	TAZ A 685 * 004 L □ # @ 0 ^ ++	TAZ A 685 * 004 L □ L @ 9 ^ ++	A	6.8	4	6	1	10	12	6	8	8	0.050	0.09	0
CWR29C^685^@C+□	TAZ C 685 * 004 L □ # @ 0 ^ ++	TAZ C 685 * 004 L □ L @ 9 ^ ++	C	6.8	4	2.2	1	10	12	6	8	8	0.075	0.18	0
CWR29C^106^@B+□	TAZ B 106 * 004 L □ # @ 0 ^ ++	TAZ B 106 * 004 L □ L @ 9 ^ ++	B	10	4	3.2	1	10	12	8	10	10	0.070	0.15	0
CWR29C^106^@D+□	TAZ D 106 * 004 L □ # @ 0 ^ ++	TAZ D 106 * 004 L □ L @ 9 ^ ++	D	10	4	1.3	1	10	12	8	8	10	0.080	0.25	0
CWR29C^156^@B+□	TAZ B 156 * 004 L □ # @ 0 ^ ++	TAZ B 156 * 004 L □ L @ 9 ^ ++	B	15	4	3.2	1	10	12	8	10	10	0.070	0.15	0
CWR29C^156^@E+□	TAZ E 156 * 004 L □ # @ 0 ^ ++	TAZ E 156 * 004 L □ L @ 9 ^ ++	E	15	4	1	1	10	12	8	10	12	0.090	0.30	0
CWR29C^226^@B+□	TAZ B 226 * 004 L □ # @ 0 ^ ++	TAZ B 226 * 004 L □ L @ 9 ^ ++	B	22	4	3.2	1	10	12	8	10	10	0.070	0.15	0
CWR29C^226^@D+□	TAZ D 226 * 004 L □ # @ 0 ^ ++	TAZ D 226 * 004 L □ L @ 9 ^ ++	D	22	4	1.3	1	10	12	8	10	12	0.080	0.25	0
CWR29C^336^@D+□	TAZ D 336 * 004 L □ # @ 0 ^ ++	TAZ D 336 * 004 L □ L @ 9 ^ ++	D	33	4	1.3	2	20	24	8	10	12	0.080	0.25	0
CWR29C^336^@E+□	TAZ E 336 * 004 L □ # @ 0 ^ ++	TAZ E 336 * 004 L □ L @ 9 ^ ++	E	33	4	0.9	2	20	24	8	10	12	0.090	0.32	0
CWR29C^336^@F+□	TAZ F 336 * 004 L □ # @ 0 ^ ++	TAZ F 336 * 004 L □ L @ 9 ^ ++	F	33	4	0.6	2	20	24	8	10	12	0.100	0.41	0
CWR29C^476^@E+□	TAZ E 476 * 004 L □ # @ 0 ^ ++	TAZ E 476 * 004 L □ L @ 9 ^ ++	E	47	4	0.9	2	20	24	8	10	12	0.090	0.32	0
CWR29C^686^@E+□	TAZ E 686 * 004 L □ # @ 0 ^ ++	TAZ E 686 * 004 L □ L @ 9 ^ ++	E	68	4	0.9	3	30	36	8	10	12	0.090	0.32	0
CWR29C^686^@G+□	TAZ G 686 * 004 L □ # @ 0 ^ ++	TAZ G 686 * 004 L □ L @ 9 ^ ++	G	68	4	0.275	3	30	36	10	12	12	0.125	0.67	0
CWR29C^107^@F+□	TAZ F 107 * 004 L □ # @ 0 ^ ++	TAZ F 107 * 004 L □ L @ 9 ^ ++	F	100	4	0.55	4	40	48	10	12	12	0.100	0.43	0
CWR29C^107^@H+□	TAZ H 107 * 004 L □ # @ 0 ^ ++	TAZ H 107 * 004 L □ L @ 9 ^ ++	H	100	4	0.18	4	40	48	10	12	12	0.150	0.91	0
CWR29C^157^@G+□	TAZ G 157 * 004 L □ # @ 0 ^ ++	TAZ G 157 * 004 L □ L @ 9 ^ ++	G	150	4	0.25	6	60	72	10	12	12	0.125	0.71	0
CWR29C^227^@H+□	TAZ H 227 * 004 L □ # @ 0 ^ ++	TAZ H 227 * 004 L □ L @ 9 ^ ++	H	220	4	0.2	8	80	96	10	12	12	0.150	0.87	0
CWR29C^337^@H+□	TAZ H 337 * 004 L □ # @ 0 ^ ++	TAZ H 337 * 004 L □ L @ 9 ^ ++	H	330	4	0.18	10	100	120	10	12	12	0.150	0.91	0
CWR29D^155^@A+□	TAZ A 155 * 006 L □ # @ 0 ^ ++	TAZ A 155 * 006 L □ L @ 9 ^ ++	A	1.5	6	4	1	10	12	6	8	8	0.050	0.11	0
CWR29D^335^@A+□	TAZ A 335 * 006 L □ # @ 0 ^ ++	TAZ A 335 * 006 L □ L @ 9 ^ ++	A	3.3	6	6	1	10	12	6	8	8	0.050	0.09	0
CWR29D^335^@B+□	TAZ B 335 * 006 L □ # @ 0 ^ ++	TAZ B 335 * 006 L □ L @ 9 ^ ++	B	3.3	6	3.2	1	10	12	6	8	8	0.070	0.15	0
CWR29D^475^@A+□	TAZ A 475 * 006 L □ # @ 0 ^ ++	TAZ A 475 * 006 L □ L @ 9 ^ ++	A	4.7	6	6	1	10	12	6	8	8	0.050	0.09	0
CWR29D^475^@C+□	TAZ C 475 * 006 L □ # @ 0 ^ ++	TAZ C 475 * 006 L □ L @ 9 ^ ++	C	4.7	6	2.2	1	10	12	6	8	8	0.075	0.18	0
CWR29D^685^@B+□	TAZ B 685 * 006 L □ # @ 0 ^ ++	TAZ B 685 * 006 L □ L @ 9 ^ ++	B	6.8	6	3.2	1	10	12	6	8	8	0.070	0.15	0
CWR29D^685^@D+□	TAZ D 685 * 006 L □ # @ 0 ^ ++	TAZ D 685 * 006 L □ L @ 9 ^ ++	D	6.8	6	1.5	1	10	12	6	8	8	0.080	0.23	0
CWR29D^106^@B+□	TAZ B 106 * 006 L □ # @ 0 ^ ++	TAZ B 106 * 006 L □ L @ 9 ^ ++	B	10	6	3.2	1	10	12	6	8	8	0.070	0.15	0
CWR29D^106^@E+□	TAZ E 106 * 006 L □ # @ 0 ^ ++	TAZ E 106 * 006 L □ L @ 9 ^ ++	E	10	6	1	1	10	12	8	10	12	0.090	0.30	0
CWR29D^156^@B+□	TAZ B 156 * 006 L □ # @ 0 ^ ++	TAZ B 156 * 006 L □ L @ 9 ^ ++	B	15	6	3.2	1	10	12	8	10	10	0.070	0.15	0
CWR29D^156^@D+□	TAZ D 156 * 006 L □ # @ 0 ^ ++	TAZ D 156 * 006 L □ L @ 9 ^ ++	D	15	6	1.7	1	10	12	8	10	12	0.080	0.22	0
CWR29D^156^@E+□	TAZ E 156 * 006 L □ # @ 0 ^ ++	TAZ E 156 * 006 L □ L @ 9 ^ ++	E	15	6	0.9	1	10	12	8	10	12	0.090	0.32	0
CWR29D^226^@D+□	TAZ D 226 * 006 L □ # @ 0 ^ ++	TAZ D 226 * 006 L □ L @ 9 ^ ++	D	22	6	1.7	1	10	12	6	8	8	0.080	0.22	0
CWR29D^226^@E+□	TAZ E 226 * 006 L □ # @ 0 ^ ++	TAZ E 226 * 006 L □ L @ 9 ^ ++	E	22	6	1	2	20	24	8	10	12	0.090	0.30	0
CWR29D^226^@F+□	TAZ F 226 * 006 L □ # @ 0 ^ ++	TAZ F 226 * 006 L □ L @ 9 ^ ++	F	22	6	0.6	2	20	24	8	10	12	0.100	0.41	0
CWR29D^336^@E+□	TAZ E 336 * 006 L □ # @ 0 ^ ++	TAZ E 336 * 006 L □ L @ 9 ^ ++	E	33	6	1	2	20	24	6	8	8	0.090	0.30	0
CWR29D^476^@F+□	TAZ F 476 * 006 L □ # @ 0 ^ ++	TAZ F 476 * 006 L □ L @ 9 ^ ++	F	47	6	1	3	30	36	8	10	12	0.100	0.32	0
CWR29D^476^@G+□	TAZ G 476 * 006 L □ # @ 0 ^ ++	TAZ G 476 * 006 L □ L @ 9 ^ ++	G	47	6	0.275	3	30	36	10	12	12	0.125	0.67	0
CWR29D^686^@F+□	TAZ F 686 * 006 L □ # @ 0 ^ ++	TAZ F 686 * 006 L □ L @ 9 ^ ++	F	68	6	0.4	4	40	48	10	12	12	0.100	0.50	0
CWR29D^686^@G+□	TAZ G 686 * 006 L □ # @ 0 ^ ++	TAZ G 686 * 006 L □ L @ 9 ^ ++	G	68	6	0.25	4	40	48	10	12	12	0.125	0.71	0
CWR29D^686^@H+□	TAZ H 686 * 006 L □ # @ 0 ^ ++	TAZ H 686 * 006 L □ L @ 9 ^ ++	H	68	6	0.18	4	40	48	10	12	12	0.150	0.91	0
CWR29D^107^@G+□	TAZ G 107 * 006 L □ # @ 0 ^ ++	TAZ G 107 * 006 L □ L @ 9 ^ ++	G	100	6	0.275	6	60	72	10	12	12	0.125	0.67	0
CWR29D^157^@G+□	TAZ G 157 * 006 L □ # @ 0 ^ ++	TAZ G 157 * 006 L □ L @ 9 ^ ++	G	150	6	0.275	10	100	120	10	12	12	0.125	0.67	0
CWR29D^227^@H+□	TAZ H 227 * 006 L □ # @ 0 ^ ++	TAZ H 227 * 006 L □ L @ 9 ^ ++	H	220	6	0.18	10	100	120	10	12	12	0.150	0.91	0
CWR29D^337^@H+□	TAZ H 337 * 006 L □ # @ 0 ^ ++	TAZ H 337 * 006 L □ L @ 9 ^ ++	H	330	6	0.18	20	200	240	10	12	12	0.150	0.91	0
CWR29F^105^@A+□	TAZ A 105 * 010 L □ # @ 0 ^ ++	TAZ A 105 * 010 L □ L @ 9 ^ ++	A	1	10	5	1	10	12	6	8	8	0.050	0.10	0
CWR29F^225^@A+□	TAZ A 225 * 010 L □ # @ 0 ^ ++	TAZ A 225 * 010 L □ L @ 9 ^ ++	A	2.2	10	6	1	10	12	6	8	8	0.050	0.09	0
CWR29F^225^@B+□	TAZ B 225 * 010 L □ # @ 0 ^ ++	TAZ B 225 * 010 L □ L @ 9 ^ ++	B	2.2	10	3.2	1	10	12	6	8	8	0.070	0.15	0
CWR29F^335^@A+□	TAZ A 335 * 010 L □ # @ 0 ^ ++	TAZ A 335 * 010 L □ L @ 9 ^ ++	A	3.3	10	6	1	10	12	6	8	8	0.050	0.09	0
CWR29F^335^@C+□	TAZ C 335 * 010 L □ # @ 0 ^ ++	TAZ C 335 * 010 L □ L @ 9 ^ ++	C	3.3	10	2.2	1	10	12	6	8	8	0.075	0.18	0
CWR29F^475^@B+□	TAZ B 475 * 010 L □ # @ 0 ^ ++	TAZ B 475 * 010 L □ L @ 9 ^ ++	B	4.7	10	3.2	1	10	12	6	8	8	0.070	0.15	0
CWR29F^475^@C+□	TAZ C 475 * 010 L □ # @ 0 ^ ++	TAZ C 475 * 010 L □ L @ 9 ^ ++	C	4.7	10	2.2	1	10	12	6	8	8	0.075	0.18	0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TAZ Series

## CWR29 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/11									Power Dissipation W	25°C Ripple A (100kHz)	Typical 8 Ri
				Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
CWR29 P/N	AVX MIL & COTS-Plus P/N	AVX SRC9000 P/N	Case				+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	(85/125)°C (%)	-55°C (%)			
CWR29F475*D+□	TAZ D 475 * 010 L □ # @ 0 ^ ++	TAZ D 475 * 010 LL @ 9 ^ ++	D	4.7	10	1.5	1	10	12	6	8	8	0.080	0.23	0
CWR29F685*B+□	TAZ B 685 * 010 L □ # @ 0 ^ ++	TAZ B 685 * 010 LL @ 9 ^ ++	B	6.8	10	3.2	1	10	12	6	8	8	0.070	0.15	0
CWR29F685*C+□	TAZ C 685 * 010 L □ # @ 0 ^ ++	TAZ C 685 * 010 LL @ 9 ^ ++	C	6.8	10	2.2	1	10	12	6	8	8	0.075	0.18	0
CWR29F685*D+□	TAZ D 685 * 010 L □ # @ 0 ^ ++	TAZ D 685 * 010 LL @ 9 ^ ++	D	6.8	10	1.7	1	10	12	6	8	8	0.080	0.22	0
CWR29F685*E+□	TAZ E 685 * 010 L □ # @ 0 ^ ++	TAZ E 685 * 010 LL @ 9 ^ ++	E	6.8	10	1	1	10	12	6	8	8	0.090	0.30	0
CWR29F106*B+□	TAZ B 106 * 010 L □ # @ 0 ^ ++	TAZ B 106 * 010 LL @ 9 ^ ++	B	10	10	3.2	1	10	12	8	10	10	0.070	0.15	0
CWR29F106*C+□	TAZ C 106 * 010 L □ # @ 0 ^ ++	TAZ C 106 * 010 LL @ 9 ^ ++	C	10	10	2.2	1	10	12	6	8	8	0.075	0.18	0
CWR29F106*D+□	TAZ D 106 * 010 L □ # @ 0 ^ ++	TAZ D 106 * 010 LL @ 9 ^ ++	D	10	10	1.3	1	10	12	6	8	8	0.080	0.25	0
CWR29F106*E+□	TAZ E 106 * 010 L □ # @ 0 ^ ++	TAZ E 106 * 010 LL @ 9 ^ ++	E	10	10	1	1	10	12	6	8	8	0.090	0.30	0
CWR29F156*D+□	TAZ D 156 * 010 L □ # @ 0 ^ ++	TAZ D 156 * 010 LL @ 9 ^ ++	D	15	10	1.7	2	20	24	6	8	8	0.080	0.22	0
CWR29F156*E+□	TAZ E 156 * 010 L □ # @ 0 ^ ++	TAZ E 156 * 010 LL @ 9 ^ ++	E	15	10	0.9	2	20	24	8	10	10	0.090	0.32	0
CWR29F156*F+□	TAZ F 156 * 010 L □ # @ 0 ^ ++	TAZ F 156 * 010 LL @ 9 ^ ++	F	15	10	0.7	2	20	24	8	8	10	0.100	0.38	0
CWR29F226*E+□	TAZ E 226 * 010 L □ # @ 0 ^ ++	TAZ E 226 * 010 LL @ 9 ^ ++	E	22	10	0.6	3	30	36	8	10	10	0.090	0.39	0
CWR29F336*F+□	TAZ F 336 * 010 L □ # @ 0 ^ ++	TAZ F 336 * 010 LL @ 9 ^ ++	F	33	10	0.4	3	30	36	8	10	10	0.100	0.50	0
CWR29F336*G+□	TAZ G 336 * 010 L □ # @ 0 ^ ++	TAZ G 336 * 010 LL @ 9 ^ ++	G	33	10	0.275	3	30	36	10	12	12	0.125	0.67	0
CWR29F476*F+□	TAZ F 476 * 010 L □ # @ 0 ^ ++	TAZ F 476 * 010 LL @ 9 ^ ++	F	47	10	0.4	4	40	48	10	12	12	0.100	0.50	0
CWR29F476*G+□	TAZ G 476 * 010 L □ # @ 0 ^ ++	TAZ G 476 * 010 LL @ 9 ^ ++	G	47	10	0.25	4	40	48	10	12	12	0.125	0.71	0
CWR29F476*H+□	TAZ H 476 * 010 L □ # @ 0 ^ ++	TAZ H 476 * 010 LL @ 9 ^ ++	H	47	10	0.18	5	50	60	10	12	12	0.150	0.91	0
CWR29F686*G+□	TAZ G 686 * 010 L □ # @ 0 ^ ++	TAZ G 686 * 010 LL @ 9 ^ ++	G	68	10	0.275	6	60	72	10	12	12	0.125	0.67	0
CWR29F107*G+□	TAZ G 107 * 010 L □ # @ 0 ^ ++	TAZ G 107 * 010 LL @ 9 ^ ++	G	100	10	0.275	10	100	120	10	12	12	0.125	0.67	0
CWR29F107*H+□	TAZ H 107 * 010 L □ # @ 0 ^ ++	TAZ H 107 * 010 LL @ 9 ^ ++	H	100	10	0.18	10	100	120	10	12	12	0.150	0.91	0
CWR29F157*H+□	TAZ H 157 * 010 L □ # @ 0 ^ ++	TAZ H 157 * 010 LL @ 9 ^ ++	H	150	10	0.18	15	150	180	10	12	12	0.150	0.91	0
CWR29F157*X+□	TAZ X 157 * 010 L □ # @ 0 ^ ++	TAZ X 157 * 010 LL @ 9 ^ ++	X	150	10	0.065	15	150	180	10	12	12	0.200	1.75	1
CWR29F227*H+□	TAZ H 227 * 010 L □ # @ 0 ^ ++	TAZ H 227 * 010 LL @ 9 ^ ++	H	220	10	0.18	20	200	240	10	12	12	0.150	0.91	0
CWR29H684*A+□	TAZ A 684 * 015 L □ # @ 0 ^ ++	TAZ A 684 * 015 LL @ 9 ^ ++	A	0.68	15	6	1	10	12	6	8	8	0.050	0.09	0
CWR29H105*A+□	TAZ A 105 * 015 L □ # @ 0 ^ ++	TAZ A 105 * 015 LL @ 9 ^ ++	A	1	15	7.5	1	10	12	6	8	8	0.050	0.08	0
CWR29H155*A+□	TAZ A 155 * 015 L □ # @ 0 ^ ++	TAZ A 155 * 015 LL @ 9 ^ ++	A	1.5	15	7.5	1	10	12	6	8	8	0.050	0.08	0
CWR29H155*B+□	TAZ B 155 * 015 L □ # @ 0 ^ ++	TAZ B 155 * 015 LL @ 9 ^ ++	B	1.5	15	3.2	1	10	12	6	8	8	0.070	0.15	0
CWR29H225*A+□	TAZ A 225 * 015 L □ # @ 0 ^ ++	TAZ A 225 * 015 LL @ 9 ^ ++	A	2.2	15	7.5	1	10	12	6	8	8	0.050	0.08	0
CWR29H225*C+□	TAZ C 225 * 015 L □ # @ 0 ^ ++	TAZ C 225 * 015 LL @ 9 ^ ++	C	2.2	15	2.2	1	10	12	6	8	8	0.075	0.18	0
CWR29H335*B+□	TAZ B 335 * 015 L □ # @ 0 ^ ++	TAZ B 335 * 015 LL @ 9 ^ ++	B	3.3	15	3.6	1	10	12	6	8	8	0.070	0.14	0
CWR29H335*D+□	TAZ D 335 * 015 L □ # @ 0 ^ ++	TAZ D 335 * 015 LL @ 9 ^ ++	D	3.3	15	1.7	1	10	12	6	8	8	0.080	0.22	0
CWR29H475*B+□	TAZ B 475 * 015 L □ # @ 0 ^ ++	TAZ B 475 * 015 LL @ 9 ^ ++	B	4.7	15	2	1	10	12	6	8	8	0.070	0.19	0
CWR29H475*C+□	TAZ C 475 * 015 L □ # @ 0 ^ ++	TAZ C 475 * 015 LL @ 9 ^ ++	C	4.7	15	2.2	1	10	12	6	8	8	0.075	0.18	0
CWR29H475*D+□	TAZ D 475 * 015 L □ # @ 0 ^ ++	TAZ D 475 * 015 LL @ 9 ^ ++	D	4.7	15	2	1	10	12	6	8	8	0.080	0.20	0
CWR29H475*E+□	TAZ E 475 * 015 L □ # @ 0 ^ ++	TAZ E 475 * 015 LL @ 9 ^ ++	E	4.7	15	1.2	1	10	12	6	8	8	0.090	0.27	0
CWR29H685*D+□	TAZ D 685 * 015 L □ # @ 0 ^ ++	TAZ D 685 * 015 LL @ 9 ^ ++	D	6.8	15	2	1	10	12	6	8	8	0.080	0.20	0
CWR29H685*E+□	TAZ E 685 * 015 L □ # @ 0 ^ ++	TAZ E 685 * 015 LL @ 9 ^ ++	E	6.8	15	0.9	1	10	12	8	10	12	0.090	0.32	0
CWR29H106*D+□	TAZ D 106 * 015 L □ # @ 0 ^ ++	TAZ D 106 * 015 LL @ 9 ^ ++	D	10	15	2	2	20	24	6	8	8	0.080	0.20	0
CWR29H106*E+□	TAZ E 106 * 015 L □ # @ 0 ^ ++	TAZ E 106 * 015 LL @ 9 ^ ++	E	10	15	1.2	2	20	24	6	8	8	0.090	0.27	0
CWR29H106*F+□	TAZ F 106 * 015 L □ # @ 0 ^ ++	TAZ F 106 * 015 LL @ 9 ^ ++	F	10	15	0.667	2	20	24	6	8	8	0.100	0.39	0
CWR29H156*E+□	TAZ E 156 * 015 L □ # @ 0 ^ ++	TAZ E 156 * 015 LL @ 9 ^ ++	E	15	15	1.2	2	20	24	6	8	8	0.090	0.27	0
CWR29H156*F+□	TAZ F 156 * 015 L □ # @ 0 ^ ++	TAZ F 156 * 015 LL @ 9 ^ ++	F	15	15	0.8	2	20	24	8	10	10	0.100	0.35	0
CWR29H226*F+□	TAZ F 226 * 015 L □ # @ 0 ^ ++	TAZ F 226 * 015 LL @ 9 ^ ++	F	22	15	0.8	3	30	36	8	10	10	0.100	0.35	0
CWR29H226*G+□	TAZ G 226 * 015 L □ # @ 0 ^ ++	TAZ G 226 * 015 LL @ 9 ^ ++	G	22	15	0.275	4	226	48	6	8	8	0.125	0.67	0
CWR29H336*F+□	TAZ F 336 * 015 L □ # @ 0 ^ ++	TAZ F 336 * 015 LL @ 9 ^ ++	F	33	15	0.8	5	50	60	6	8	8	0.100	0.35	0
CWR29H336*G+□	TAZ G 336 * 015 L □ # @ 0 ^ ++	TAZ G 336 * 015 LL @ 9 ^ ++	G	33	15	0.275	6	336	72	8	10	10	0.125	0.67	0
CWR29H336*H+□	TAZ H 336 * 015 L □ # @ 0 ^ ++	TAZ H 336 * 015 LL @ 9 ^ ++	H	33	15	0.18	5	50	60	8	10	10	0.150	0.91	0
CWR29H476*G+□	TAZ G 476 * 015 L □ # @ 0 ^ ++	TAZ G 476 * 015 LL @ 9 ^ ++	G	47	15	0.275	10	100	120	8	10	10	0.125	0.67	0
CWR29H476*H+□	TAZ H 476 * 015 L □ # @ 0 ^ ++	TAZ H 476 * 015 LL @ 9 ^ ++	H	47	15	0.18	10	100	120	8	10	10	0.150	0.91	0
CWR29H686*G+□	TAZ G 686 * 015 L □ # @ 0 ^ ++	TAZ G 686 * 015 LL @ 9 ^ ++	G	68	15	0.275	10	100	120	8	10	10	0.125	0.67	0
CWR29H686*H+□	TAZ H 686 * 015 L □ # @ 0 ^ ++	TAZ H 686 * 015 LL @ 9 ^ ++	H	68	15	0.18	10	100	120	8	10	10	0.150	0.91	0
CWR29H107*H+□	TAZ H 107 * 015 L □ # @ 0 ^ ++	TAZ H 107 * 015 LL @ 9 ^ ++	H	100	15	0.18	15	150	180	10	12	12	0.150	0.91	0
CWR29J474*A+□	TAZ A 474 * 020 L □ # @ 0 ^ ++	TAZ A 474 * 020 LL @ 9 ^ ++	A	0.47	20	7.5	1	10	12	8	8	10	0.050	0.08	0
CWR29J684*A+□	TAZ A 684 * 020 L □ # @ 0 ^ ++	TAZ A 684 * 020 LL @ 9 ^ ++	A	0.68	20	7.5	1	10	12	6	8	8	0.050	0.08	0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TAZ Series

## CWR29 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/11									Power Dissipation W	25°C Ripple A (100kHz)	Typical Ripple V (100kHz)
				Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
							+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)			
CWR29 P/N	AVX MIL & COTS-Plus P/N	AVX SRC9000 P/N	Case	0.68	20	5.6	1	10	12	6	8	8	0.070	0.11	0.11
CWR29J <sup>1</sup> 684 <sup>1</sup> @B+□	TAZ B 684 * 020 L □ # @ 0 ^ ++	TAZ B 684 * 020 LL @ 9 ^ ++	B	1	20	7.5	1	10	12	6	8	8	0.050	0.08	0.08
CWR29J <sup>1</sup> 105 <sup>1</sup> @A+□	TAZ A 105 * 020 L □ # @ 0 ^ ++	TAZ A 105 * 020 LL @ 9 ^ ++	A	1	20	4.8	1	10	12	6	8	8	0.070	0.12	0.12
CWR29J <sup>1</sup> 105 <sup>1</sup> @B+□	TAZ B 105 * 020 L □ # @ 0 ^ ++	TAZ B 105 * 020 LL @ 9 ^ ++	B	1.5	20	3.6	1	10	12	6	8	8	0.070	0.14	0.14
CWR29J <sup>1</sup> 155 <sup>1</sup> @B+□	TAZ B 155 * 020 L □ # @ 0 ^ ++	TAZ B 155 * 020 LL @ 9 ^ ++	B	1.5	20	2.4	1	10	12	6	8	8	0.075	0.18	0.18
CWR29J <sup>1</sup> 155 <sup>1</sup> @C+□	TAZ C 155 * 020 L □ # @ 0 ^ ++	TAZ C 155 * 020 LL @ 9 ^ ++	C	2.2	20	3.6	1	10	12	6	8	8	0.070	0.14	0.14
CWR29J <sup>1</sup> 225 <sup>1</sup> @B+□	TAZ B 225 * 020 L □ # @ 0 ^ ++	TAZ B 225 * 020 LL @ 9 ^ ++	B	2.2	20	1.7	1	10	12	6	8	8	0.080	0.22	0.22
CWR29J <sup>1</sup> 225 <sup>1</sup> @D+□	TAZ D 225 * 020 L □ # @ 0 ^ ++	TAZ D 225 * 020 LL @ 9 ^ ++	D	3.3	20	2	1	10	12	6	8	8	0.080	0.20	0.20
CWR29J <sup>1</sup> 335 <sup>1</sup> @D+□	TAZ D 335 * 020 L □ # @ 0 ^ ++	TAZ D 335 * 020 LL @ 9 ^ ++	D	3.3	20	1.2	1	10	12	6	8	8	0.090	0.27	0.27
CWR29J <sup>1</sup> 335 <sup>1</sup> @E+□	TAZ E 335 * 020 L □ # @ 0 ^ ++	TAZ E 335 * 020 LL @ 9 ^ ++	E	4.7	20	1.7	1	10	12	6	8	8	0.090	0.23	0.23
CWR29J <sup>1</sup> 475 <sup>1</sup> @E+□	TAZ E 475 * 020 L □ # @ 0 ^ ++	TAZ E 475 * 020 LL @ 9 ^ ++	E	6.8	20	1.5	2	20	24	6	8	8	0.090	0.24	0.24
CWR29J <sup>1</sup> 685 <sup>1</sup> @E+□	TAZ E 685 * 020 L □ # @ 0 ^ ++	TAZ E 685 * 020 LL @ 9 ^ ++	E	6.8	20	0.7	2	20	24	6	8	8	0.100	0.38	0.38
CWR29J <sup>1</sup> 685 <sup>1</sup> @F+□	TAZ F 685 * 020 L □ # @ 0 ^ ++	TAZ F 685 * 020 LL @ 9 ^ ++	F	10	20	1.5	2	20	24	6	8	8	0.090	0.24	0.24
CWR29J <sup>1</sup> 106 <sup>1</sup> @E+□	TAZ E 106 * 020 L □ # @ 0 ^ ++	TAZ E 106 * 020 LL @ 9 ^ ++	E	10	20	0.8	2	20	24	6	8	8	0.100	0.35	0.35
CWR29J <sup>1</sup> 106 <sup>1</sup> @F+□	TAZ F 106 * 020 L □ # @ 0 ^ ++	TAZ F 106 * 020 LL @ 9 ^ ++	F	15	20	0.8	3	30	36	6	8	8	0.100	0.35	0.35
CWR29J <sup>1</sup> 156 <sup>1</sup> @F+□	TAZ F 156 * 020 L □ # @ 0 ^ ++	TAZ F 156 * 020 LL @ 9 ^ ++	F	15	20	0.275	3	30	36	6	8	8	0.125	0.67	0.67
CWR29J <sup>1</sup> 156 <sup>1</sup> @G+□	TAZ G 156 * 020 L □ # @ 0 ^ ++	TAZ G 156 * 020 LL @ 9 ^ ++	G	22	20	0.625	4	40	48	6	8	8	0.125	0.45	0.45
CWR29J <sup>1</sup> 226 <sup>1</sup> @G+□	TAZ G 226 * 020 L □ # @ 0 ^ ++	TAZ G 226 * 020 LL @ 9 ^ ++	G	22	20	0.18	4	40	48	6	8	8	0.150	0.91	0.91
CWR29J <sup>1</sup> 226 <sup>1</sup> @H+□	TAZ H 226 * 020 L □ # @ 0 ^ ++	TAZ H 226 * 020 LL @ 9 ^ ++	H	33	20	0.18	6	60	72	8	10	10	0.150	0.91	0.91
CWR29J <sup>1</sup> 336 <sup>1</sup> @H+□	TAZ H 336 * 020 L □ # @ 0 ^ ++	TAZ H 336 * 020 LL @ 9 ^ ++	H	47	20	0.18	10	100	120	8	10	10	0.150	0.91	0.91
CWR29J <sup>1</sup> 476 <sup>1</sup> @H+□	TAZ H 476 * 020 L □ # @ 0 ^ ++	TAZ H 476 * 020 LL @ 9 ^ ++	H	47	20	0.11	10	100	120	8	10	10	0.200	1.35	1.35
CWR29J <sup>1</sup> 476 <sup>1</sup> @X+□	TAZ X 476 * 020 L □ # @ 0 ^ ++	TAZ X 476 * 020 LL @ 9 ^ ++	X	0.33	25	7.5	1	10	12	6	8	8	0.050	0.08	0.08
CWR29K <sup>1</sup> 334 <sup>1</sup> @A+□	TAZ A 334 * 025 L □ # @ 0 ^ ++	TAZ A 334 * 025 LL @ 9 ^ ++	A	0.47	25	7.5	1	10	12	6	8	8	0.050	0.08	0.08
CWR29K <sup>1</sup> 474 <sup>1</sup> @A+□	TAZ A 474 * 025 L □ # @ 0 ^ ++	TAZ A 474 * 025 LL @ 9 ^ ++	A	0.68	25	4	1	10	12	6	8	8	0.070	0.13	0.13
CWR29K <sup>1</sup> 684 <sup>1</sup> @B+□	TAZ B 684 * 025 L □ # @ 0 ^ ++	TAZ B 684 * 025 LL @ 9 ^ ++	B	1	25	4	1	10	12	6	8	8	0.070	0.13	0.13
CWR29K <sup>1</sup> 105 <sup>1</sup> @B+□	TAZ B 105 * 025 L □ # @ 0 ^ ++	TAZ B 105 * 025 LL @ 9 ^ ++	B	1	25	2.6	1	10	12	6	8	8	0.075	0.17	0.17
CWR29K <sup>1</sup> 105 <sup>1</sup> @C+□	TAZ C 105 * 025 L □ # @ 0 ^ ++	TAZ C 105 * 025 LL @ 9 ^ ++	C	1.5	25	1.7	1	10	12	6	8	8	0.080	0.22	0.22
CWR29K <sup>1</sup> 155 <sup>1</sup> @D+□	TAZ D 155 * 025 L □ # @ 0 ^ ++	TAZ D 155 * 025 LL @ 9 ^ ++	D	2.2	25	2	1	10	12	6	8	8	0.080	0.20	0.20
CWR29K <sup>1</sup> 225 <sup>1</sup> @D+□	TAZ D 225 * 025 L □ # @ 0 ^ ++	TAZ D 225 * 025 LL @ 9 ^ ++	D	2.2	25	1	1	10	12	6	8	8	0.090	0.30	0.30
CWR29K <sup>1</sup> 225 <sup>1</sup> @E+□	TAZ E 225 * 025 L □ # @ 0 ^ ++	TAZ E 225 * 025 LL @ 9 ^ ++	E	3.3	25	1.2	1	10	12	6	8	8	0.090	0.27	0.27
CWR29K <sup>1</sup> 335 <sup>1</sup> @E+□	TAZ E 335 * 025 L □ # @ 0 ^ ++	TAZ E 335 * 025 LL @ 9 ^ ++	E	4.7	25	0.7	2	20	24	6	8	8	0.100	0.38	0.38
CWR29K <sup>1</sup> 475 <sup>1</sup> @F+□	TAZ F 475 * 025 L □ # @ 0 ^ ++	TAZ F 475 * 025 LL @ 9 ^ ++	F	6.8	25	0.8	2	20	24	6	8	8	0.100	0.35	0.35
CWR29K <sup>1</sup> 685 <sup>1</sup> @F+□	TAZ F 685 * 025 L □ # @ 0 ^ ++	TAZ F 685 * 025 LL @ 9 ^ ++	F	6.8	25	0.3	2	20	24	6	8	8	0.125	0.65	0.65
CWR29K <sup>1</sup> 685 <sup>1</sup> @G+□	TAZ G 685 * 025 L □ # @ 0 ^ ++	TAZ G 685 * 025 LL @ 9 ^ ++	G	10	25	0.35	3	30	36	6	8	8	0.125	0.60	0.60
CWR29K <sup>1</sup> 106 <sup>1</sup> @G+□	TAZ G 106 * 025 L □ # @ 0 ^ ++	TAZ G 106 * 025 LL @ 9 ^ ++	G	15	25	0.35	4	40	48	6	8	8	0.125	0.60	0.60
CWR29K <sup>1</sup> 156 <sup>1</sup> @G+□	TAZ G 156 * 025 L □ # @ 0 ^ ++	TAZ G 156 * 025 LL @ 9 ^ ++	G	15	25	0.2	4	40	48	6	8	8	0.150	0.87	0.87
CWR29K <sup>1</sup> 156 <sup>1</sup> @H+□	TAZ H 156 * 025 L □ # @ 0 ^ ++	TAZ H 156 * 025 LL @ 9 ^ ++	H	22	25	0.35	6	60	72	6	8	8	0.125	0.60	0.60
CWR29K <sup>1</sup> 226 <sup>1</sup> @G+□	TAZ G 226 * 025 L □ # @ 0 ^ ++	TAZ G 226 * 025 LL @ 9 ^ ++	G	22	25	0.18	10	100	120	8	10	10	0.150	0.91	0.91
CWR29K <sup>1</sup> 226 <sup>1</sup> @H+□	TAZ H 226 * 025 L □ # @ 0 ^ ++	TAZ H 226 * 025 LL @ 9 ^ ++	H	33	25	0.18	10	100	120	8	10	10	0.150	0.91	0.91
CWR29K <sup>1</sup> 336 <sup>1</sup> @H+□	TAZ H 336 * 025 L □ # @ 0 ^ ++	TAZ H 336 * 025 LL @ 9 ^ ++	H	47	25	0.18	10	100	120	8	10	10	0.150	0.91	0.91
CWR29M <sup>1</sup> 224 <sup>1</sup> @A+□	TAZ A 224 * 035 L □ # @ 0 ^ ++	TAZ A 224 * 035 LL @ 9 ^ ++	A	0.22	35	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR29M <sup>1</sup> 334 <sup>1</sup> @A+□	TAZ A 334 * 035 L □ # @ 0 ^ ++	TAZ A 334 * 035 LL @ 9 ^ ++	A	0.33	35	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR29M <sup>1</sup> 474 <sup>1</sup> @B+□	TAZ B 474 * 035 L □ # @ 0 ^ ++	TAZ B 474 * 035 LL @ 9 ^ ++	B	0.47	35	6.8	1	10	12	6	8	8	0.070	0.10	0.10
CWR29M <sup>1</sup> 684 <sup>1</sup> @C+□	TAZ C 684 * 035 L □ # @ 0 ^ ++	TAZ C 684 * 035 LL @ 9 ^ ++	C	0.68	35	4	1	10	12	6	8	8	0.075	0.14	0.14
CWR29M <sup>1</sup> 105 <sup>1</sup> @D+□	TAZ D 105 * 035 L □ # @ 0 ^ ++	TAZ D 105 * 035 LL @ 9 ^ ++	D	1	35	2.2	1	10	12	6	8	8	0.080	0.19	0.19
CWR29M <sup>1</sup> 155 <sup>1</sup> @E+□	TAZ E 155 * 035 L □ # @ 0 ^ ++	TAZ E 155 * 035 LL @ 9 ^ ++	E	1.5	35	1.3	1	10	12	6	8	8	0.090	0.26	0.26
CWR29M <sup>1</sup> 335 <sup>1</sup> @F+□	TAZ F 335 * 035 L □ # @ 0 ^ ++	TAZ F 335 * 035 LL @ 9 ^ ++	F	3.3	35	0.7	1	10	12	6	8	8	0.100	0.38	0.38
CWR29M <sup>1</sup> 475 <sup>1</sup> @G+□	TAZ G 475 * 035 L □ # @ 0 ^ ++	TAZ G 475 * 035 LL @ 9 ^ ++	G	4.7	35	0.375	2	20	24	6	8	8	0.125	0.58	0.58
CWR29M <sup>1</sup> 685 <sup>1</sup> @G+□	TAZ G 685 * 035 L □ # @ 0 ^ ++	TAZ G 685 * 035 LL @ 9 ^ ++	G	6.8	35	0.375	3	30	36	6	8	8	0.125	0.58	0.58
CWR29M <sup>1</sup> 685 <sup>1</sup> @H+□	TAZ H 685 * 035 L □ # @ 0 ^ ++	TAZ H 685 * 035 LL @ 9 ^ ++	H	6.8	35	0.5	3	30	36	6	8	8	0.150	0.55	0.55
CWR29M <sup>1</sup> 106 <sup>1</sup> @H+□	TAZ H 106 * 035 L □ # @ 0 ^ ++	TAZ H 106 * 035 LL @ 9 ^ ++	H	10	35	0.5	4	40	48	8	10	10	0.150	0.55	0.55
CWR29N <sup>1</sup> 104 <sup>1</sup> @A+□	TAZ A 104 * 050 L □ # @ 0 ^ ++	TAZ A 104 * 050 LL @ 9 ^ ++	A	0.1	50	12	1	10	12	6	8	8	0.050	0.06	0.06
CWR29N <sup>1</sup> 154 <sup>1</sup> @A+□	TAZ A 154 * 050 L □ # @ 0 ^ ++	TAZ A 154 * 050 LL @ 9 ^ ++	A	0.15	50	12	1	10	12	6	8	8	0.050	0.06	0.06

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TAZ Series

## CWR29 - MIL-PRF-55365/11 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/11									Power Dissipation W	25°C Ripple A (100kHz)	Type 8 Ri (10
				Cap @ 120Hz μF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
CWR29 P/N	AVX MIL & COTS-Plus P/N	AVX SRC9000 P/N	Case				+25°C (μA)	+85°C (μA)	+125°C (μA)	+25°C (%)	+ (85/125)°C (%)	-55°C (%)			
CWR29N^224^@B+□	TAZ B 224 * 050 L □ # @ 0 ^ ++	TAZ B 224 * 050 L L @ 9 ^ ++	B	0.22	50	6.8	1	10	12	6	8	8	0.070	0.10	0
CWR29N^334^@B+□	TAZ B 334 * 050 L □ # @ 0 ^ ++	TAZ B 334 * 050 L L @ 9 ^ ++	B	0.33	50	4.8	1	10	12	6	8	8	0.070	0.12	0
CWR29N^474^@C+□	TAZ C 474 * 050 L □ # @ 0 ^ ++	TAZ C 474 * 050 L L @ 9 ^ ++	C	0.47	50	3.2	1	10	12	6	8	8	0.075	0.15	0
CWR29N^684^@D+□	TAZ D 684 * 050 L □ # @ 0 ^ ++	TAZ D 684 * 050 L L @ 9 ^ ++	D	0.68	50	2.3	1	10	12	6	8	8	0.080	0.19	0
CWR29N^105^@E+□	TAZ E 105 * 050 L □ # @ 0 ^ ++	TAZ E 105 * 050 L L @ 9 ^ ++	E	1	50	1.7	1	10	12	6	8	8	0.090	0.23	0
CWR29N^155^@F+□	TAZ F 155 * 050 L □ # @ 0 ^ ++	TAZ F 155 * 050 L L @ 9 ^ ++	F	1.5	50	1.1	1	10	12	6	8	8	0.100	0.30	0
CWR29N^225^@F+□	TAZ F 225 * 050 L □ # @ 0 ^ ++	TAZ F 225 * 050 L L @ 9 ^ ++	F	2.2	50	0.7	2	20	24	6	8	8	0.100	0.38	0
CWR29N^335^@G+□	TAZ G 335 * 050 L □ # @ 0 ^ ++	TAZ G 335 * 050 L L @ 9 ^ ++	G	3.3	50	0.5	2	20	24	6	8	8	0.125	0.50	0
CWR29N^475^@H+□	TAZ H 475 * 050 L □ # @ 0 ^ ++	TAZ H 475 * 050 L L @ 9 ^ ++	H	4.7	50	0.5	3	30	36	6	8	8	0.150	0.55	0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TAZ Series



## HRC5000 Medical Implantable Grade



The TAZ HRC5000 Medical Grade series is designed for use in medical implantable applications. These are based off of the MIL-PRF-55365 case sizes and feature extremely low DC leakage levels well below typical values.

These components are manufactured and tested in the AVX Biddeford Maine factory which is ISO 13485 certified. Weibull grading and surge current testing options per MIL-PRF-55365 are

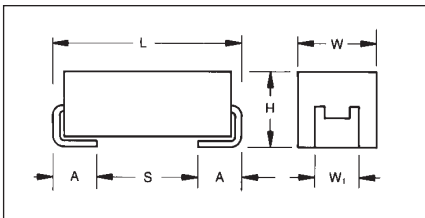
available along with several plating options including tin/lead solder, 100% tin, or gold terminations.

To request an additional rating not listed here, or for more information on HRC5000 testing details, please contact the factory.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

### CASE DIMENSIONS:

millimeters (inches)



### MARKING

(White marking on black body)



**Polarity Stripe (+)**

**Capacitance Code  
Rated Voltage**

Case Code	Length (L) ±0.38 (0.015)	Width (W) ±0.38 (0.015)	Height (H) ±0.38 (0.015)	Term. Width (W <sub>t</sub> )	Term. Length (A) +0.25/-0.13 (+0.010/-0.005)	S min	Typical Weight (g)
A	2.54 (0.100)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	0.38 (0.015)	0.016
B	3.81 (0.150)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	1.65 (0.065)	0.025
C	5.08 (0.200)	1.27 (0.050)	1.27 (0.050)	1.27±0.13 (0.050±0.005)	0.76 (0.030)	2.92 (0.115)	0.035
D	3.81 (0.150)	2.54 (0.100)	1.27 (0.050)	2.41+0.13/-0.25 (0.095+0.005/-0.010)	0.76 (0.030)	1.65 (0.065)	0.045
E	5.08 (0.200)	2.54 (0.100)	1.27 (0.050)	2.41+0.13/-0.25 (0.095+0.005/-0.010)	0.76 (0.030)	2.92 (0.115)	0.065
F	5.59 (0.220)	3.43 (0.135)	1.78 (0.070)	3.30±0.13 (0.130±0.005)	0.76 (0.030)	3.43 (0.135)	0.125
G	6.73 (0.265)	2.79 (0.110)	2.79 (0.110)	2.67±0.13 (0.105±0.005)	1.27 (0.050)	3.56 (0.140)	0.205
H	7.24 (0.285)	3.81 (0.150)	2.79 (0.110)	3.68+0.13/-0.51 (0.145+0.005/-0.020)	1.27 (0.050)	4.06 (0.160)	0.335

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage								
µF	Code	4V	6V	10V	12V	15V	20V	25V	35V	50V
0.10	104									A
0.15	154									A
0.22	224								A	
0.33	334							A	B	
0.47	474						A			
0.68	684					A				
1	105			A		A	A/B	B	D	E
1.5	155		A	A		B	D			
2.2	225	A	A	A/B		A/B/C	B/D	D/E		F
3.3	335		A/B	A/B		B/D	E	E	F	G
4.7	475	A/B	A	B/D		B/D/E	D/E	F		
6	605									
6.8	685	A	D	B/D/E		D/E/F	D/E	F	H	
10	106	D	B/D/E	B/D/E		D/E/F	E	G		
14	146			E						
15	156		B/D/F	D/E/F		E	F/G	G/H		
22	226		F	D/E/F	E	F/G	G/H	H		
33	336	E/F	E	F/G		F/H				
47	476	E	E/F/G	F/G/H		G	H			
68	686	E/G	E/F/G/H	G						
100	107	F	G	H		H				
150	157		G	H						
220	227			H						
300	307		H							
330	337		H							







# TAZ Series



## HRC5000 Medical Implantable Grade

### HOW TO ORDER

TAZ	E	106	*	010	C	□	L	@	5	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> J = ±5% K = ±10% M = ±20%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	<b>ESR</b> C = Std ESR L = Low ESR	<b>Packaging</b> B = Bulk R = 7* T&R W = Waffle	<b>Inspection Level</b> L = Group A	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf.	<b>Qualification Level</b> 5 = HRC5000	<b>Termination Finish</b> H = Solder Plated 0 = Solder Fused 9 = Gold Plated 7 = 100% Tin	<b>Surge Test Option</b> 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 Cycles, -55°C & +85°C before Weibull

For RoHS compliant products, please select correct termination style.

\*Contact factory for AVX HRC5000 Medical Grade SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	0.10 µF to 330 µF									
Capacitance Tolerance:	±5%; ±10%; ±20%									
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	4	6	10	15	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ 125°C:	2.7	4	6.7	10	13.3	16.7	23.3	33.3	
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	5.3	8	13.3	20	26.7	33.3	46.7	66.7	
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	3.5	5.3	8.7	13.3	17.8	22.2	31.1	44.5	
Temperature Range:	-55°C to +125°C									

# TAZ Series

## HRC5000 Medical Implantable Grade

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating									Typical Ripple			
		Cap @ 120Hz	DC Rated Voltage	ESR @ 100kHz	DCL max			DF max			Power Dissipation	25°C Ripple Current	85°C Ripple Current	100°C Ripple Current
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C				
AVX P/N	Case	µF @ 25°C	V @ +85°C	Ohms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)				
TAZA225*004L□□@5^++	A	2.2	4	4	0.100	1.000	1.200	6	8	8	0.050	0.112	0.101	0.082
TAZA475*004L□□@5^++	A	4.7	4	6	0.100	1.000	1.200	6	8	8	0.050	0.091	0.082	0.082
TAZB475*004L□□@5^++	B	4.7	4	3.2	0.100	1.000	1.200	6	8	8	0.070	0.148	0.133	0.133
TAZA685*004L□□@5^++	A	6.8	4	6	0.100	1.000	1.200	6	8	8	0.050	0.091	0.082	0.082
TAZD106*004L□□@5^++	D	10	4	1.3	0.100	1.000	1.200	8	8	10	0.080	0.248	0.223	0.223
TAZE336*004L□□@5^++	E	33	4	0.9	0.330	3.300	3.960	8	10	12	0.090	0.316	0.285	0.285
TAZF336*004L□□@5^++	F	33	4	0.6	0.330	3.300	3.960	8	10	12	0.100	0.408	0.367	0.367
TAZE476*004L□□@5^++	E	47	4	0.9	0.470	4.700	5.640	8	10	12	0.090	0.316	0.285	0.285
TAZE686*004L□□@5^++	E	68	4	0.9	0.680	6.800	8.160	8	10	12	0.090	0.316	0.285	0.285
TAZG686*004L□□@5^++	G	68	4	0.275	0.680	6.800	8.160	10	12	12	0.125	0.674	0.607	0.607
TAZF107*004L□□@5^++	F	100	4	0.55	1.000	10.000	12.000	10	12	12	0.100	0.426	0.384	0.384
TAZA155*006L□□@5^++	A	1.5	6	4	0.100	1.000	1.200	6	8	8	0.050	0.112	0.101	0.101
TAZA225*006C□□@5^++	A	2.2	6	12	0.100	1.000	1.200	6	8	8	0.050	0.065	0.058	0.058
TAZA335*006L□□@5^++	A	3.3	6	6	0.100	1.000	1.200	6	8	8	0.050	0.091	0.082	0.082
TAZB335*006L□□@5^++	B	3.3	6	3.2	0.100	1.000	1.200	6	8	8	0.070	0.148	0.133	0.133
TAZA475*006L□□@5^++	A	4.7	6	6	0.100	1.000	1.200	6	8	8	0.050	0.091	0.082	0.082
TAZD685*006L□□@5^++	D	6.8	6	1.5	0.102	1.020	1.224	6	8	8	0.080	0.231	0.208	0.208
TAZB106*006L□□@5^++	B	10	6	3.2	0.150	1.500	1.800	6	8	8	0.070	0.148	0.133	0.133
TAZD106*006C□□@5^++	D	10	6	6	0.150	1.500	1.800	6	8	8	0.080	0.115	0.104	0.104
TAZE106*006L□□@5^++	E	10	6	1	0.150	1.500	1.800	8	10	12	0.090	0.300	0.270	0.270
TAZB156*006L□□@5^++	B	15	6	3.2	0.225	2.250	2.700	8	10	10	0.070	0.148	0.133	0.133
TAZD156*006L□□@5^++	D	15	6	1.7	0.225	2.250	2.700	8	10	12	0.080	0.217	0.195	0.195
TAZF156*006C□□@5^++	F	15	6	0.3	0.225	2.250	2.700	6	8	8	0.100	0.577	0.520	0.520
TAZF226*006L□□@5^++	F	22	6	0.6	0.330	3.300	3.960	8	10	12	0.100	0.408	0.367	0.367
TAZE336*006L□□@5^++	E	33	6	1	0.495	4.950	5.940	6	8	8	0.090	0.300	0.270	0.270
TAZE476*006C□□@5^++	E	47	6	5	0.705	7.050	8.460	6	8	8	0.090	0.134	0.121	0.121
TAZF476*006L□□@5^++	F	47	6	1	0.705	7.050	8.460	8	10	12	0.100	0.316	0.285	0.285
TAZG476*006L□□@5^++	G	47	6	0.275	0.705	7.050	8.460	10	12	12	0.125	0.674	0.607	0.607
TAZE686*006C□□@5^++	E	68	6	2	1.020	10.200	12.240	10	12	12	0.090	0.212	0.191	0.191
TAZF686*006L□□@5^++	F	68	6	0.4	1.020	10.200	12.240	10	12	12	0.100	0.500	0.450	0.450
TAZG686*006L□□@5^++	G	68	6	0.25	1.020	10.200	12.240	10	12	12	0.125	0.707	0.636	0.636
TAZH686*006L□□@5^++	H	68	6	0.18	1.020	10.200	12.240	10	12	12	0.150	0.913	0.822	0.822
TAZG107*006L□□@5^++	G	100	6	0.275	1.500	15.000	18.000	10	12	12	0.125	0.674	0.607	0.607
TAZG157*006L□□@5^++	G	150	6	0.275	2.250	22.500	27.000	10	12	12	0.125	0.674	0.607	0.607
TAZH307*006C□□@5^++	H	300	6	0.9	4.500	45.000	54.000	15	18	18	0.150	0.408	0.367	0.367
TAZH337*006L□□@5^++	H	330	6	0.18	4.950	49.500	59.400	10	12	12	0.150	0.913	0.822	0.822
TAZR334*010C□□@5^++	R	0.33	10	50	0.100	1.000	1.200	6	8	8	0.030	0.024	0.022	0.022
TAZA105*010L□□@5^++	A	1	10	5	0.100	1.000	1.200	6	8	8	0.050	0.100	0.090	0.090
TAZA155*010C□□@5^++	A	1.5	10	12	0.100	1.000	1.200	6	8	8	0.050	0.065	0.058	0.058
TAZA225*010L□□@5^++	A	2.2	10	6	0.100	1.000	1.200	6	8	8	0.050	0.091	0.082	0.082
TAZB225*010L□□@5^++	B	2.2	10	3.2	0.100	1.000	1.200	6	8	8	0.070	0.148	0.133	0.133
TAZA335*010L□□@5^++	A	3.3	10	6	0.100	1.000	1.200	6	8	8	0.050	0.091	0.082	0.082
TAZB335*010C□□@5^++	B	3.3	10	18	0.100	1.000	1.200	6	8	8	0.070	0.062	0.056	0.056

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TAZ Series

## HRC5000 Medical Implantable Grade

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating									Typical Ripple		
		Cap @ 120Hz	DC Rated Voltage	ESR @ 100kHz	DCL max			DF max			Power Dissipation	25°C Ripple Current	85°C Ripple Current
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C			
AVX P/N	Case	µF @ 25°C	V @ +85°C	Ohms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	A (100kHz)	A (100kHz)
TAZB475*010L□□@5^++	B	4.7	10	3.2	0.200	2.000	2.400	6	8	8	0.070	0.148	0.133
TAZD475*010L□□@5^++	D	4.7	10	1.5	0.200	2.000	2.400	6	8	8	0.080	0.231	0.208
TAZB685*010L□□@5^++	B	6.8	10	3.2	0.170	1.700	2.040	6	8	8	0.070	0.148	0.133
TAZD685*010L□□@5^++	D	6.8	10	1.7	0.170	1.700	2.040	6	8	8	0.080	0.217	0.195
TAZE685*010L□□@5^++	E	6.8	10	1	0.170	1.700	2.040	6	8	8	0.090	0.300	0.270
TAZB106*010L□□@5^++	B	10	10	3.2	0.250	2.500	3.000	8	10	10	0.070	0.148	0.133
TAZD106*010L□□@5^++	D	10	10	1.3	0.250	2.500	3.000	6	8	8	0.080	0.248	0.223
TAZE106*010L□□@5^++	E	10	10	1	0.250	2.500	3.000	6	8	8	0.090	0.300	0.270
TAZE146*010C□□@5^++	E	14	10	3	0.350	3.500	4.200	6	8	8	0.090	0.173	0.156
TAZD156*010L□□@5^++	D	15	10	1.7	0.375	3.750	4.500	6	8	8	0.080	0.217	0.195
TAZE156*010L□□@5^++	E	15	10	0.9	0.375	3.750	4.500	8	10	10	0.090	0.316	0.285
TAZF156*010L□□@5^++	F	15	10	0.7	0.375	3.750	4.500	8	8	10	0.100	0.378	0.340
TAZD226*010C□□@5^++	D	22	10	8	0.550	5.500	6.600	6	8	8	0.080	0.100	0.090
TAZE226*010L□□@5^++	E	22	10	0.6	0.550	5.500	6.600	8	10	10	0.090	0.387	0.349
TAZF226*010C□□@5^++	F	22	10	3	0.550	5.500	6.600	8	10	10	0.100	0.183	0.164
TAZF336*010L□□@5^++	F	33	10	0.4	0.825	8.250	9.900	8	10	10	0.100	0.500	0.450
TAZG336*010L□□@5^++	G	33	10	0.275	0.825	8.250	9.900	10	12	12	0.125	0.674	0.607
TAZF476*010L□□@5^++	F	47	10	0.4	1.175	11.750	14.100	10	12	12	0.100	0.500	0.450
TAZG476*010L□□@5^++	G	47	10	0.25	1.175	11.750	14.100	10	12	12	0.125	0.707	0.636
TAZH476*010L□□@5^++	H	47	10	0.18	1.175	11.750	14.100	10	12	12	0.150	0.913	0.822
TAZG686*010L□□@5^++	G	68	10	0.275	1.700	17.000	20.400	10	12	12	0.125	0.674	0.607
TAZH107*010L□□@5^++	H	100	10	0.18	2.500	25.000	30.000	10	12	12	0.150	0.913	0.822
TAZH157*010L□□@5^++	H	150	10	0.18	3.750	37.500	45.000	10	12	12	0.150	0.913	0.822
TAZH227*010L□□@5^++	H	220	10	0.18	5.500	55.000	66.000	10	12	12	0.150	0.913	0.822
TAZE226*012C□□@5^++	E	22	12	0.5	0.660	6.600	7.920	6	8	8	0.090	0.424	0.382
TAZA684*015L□□@5^++	A	0.68	15	6	0.100	1.000	1.200	6	8	8	0.050	0.091	0.082
TAZA105*015L□□@5^++	A	1	15	7.5	0.100	1.000	1.200	6	8	8	0.050	0.082	0.073
TAZA225*015L□□@5^++	A	2.2	15	7.5	0.200	2.000	2.400	6	8	8	0.050	0.082	0.073
TAZB225*015C□□@5^++	B	2.2	15	5.5	0.100	1.000	1.200	6	8	8	0.070	0.113	0.102
TAZB335*015L□□@5^++	B	3.3	15	3.6	0.290	2.900	3.480	6	8	8	0.070	0.139	0.125
TAZD335*015L□□@5^++	D	3.3	15	1.7	0.124	1.238	1.485	6	8	8	0.080	0.217	0.195
TAZB475*015L□□@5^++	B	4.7	15	2	0.250	2.500	3.000	6	8	8	0.070	0.187	0.168
TAZD475*015L□□@5^++	D	4.7	15	2	0.250	2.500	3.000	6	8	8	0.080	0.200	0.180
TAZE475*015L□□@5^++	E	4.7	15	1.2	0.245	2.450	2.940	6	8	8	0.090	0.274	0.246
TAZD106*015L□□@5^++	D	10	15	2	0.375	3.750	4.500	6	8	8	0.080	0.200	0.180
TAZE106*015L□□@5^++	E	10	15	1.2	0.375	3.750	4.500	6	8	8	0.090	0.274	0.246
TAZF106*015L□□@5^++	F	10	15	0.667	0.375	3.750	4.500	6	8	8	0.100	0.387	0.348
TAZE156*015L□□@5^++	E	15	15	1.2	0.563	5.625	6.750	6	8	8	0.090	0.274	0.246
TAZF226*015L□□@5^++	F	22	15	0.8	0.825	8.250	9.900	8	10	10	0.100	0.354	0.318
TAZG226*015L□□@5^++	G	22	15	0.275	0.825	8.250	9.900	6	8	8	0.125	0.674	0.607
TAZF336*015L□□@5^++	F	33	15	0.8	1.238	12.375	14.850	6	8	8	0.100	0.354	0.318
TAZH336*015L□□@5^++	H	33	15	0.18	1.238	12.375	14.850	8	8	10	0.150	0.913	0.822
TAZG476*015L□□@5^++	G	47	15	0.275	1.763	17.625	21.150	8	10	10	0.125	0.674	0.607

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TAZ Series

## HRC5000 Medical Implantable Grade

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating									Typical Ripple			
		Cap @ 120Hz	DC Rated Voltage	ESR @ 100kHz	DCL max			DF max			Power Dissipation	25°C Ripple Current	85°C Ripple Current	100°C Ripple Current
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C				
AVX P/N	Case	µF @ 25°C	V @ +85°C	Ohms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)				
TAZH107*015L□□@5^++	H	100	15	0.18	3.750	37.500	45.000	10	12	12	0.150	0.913	0.822	0.700
TAZA474*020L□□@5^++	A	0.47	20	7.5	0.100	1.000	1.200	8	8	10	0.050	0.082	0.073	0.060
TAZA105*020L□□@5^++	A	1	20	7.5	0.100	1.000	1.200	6	8	8	0.050	0.082	0.073	0.060
TAZB105*020L□□@5^++	B	1	20	4.8	0.100	1.000	1.200	6	8	8	0.070	0.121	0.109	0.090
TAZB155*020L□□@5^++	B	1.5	20	3.6	0.100	1.000	1.200	6	8	8	0.070	0.139	0.125	0.100
TAZB225*020L□□@5^++	B	2.2	20	3.6	0.110	1.100	1.320	6	8	8	0.070	0.139	0.125	0.100
TAZD225*020L□□@5^++	D	2.2	20	1.7	0.225	2.250	2.700	6	8	8	0.080	0.217	0.195	0.160
TAZE335*020L□□@5^++	E	3.3	20	1.2	0.165	1.650	1.980	6	8	8	0.090	0.274	0.246	0.200
TAZD475*020C□□@5^++	D	4.7	20	6	0.235	2.350	2.820	6	8	8	0.080	0.115	0.104	0.080
TAZE475*020L□□@5^++	E	4.7	20	1.7	0.235	2.350	2.820	6	8	8	0.090	0.230	0.207	0.160
TAZD685*020C□□@5^++	D	6.8	20	4	0.450	4.500	5.400	6	8	8	0.080	0.141	0.127	0.100
TAZE685*020L□□@5^++	E	6.8	20	1.5	0.450	4.500	5.400	6	8	8	0.090	0.245	0.220	0.160
TAZE106*020L□□@5^++	E	10	20	1.5	0.500	5.000	6.000	6	8	8	0.090	0.245	0.220	0.160
TAZF156*020L□□@5^++	F	15	20	0.8	0.750	7.500	9.000	6	8	8	0.100	0.354	0.318	0.240
TAZG156*020L□□@5^++	G	15	20	0.275	0.750	7.500	9.000	6	8	8	0.125	0.674	0.607	0.480
TAZG226*020L□□@5^++	G	22	20	0.625	1.100	11.000	13.200	6	8	8	0.125	0.447	0.402	0.300
TAZH226*020L□□@5^++	H	22	20	0.18	1.100	11.000	13.200	6	8	8	0.150	0.913	0.822	0.700
TAZH476*020L□□@5^++	H	47	20	0.18	2.350	23.500	28.200	8	10	10	0.150	0.913	0.822	0.700
TAZA334*025L□□@5^++	A	0.33	25	15	0.100	1.000	1.200	6	8	8	0.050	0.058	0.052	0.040
TAZB105*025L□□@5^++	B	1	25	4	0.160	1.600	1.920	6	8	8	0.070	0.132	0.119	0.090
TAZD155*025L□□@5^++	D	1.5	25	1.7	0.200	2.000	2.400	6	8	8	0.080	0.217	0.195	0.160
TAZD225*025L□□@5^++	D	2.2	25	2	0.215	2.150	2.580	6	8	8	0.080	0.200	0.180	0.140
TAZE225*025L□□@5^++	E	2.2	25	1	0.230	2.300	2.760	6	8	8	0.090	0.300	0.270	0.200
TAZE335*025L□□@5^++	E	3.3	25	1.2	0.245	2.450	2.940	6	8	8	0.090	0.274	0.246	0.200
TAZF475*025L□□@5^++	F	4.7	25	0.7	0.294	2.938	3.525	6	8	8	0.100	0.378	0.340	0.260
TAZF685*025L□□@5^++	F	6.8	25	0.8	0.425	4.250	5.100	6	8	8	0.100	0.354	0.318	0.240
TAZG106*025L□□@5^++	G	10	25	0.35	0.625	6.250	7.500	6	8	8	0.125	0.598	0.538	0.400
TAZH226*025L□□@5^++	H	22	25	0.18	1.375	13.750	16.500	6	8	8	0.150	0.913	0.822	0.700
TAZA224*035L□□@5^++	A	0.22	35	12	0.100	1.000	1.200	6	8	8	0.050	0.065	0.058	0.040
TAZB474*035L□□@5^++	B	0.47	35	6.8	0.100	1.000	1.200	6	8	8	0.070	0.101	0.091	0.070
TAZD105*035L□□@5^++	D	1	35	2.2	0.100	1.000	1.200	6	8	8	0.080	0.191	0.172	0.130
TAZF335*035L□□@5^++	F	3.3	35	0.7	0.289	2.888	3.465	6	8	8	0.100	0.378	0.340	0.260
TAZH106*035L□□@5^++	H	10	35	0.5	0.875	8.750	10.500	8	10	10	0.150	0.548	0.493	0.360
TAZA104*050L□□@5^++	A	0.1	50	12	0.100	1.000	1.200	6	8	8	0.050	0.065	0.058	0.040
TAZA154*050L□□@5^++	A	0.15	50	12	0.100	1.000	1.200	6	8	8	0.050	0.065	0.058	0.040
TAZE105*050L□□@5^++	E	1	50	1.7	0.125	1.250	1.500	6	8	8	0.090	0.230	0.207	0.160
TAZF225*050L□□@5^++	F	2.2	50	0.7	0.275	2.750	3.300	6	8	8	0.100	0.378	0.340	0.260
TAZG335*050L□□@5^++	G	3.3	50	0.5	0.413	4.125	4.950	6	8	8	0.125	0.500	0.450	0.340

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TCP Series - DSCC 09009



## TCP Series Low ESR Tantalum Modules



TCP Series tantalum modules represent high packing density for applications utilizing multiple components in a parallel configuration, and are available with testing to DSCC 09009.

These modules feature stacked assemblies of CWR29 capacitors which provide ultra low ESR and utilize established reliability capacitors (Weibull Grade voltage conditioning) in accordance with MIL-PRF-55365. They can also be supplied with SRC9000 Space Level components.

The stacked construction of fully molded capacitors is compatible with a wide range of SMT board assembly processes including reflow solder or conductive epoxy.

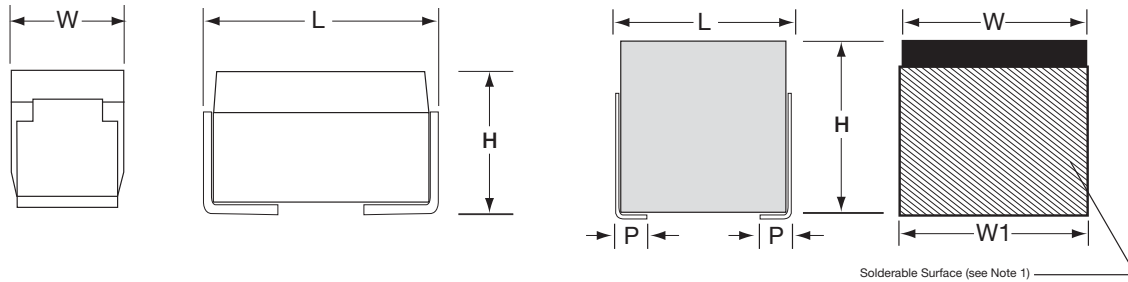
There are two termination finishes available: hot solder dipped ("C") and gold plated ("B").

The molding compound has been selected to meet the requirements of UL94V-0 and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

**Note: Additional form factors and ratings are available.  
Contact plant for details.**

### DIMENSIONS



### CASE DIMENSIONS:

millimeters (inches)

Case Code	Length (L) ±0.38 (0.015)	Width (W) ±0.38 (0.015)	Height (H) ±0.38 (0.015)	Term. Width (W <sub>1</sub> ) ±0.38 (0.015)	Term. Length (P) For Reference Only
2H	7.82 (0.308)	4.06 (0.160)	6.10 (0.240)	4.06 (0.160)	1.52 (0.060)
4H	7.82 (0.308)	8.13 (0.320)	6.10 (0.240)	8.13 (0.320)	1.52 (0.060)
6H	7.82 (0.308)	8.13 (0.320)	9.14 (0.360)	8.13 (0.320)	1.52 (0.060)

Additional form factors and ratings are available – contact plant for details.

### CAPACITANCE AND RATED VOLTAGE CASE SIZE (ESR IN mΩ)

Capacitance		Rated voltage DC (V <sub>R</sub> ) to 85°C						
μF	Code	6V	10V	15V	20V	25V	35V	50V
9.4	945							2H (200)
18.8	196							4H (100)
20	206						2H (200)	
28.2	286							6H (67)
40	406						4H (100)	
60	606						6H (67)	
66	666					2H (85)		
94	946				2H (75)			
132	137					4H (43)		
188	197				4H (38)			
198	207					6H (28)		
200	207			2H (63)				
282	287				6H (25)			
400	407			4H (31)				
440	447		2H (50)					
600	607			6H (21)				
660	667	2H (50)						
880	887		4H (25)					
1,320	138	4H (25)	6H (17)					
1,980	208	6H (17)						



# TCP Series - DSCC 09009



## TCP Series Low ESR Tantalum Modules

### HOW TO ORDER

TC	2H	945	K	050	L	R	#	@	0	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10% J = ±5%	<b>Voltage Code</b> 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	<b>Standard or Low ESR Range</b> L = Low ESR	<b>Packaging</b> B = Bulk R = 7" T&R	<b>Inspection Level</b> S = Std. Conformance L = Group A D = DSCC DWG	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER	<b>Qualification Level</b> 0 = N/A 9 = SRC9000	<b>Termination Finish</b> 8 = Hot Solder Dipped 9 = Gold Plated	<b>Surge Test Option</b> 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull



### DSCC DWG P/N:

09009	-01	K	B	C	A
<b>DSCC DWG</b> 09009	<b>Dash Number</b> See Rating Tables	<b>Capacitance Tolerance</b> K = ±10% M = ±20%	<b>Reliability Grade</b> B = B Weibull C = C Weibull D = D Weibull	<b>Termination Finish</b> B = Gold Plated (10 microinch minimum) C = Hot Solder Dip (60 microinch minimum)	<b>Surge Test Option</b> A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull Z = None required Per MIL-PRF-55365



### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	9.4 µF to 1,980 µF									
Capacitance Tolerance:	±5%; ±10%; ±20%									
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	6	10	15	20	25	35	50		
Category Voltage (V <sub>C</sub> )	≤ 125°C:	4	6.7	10	13.3	16.7	23.3	33.3		
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	8	13.3	20	26.7	33.3	46.7	66.7		
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	5.3	8.7	13.3	17.8	22.2	31.1	44.5		
Temperature Range:	-55°C to +125°C									



# TCP Series

## TCP Series Low ESR Tantalum Modules

### RATINGS & PART NUMBER REFERENCE

2-STACK			Parametric Specifications by Rating									Typical R		
AVX P/N	Case	Cap μF	Volt V	ESR @ 100 kHz +25°C mΩ	DC Leakage (max) μA			Disspation Factor (max) %			100kHz Ripple Current Ra			
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	+25°C	+85°C	+125°C	
TC2H 667	*006L#D^00++	2H	660	6	50	39.6	396	495	10	12	12	2.4	2.2	1
TC2H 447	*010L#D^00++	2H	440	10	50	44	440	550	10	12	12	2.4	2.2	1
TC2H 207	*015L#D^00++	2H	200	15	63	30	300	375	10	12	12	2.2	2.0	0
TC2H 946	*020L#D^00++	2H	94	20	75	18.8	188	235	8	10	10	2.0	1.8	0
TC2H 666	*025L#D^00++	2H	66	25	85	16.5	165	206	8	10	10	1.9	1.7	0
TC2H 206	*035L#D^00++	2H	20	35	200	7	70	88	8	10	10	1.2	1.1	0
TC2H 945	*050L#D^00++	2H	9.4	50	200	4.7	47	59	6	8	8	1.2	1.1	0

4-STACK			Parametric Specifications by Rating									Typical R		
AVX P/N	Case	Cap μF	Volt V	ESR @ 100 kHz +25°C mΩ	DC Leakage (max) μA			Disspation Factor (max) %			100kHz Ripple Current Ra			
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	+25°C	+85°C	+125°C	
TC4H 138	*006L#D^00++	4H	1320	6	25	79.2	792	990	10	12	12	4.2	3.8	1
TC4H 887	*010L#D^00++	4H	880	10	25	88	880	1100	10	12	12	4.2	3.8	1
TC4H 407	*015L#D^00++	4H	400	15	31	60	600	750	10	12	12	3.8	3.4	1
TC4H 197	*020L#D^00++	4H	188	20	38	37.6	376	470	8	10	10	3.5	3.2	1
TC4H 137	*025L#D^00++	4H	132	25	43	33	330	413	8	10	10	3.2	2.9	1
TC4H 406	*035L#D^00++	4H	40	35	100	14	140	175	8	10	10	2.1	1.9	0
TC4H 196	*050L#D^00++	4H	18.8	50	100	9.4	94	118	6	8	8	2.1	1.9	0

6-STACK			Parametric Specifications by Rating									Typical R		
AVX P/N	Case	Cap μF	Volt V	ESR @ 100 kHz +25°C mΩ	DC Leakage (max) μA			Disspation Factor (max) %			100kHz Ripple Current Ra			
					+25°C	+85°C	+125°C	+25°C	+(85/125)°C	-55°C	+25°C	+85°C	+125°C	
TC6H 208	*006L#D^00++	6H	1980	6	17	118.8	1188	1485	10	12	12	5.9	5.3	2
TC6H 138	*010L#D^00++	6H	1320	10	17	132	1320	1650	10	12	12	5.9	5.3	2
TC6H 607	*015L#D^00++	6H	600	15	21	90	900	1125	10	12	12	5.2	4.7	2
TC6H 287	*020L#D^00++	6H	282	20	25	56.4	564	705	8	10	10	4.8	4.3	1
TC6H 207	*025L#D^00++	6H	198	25	28	49.5	495	619	8	10	10	4.5	4.1	1
TC6H 606	*035L#D^00++	6H	60	35	67	21	210	263	8	10	10	2.9	2.6	1
TC6H 286	*050L#D^00++	6H	28.2	50	67	14.1	141	176	6	8	8	2.9	2.6	1

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBJ Series



## CWR11 - MIL-PRF-55365/8 Established Reliability, COTS-Plus & Space Level



Fully qualified to MIL-PRF-55365/8, the CWR11 is the military version of EIA-535BAAC, with four case sizes designed for maximum packaging efficiency on 8mm & 12mm tape for high volume production (ensuring no TCE mismatch with any substrate). This construction is compatible with a wide range of SMT board assembly processes including wave or reflow solder, conductive epoxy or compression bonding techniques. The part also carries full polarity, capacitance / voltage and JAN brand marking.

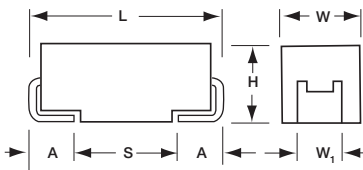
For Space Level applications, AVX SRC9000 qualification is recommended (see ratings table for part number availability).

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these are "H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365).

The molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and out-gassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

The series is qualified to MIL-PRF-55365 Weibull "B", "C", "D" and "T" levels, with all surge options ("A", "B" & "C") available.



### MARKING

(Brown marking on gold body)



Polarity Stripe (+)

"J" for "JAN" Brand  
Capacitance Code

Rated Voltage  
Manufacturer's ID

### CASE DIMENSIONS: millimeters (inches)

Case Code	EIA Metric	Length (L)	Width (W)	Height (H)	Term. Width (W <sub>1</sub> ) ±0.10 (±0.004)	Term. Length A ±0.30(±0.012)	S min
A	3216-18	3.20±0.20 (0.126±0.008)	1.60±0.20 (0.063±0.008)	1.60±0.20 (0.063±0.008)	1.20 (0.047)	0.80 (0.031)	1.80 (0.071)
B	3528-21	3.50±0.20 (0.138±0.008)	2.80±0.20 (0.110±0.008)	1.90±0.20 (0.075±0.008)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	6032-28	6.00±0.30 (0.236±0.012)	3.20±0.30 (0.126±0.012)	2.50±0.30 (0.098±0.012)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	7343-31	7.30±0.30 (0.287±0.012)	4.30±0.30 (0.169±0.012)	2.80±0.30 (0.110±0.012)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (MIL VOLTAGE CODE) RANGE CASE SIZE

Capacitance		Rated voltage DC (V <sub>R</sub> ) to 85°C							
μF	Code	4V (C)	6V (D)	10V (F)	15V (H)	20V (J)	25V (K)	35V (M)	50V (N)
0.10	104							A	A
0.15	154							A	B
0.22	224							A	B
0.33	334						A	A	B
0.47	474					A	A	B	C
0.68	684				A	A	B	B	C
1.0	105			A	A	A	B	B	C
1.5	155		A	A	A	B	B	C	D
2.2	225	A	A	A	B	B	C	C	D
3.3	335		A	B	B	B	C	C	D
4.7	475	A	B	B	B	C	C	D	D
6.8	685	B	B	B		C	D	D	
10	106	B	B		C		D		
15	156	B	C	C		D	D		
22	226		C		D	D			
33	336	C		D	D				
47	476		D	D					
68	686	D	D						
100	107	D							





# TBJ Series





## CWR11 - MIL-PRF-55365/8 Established Reliability, COTS-Plus & Space Level

### HOW TO ORDER

#### COTS-PLUS & MIL QPL (CWR11):



TBJ	D	686	*	006	C	□	#	@	0	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10% J = ±5%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	<b>Standard or Low ESR Range</b> C = Std ESR L = Low ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	<b>Inspection Level</b> S = Std. Conformance L = Group A  M = MIL (JAN) CWR11	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER	<b>Qualification Level</b> 0 = N/A T = T Level  9 = SRC9000	<b>Termination Finish</b> H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	<b>Surge Test Option</b> 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

For RoHS compliant products, please select correct termination style.

#### CWR11 P/N CROSS REFERENCE:



CWR11	D	^	686	*	@	+	□
<b>Type</b>	<b>Voltage Code</b> C = 4Vdc D = 6Vdc F = 10Vdc H = 15Vdc J = 20Vdc K = 25Vdc M = 35Vdc N = 50Vdc	<b>Termination Finish</b> H = Solder Plated K = Solder Fused C = Hot Solder Dipped B = Gold Plated	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10% J = ±5%	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. T = T Level A = Non-ER	<b>Surge Test Option</b> A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull  If blank, None required	<b>Packaging</b> Bulk = Standard TR = 7" T&R WR = 13" T&R W = Waffle  See page 7 for additional packaging options.

For RoHS compliant products, please select correct termination style.

#### SPACE LEVEL OPTIONS TO SRC9000\*:

TBJ	D	686	*	006	C	□	L	@	9	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10% J = ±5%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	<b>Standard or Low ESR Range</b> C = Std ESR L = Low ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	<b>Inspection Level</b> L = Group A	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf.	<b>Qualification Level</b> 9 = SRC9000	<b>Termination Finish</b> H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	<b>Surge Test Option</b> 45 = 10 cycles, -55°C & +85°C before Weibull

For RoHS compliant products, please select correct termination style.

\*Contact factory for AVX SRC9000 Space Level SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	0.10 µF to 100 µF									
Capacitance Tolerance:	±5%; ±10%; ±20%									
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	4	6	10	16	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ 125°C:	2.7	4	6.7	10	13.3	16.7	23.3	33.3	
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	5.3	8	13.3	20	26.7	33.3	46.7	66.7	
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	3.5	5.3	8.7	13.3	17.8	22.2	31.1	44.5	
Temperature Range:	-55°C to +125°C									



# TBJ Series

## CWR11 - MIL-PRF-55365/8 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/8									Power Dissipation W	25°C Ripple A (100kHz)	Temp. Rise °C (100kHz)
				Cap @ 120Hz μF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
CWR11 P/N	AVX COTS-Plus P/N	AVX SRC9000 P/N	Case				+25°C	+85°C	+125°C	+25°C	+85/125°C	-55°C			
CWR11C^225^@+□	TBJA 225 * 004 C □ # @ 0 ^ ++	TBJA 225 * 004 C □ L @ 9 ^ ++	A	2.2	4	8	0.5	5	6	6	9	9	0.075	0.10	0
CWR11C^475^@+□	TBJA 475 * 004 C □ # @ 0 ^ ++	TBJA 475 * 004 C □ L @ 9 ^ ++	A	4.7	4	8	0.5	5	6	6	9	9	0.075	0.10	0
CWR11C^685^@+□	TBJB 685 * 004 C □ # @ 0 ^ ++	TBJB 685 * 004 C □ L @ 9 ^ ++	B	6.8	4	5.5	0.5	5	6	6	9	9	0.085	0.12	0
CWR11C^106^@+□	TBJB 106 * 004 C □ # @ 0 ^ ++	TBJB 106 * 004 C □ L @ 9 ^ ++	B	10	4	4	0.5	5	6	6	9	9	0.085	0.15	0
CWR11C^156^@+□	TBJB 156 * 004 C □ # @ 0 ^ ++	TBJB 156 * 004 C □ L @ 9 ^ ++	B	15	4	3.5	0.6	6	7.2	6	9	9	0.085	0.16	0
CWR11C^336^@+□	TBJC 336 * 004 C □ # @ 0 ^ ++	TBJC 336 * 004 C □ L @ 9 ^ ++	C	33	4	2.2	1.3	13	15.6	6	9	9	0.110	0.22	0
CWR11C^686^@+□	TBJD 686 * 004 C □ # @ 0 ^ ++	TBJD 686 * 004 C □ L @ 9 ^ ++	D	68	4	1.1	2.7	27	32.4	6	9	9	0.150	0.37	0
CWR11C^107^@+□	TBJD 107 * 004 C □ # @ 0 ^ ++	TBJD 107 * 004 C □ L @ 9 ^ ++	D	100	4	0.9	4	40	48	8	12	12	0.150	0.41	0
CWR11D^155^@+□	TBJA 155 * 006 C □ # @ 0 ^ ++	TBJA 155 * 006 C □ L @ 9 ^ ++	A	1.5	6	8	0.5	5	6	6	9	9	0.075	0.10	0
CWR11D^225^@+□	TBJA 225 * 006 C □ # @ 0 ^ ++	TBJA 225 * 006 C □ L @ 9 ^ ++	A	2.2	6	8	0.5	5	6	6	9	9	0.075	0.10	0
CWR11D^335^@+□	TBJA 335 * 006 C □ # @ 0 ^ ++	TBJA 335 * 006 C □ L @ 9 ^ ++	A	3.3	6	8	0.5	5	6	6	9	9	0.075	0.10	0
CWR11D^475^@+□	TBJB 475 * 006 C □ # @ 0 ^ ++	TBJB 475 * 006 C □ L @ 9 ^ ++	B	4.7	6	5.5	0.5	5	6	6	9	9	0.085	0.12	0
CWR11D^685^@+□	TBJB 685 * 006 C □ # @ 0 ^ ++	TBJB 685 * 006 C □ L @ 9 ^ ++	B	6.8	6	4.5	0.5	5	6	6	9	9	0.085	0.14	0
CWR11D^106^@+□	TBJB 106 * 006 C □ # @ 0 ^ ++	TBJB 106 * 006 C □ L @ 9 ^ ++	B	10	6	3.5	0.6	6	7.2	6	9	9	0.085	0.16	0
CWR11D^156^@+□	TBJC 156 * 006 C □ # @ 0 ^ ++	TBJC 156 * 006 C □ L @ 9 ^ ++	C	15	6	3	0.9	9	10.8	6	9	9	0.110	0.19	0
CWR11D^226^@+□	TBJC 226 * 006 C □ # @ 0 ^ ++	TBJC 226 * 006 C □ L @ 9 ^ ++	C	22	6	2.2	1.4	14	16.8	6	9	9	0.110	0.22	0
CWR11D^476^@+□	TBJD 476 * 006 C □ # @ 0 ^ ++	TBJD 476 * 006 C □ L @ 9 ^ ++	D	47	6	1.1	2.8	28	33.6	6	9	9	0.150	0.37	0
CWR11D^686^@+□	TBJD 686 * 006 C □ # @ 0 ^ ++	TBJD 686 * 006 C □ L @ 9 ^ ++	D	68	6	0.9	4.3	43	51.6	6	9	9	0.150	0.41	0
CWR11F^105^@+□	TBJA 105 * 010 C □ # @ 0 ^ ++	TBJA 105 * 010 C □ L @ 9 ^ ++	A	1	10	10	0.5	5	6	4	6	6	0.075	0.09	0
CWR11F^155^@+□	TBJA 155 * 010 C □ # @ 0 ^ ++	TBJA 155 * 010 C □ L @ 9 ^ ++	A	1.5	10	8	0.5	5	6	6	9	9	0.075	0.10	0
CWR11F^225^@+□	TBJA 225 * 010 C □ # @ 0 ^ ++	TBJA 225 * 010 C □ L @ 9 ^ ++	A	2.2	10	8	0.5	5	6	6	9	9	0.075	0.10	0
CWR11F^335^@+□	TBJB 335 * 010 C □ # @ 0 ^ ++	TBJB 335 * 010 C □ L @ 9 ^ ++	B	3.3	10	5.5	0.5	5	6	6	9	9	0.085	0.12	0
CWR11F^475^@+□	TBJB 475 * 010 C □ # @ 0 ^ ++	TBJB 475 * 010 C □ L @ 9 ^ ++	B	4.7	10	4.5	0.5	5	6	6	9	9	0.085	0.14	0
CWR11F^685^@+□	TBJB 685 * 010 C □ # @ 0 ^ ++	TBJB 685 * 010 C □ L @ 9 ^ ++	B	6.8	10	3.5	0.7	7	8.4	6	9	9	0.085	0.16	0
CWR11F^156^@+□	TBJC 156 * 010 C □ # @ 0 ^ ++	TBJC 156 * 010 C □ L @ 9 ^ ++	C	15	10	2.5	1.5	15	18	6	9	9	0.110	0.21	0
CWR11F^336^@+□	TBJD 336 * 010 C □ # @ 0 ^ ++	TBJD 336 * 010 C □ L @ 9 ^ ++	D	33	10	1.1	3.3	33	39.6	6	9	9	0.150	0.37	0
CWR11F^476^@+□	TBJD 476 * 010 C □ # @ 0 ^ ++	TBJD 476 * 010 C □ L @ 9 ^ ++	D	47	10	0.9	4.7	47	56.4	6	9	9	0.150	0.41	0
CWR11H^684^@+□	TBJA 684 * 015 C □ # @ 0 ^ ++	TBJA 684 * 015 C □ L @ 9 ^ ++	A	0.68	15	12	0.5	5	6	4	6	6	0.075	0.08	0
CWR11H^105^@+□	TBJA 105 * 015 C □ # @ 0 ^ ++	TBJA 105 * 015 C □ L @ 9 ^ ++	A	1	15	10	0.5	5	6	4	6	6	0.075	0.09	0
CWR11H^155^@+□	TBJA 155 * 015 C □ # @ 0 ^ ++	TBJA 155 * 015 C □ L @ 9 ^ ++	A	1.5	15	8	0.5	5	6	6	9	9	0.075	0.10	0
CWR11H^225^@+□	TBJB 225 * 015 C □ # @ 0 ^ ++	TBJB 225 * 015 C □ L @ 9 ^ ++	B	2.2	15	5.5	0.5	5	6	6	9	9	0.085	0.12	0
CWR11H^335^@+□	TBJB 335 * 015 C □ # @ 0 ^ ++	TBJB 335 * 015 C □ L @ 9 ^ ++	B	3.3	15	5	0.5	5	6	6	8	9	0.085	0.13	0
CWR11H^475^@+□	TBJB 475 * 015 C □ # @ 0 ^ ++	TBJB 475 * 015 C □ L @ 9 ^ ++	B	4.7	15	4	0.7	7	8.4	6	9	9	0.085	0.15	0
CWR11H^106^@+□	TBJC 106 * 015 C □ # @ 0 ^ ++	TBJC 106 * 015 C □ L @ 9 ^ ++	C	10	15	2.5	1.6	16	19.2	6	8	9	0.110	0.21	0
CWR11H^226^@+□	TBJD 226 * 015 C □ # @ 0 ^ ++	TBJD 226 * 015 C □ L @ 9 ^ ++	D	22	15	1.1	3.3	33	39.6	6	8	9	0.150	0.37	0
CWR11H^336^@+□	TBJD 336 * 015 C □ # @ 0 ^ ++	TBJD 336 * 015 C □ L @ 9 ^ ++	D	33	15	0.9	5.3	53	63.6	6	9	9	0.150	0.41	0
CWR11J^474^@+□	TBJA 474 * 020 C □ # @ 0 ^ ++	TBJA 474 * 020 C □ L @ 9 ^ ++	A	0.47	20	14	0.5	5	6	4	6	6	0.075	0.07	0
CWR11J^684^@+□	TBJA 684 * 020 C □ # @ 0 ^ ++	TBJA 684 * 020 C □ L @ 9 ^ ++	A	0.68	20	12	0.5	5	6	4	6	6	0.075	0.08	0
CWR11J^105^@+□	TBJA 105 * 020 C □ # @ 0 ^ ++	TBJA 105 * 020 C □ L @ 9 ^ ++	A	1	20	10	0.5	5	6	4	6	6	0.075	0.09	0
CWR11J^155^@+□	TBJB 155 * 020 C □ # @ 0 ^ ++	TBJB 155 * 020 C □ L @ 9 ^ ++	B	1.5	20	6	0.5	5	6	6	9	9	0.085	0.12	0
CWR11J^225^@+□	TBJB 225 * 020 C □ # @ 0 ^ ++	TBJB 225 * 020 C □ L @ 9 ^ ++	B	2.2	20	5	0.5	5	6	6	8	9	0.085	0.13	0
CWR11J^335^@+□	TBJB 335 * 020 C □ # @ 0 ^ ++	TBJB 335 * 020 C □ L @ 9 ^ ++	B	3.3	20	4	0.7	7	8.4	6	9	9	0.085	0.15	0
CWR11J^475^@+□	TBJC 475 * 020 C □ # @ 0 ^ ++	TBJC 475 * 020 C □ L @ 9 ^ ++	C	4.7	20	3	1	10	12	6	8	9	0.110	0.19	0
CWR11J^685^@+□	TBJC 685 * 020 C □ # @ 0 ^ ++	TBJC 685 * 020 C □ L @ 9 ^ ++	C	6.8	20	2.4	1.4	14	16.8	6	9	9	0.110	0.21	0
CWR11J^156^@+□	TBJD 156 * 020 C □ # @ 0 ^ ++	TBJD 156 * 020 C □ L @ 9 ^ ++	D	15	20	1.1	3	30	36	6	8	9	0.150	0.37	0
CWR11J^226^@+□	TBJD 226 * 020 C □ # @ 0 ^ ++	TBJD 226 * 020 C □ L @ 9 ^ ++	D	22	20	0.9	4.4	44	52.8	6	9	9	0.150	0.41	0
CWR11K^334^@+□	TBJA 334 * 025 C □ # @ 0 ^ ++	TBJA 334 * 025 C □ L @ 9 ^ ++	A	0.33	25	15	0.5	5	6	4	6	6	0.075	0.07	0
CWR11K^474^@+□	TBJA 474 * 025 C □ # @ 0 ^ ++	TBJA 474 * 025 C □ L @ 9 ^ ++	A	0.47	25	14	0.5	5	6	4	6	6	0.075	0.07	0
CWR11K^684^@+□	TBJB 684 * 025 C □ # @ 0 ^ ++	TBJB 684 * 025 C □ L @ 9 ^ ++	B	0.68	25	7.5	0.5	5	6	4	6	6	0.085	0.11	0
CWR11K^105^@+□	TBJB 105 * 025 C □ # @ 0 ^ ++	TBJB 105 * 025 C □ L @ 9 ^ ++	B	1	25	6.5	0.5	5	6	4	6	6	0.085	0.11	0
CWR11K^155^@+□	TBJB 155 * 025 C □ # @ 0 ^ ++	TBJB 155 * 025 C □ L @ 9 ^ ++	B	1.5	25	6.5	0.5	5	6	6	8	9	0.085	0.11	0
CWR11K^225^@+□	TBJC 225 * 025 C □ # @ 0 ^ ++	TBJC 225 * 025 C □ L @ 9 ^ ++	C	2.2	25	3.5	0.6	6	7.2	6	9	9	0.110	0.18	0
CWR11K^335^@+□	TBJC 335 * 025 C □ # @ 0 ^ ++	TBJC 335 * 025 C □ L @ 9 ^ ++	C	3.3	25	3.5	0.9	9	10.8	6	8	9	0.110	0.18	0
CWR11K^475^@+□	TBJC 475 * 025 C □ # @ 0 ^ ++	TBJC 475 * 025 C □ L @ 9 ^ ++	C	4.7	25	2.5	1.2	12	14.4	6	9	9	0.110	0.21	0
CWR11K^685^@+□	TBJD 685 * 025 C □ # @ 0 ^ ++	TBJD 685 * 025 C □ L @ 9 ^ ++	D	6.8	25	1.4	1.7	17	20.4	6	9	9	0.150	0.33	0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBJ Series

## CWR11 - MIL-PRF-55365/8 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/8									Power Dissipation W	25°C Ripple A (100kHz)	Typical Ripple A (100kHz)
				Cap @ 120Hz μF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
CWR11 P/N	AVX COTS-Plus P/N	AVX SRC9000 P/N	Case				+25°C (μA)	+85°C (μA)	+125°C (μA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)			
CWR11K^106^@+□	TBJ D 106 * 025 C □ # @ 0 ^ ++	TBJ D 106 * 025 C □ L @ 9 ^ ++	D	10	25	1.2	2.5	25	30	6	8	9	0.150	0.35	0
CWR11K^156^@+□	TBJ D 156 * 025 C □ # @ 0 ^ ++	TBJ D 156 * 025 C □ L @ 9 ^ ++	D	15	25	1	3.8	38	45.6	6	9	9	0.150	0.39	0
CWR11M^104^@+□	TBJ A 104 * 035 C □ # @ 0 ^ ++	TBJ A 104 * 035 C □ L @ 9 ^ ++	A	0.1	35	24	0.5	5	6	4	6	6	0.075	0.06	0
CWR11M^154^@+□	TBJ A 154 * 035 C □ # @ 0 ^ ++	TBJ A 154 * 035 C □ L @ 9 ^ ++	A	0.15	35	21	0.5	5	6	4	6	6	0.075	0.06	0
CWR11M^224^@+□	TBJ A 224 * 035 C □ # @ 0 ^ ++	TBJ A 224 * 035 C □ L @ 9 ^ ++	A	0.22	35	18	0.5	5	6	4	6	6	0.075	0.06	0
CWR11M^334^@+□	TBJ A 334 * 035 C □ # @ 0 ^ ++	TBJ A 334 * 035 C □ L @ 9 ^ ++	A	0.33	35	15	0.5	5	6	4	6	6	0.075	0.07	0
CWR11M^474^@+□	TBJ B 474 * 035 C □ # @ 0 ^ ++	TBJ B 474 * 035 C □ L @ 9 ^ ++	B	0.47	35	10	0.5	5	6	4	6	6	0.085	0.09	0
CWR11M^684^@+□	TBJ B 684 * 035 C □ # @ 0 ^ ++	TBJ B 684 * 035 C □ L @ 9 ^ ++	B	0.68	35	8	0.5	5	6	4	6	6	0.085	0.10	0
CWR11M^105^@+□	TBJ B 105 * 035 C □ # @ 0 ^ ++	TBJ B 105 * 035 C □ L @ 9 ^ ++	B	1	35	6.5	0.5	5	6	4	6	6	0.085	0.11	0
CWR11M^155^@+□	TBJ C 155 * 035 C □ # @ 0 ^ ++	TBJ C 155 * 035 C □ L @ 9 ^ ++	C	1.5	35	4.5	0.5	5	6	6	8	9	0.110	0.16	0
CWR11M^225^@+□	TBJ C 225 * 035 C □ # @ 0 ^ ++	TBJ C 225 * 035 C □ L @ 9 ^ ++	C	2.2	35	3.5	0.8	8	9.6	6	8	9	0.110	0.18	0
CWR11M^335^@+□	TBJ C 335 * 035 C □ # @ 0 ^ ++	TBJ C 335 * 035 C □ L @ 9 ^ ++	C	3.3	35	2.5	1.2	12	14.4	6	8	9	0.110	0.21	0
CWR11M^475^@+□	TBJ D 475 * 035 C □ # @ 0 ^ ++	TBJ D 475 * 035 C □ L @ 9 ^ ++	D	4.7	35	1.5	1.7	17	20.4	6	8	9	0.150	0.32	0
CWR11M^685^@+□	TBJ D 685 * 035 C □ # @ 0 ^ ++	TBJ D 685 * 035 C □ L @ 9 ^ ++	D	6.8	35	1.3	2.4	24	28.8	6	9	9	0.150	0.34	0
CWR11N^104^@+□	TBJ A 104 * 050 C □ # @ 0 ^ ++	TBJ A 104 * 050 C □ L @ 9 ^ ++	A	0.1	50	22	0.5	5	12	6	8	8	0.075	0.06	0
CWR11N^154^@+□	TBJ B 154 * 050 C □ # @ 0 ^ ++	TBJ B 154 * 050 C □ L @ 9 ^ ++	B	0.15	50	17	0.5	5	6	4	6	6	0.085	0.07	0
CWR11N^224^@+□	TBJ B 224 * 050 C □ # @ 0 ^ ++	TBJ B 224 * 050 C □ L @ 9 ^ ++	B	0.22	50	14	0.5	5	6	4	6	6	0.085	0.08	0
CWR11N^334^@+□	TBJ B 334 * 050 C □ # @ 0 ^ ++	TBJ B 334 * 050 C □ L @ 9 ^ ++	B	0.33	50	12	0.5	5	6	4	6	6	0.085	0.08	0
CWR11N^474^@+□	TBJ C 474 * 050 C □ # @ 0 ^ ++	TBJ C 474 * 050 C □ L @ 9 ^ ++	C	0.47	50	8	0.5	5	6	4	6	6	0.110	0.12	0
CWR11N^684^@+□	TBJ C 684 * 050 C □ # @ 0 ^ ++	TBJ C 684 * 050 C □ L @ 9 ^ ++	C	0.68	50	7	0.5	5	6	4	6	6	0.110	0.13	0
CWR11N^105^@+□	TBJ C 105 * 050 C □ # @ 0 ^ ++	TBJ C 105 * 050 C □ L @ 9 ^ ++	C	1	50	6	0.5	5	6	4	6	6	0.110	0.14	0
CWR11N^155^@+□	TBJ D 155 * 050 C □ # @ 0 ^ ++	TBJ D 155 * 050 C □ L @ 9 ^ ++	D	1.5	50	4	0.8	8	9.6	6	8	9	0.150	0.19	0
CWR11N^225^@+□	TBJ D 225 * 050 C □ # @ 0 ^ ++	TBJ D 225 * 050 C □ L @ 9 ^ ++	D	2.2	50	2.5	1.1	11	13.2	6	8	9	0.150	0.24	0
CWR11N^335^@+□	TBJ D 335 * 050 C □ # @ 0 ^ ++	TBJ D 335 * 050 C □ L @ 9 ^ ++	D	3.3	50	2	1.7	17	20.4	6	9	9	0.150	0.27	0
CWR11N^475^@+□	TBJ D 475 * 050 C □ # @ 0 ^ ++	TBJ D 475 * 050 C □ L @ 9 ^ ++	D	4.7	50	1.5	2.4	24	28.8	6	9	9	0.150	0.32	0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBJ Series



## COTS-Plus



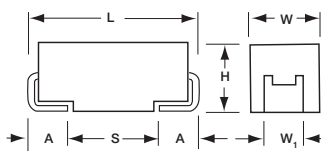
The TBJ COTS-Plus series, based on the CWR11 form factor, is a high reliability series encompassing the current range of EIA Low ESR ratings. These ratings are available with Weibull grading (B and C), surge current testing (A, B, C) per MIL-PRF-55365 Rev. G, and optional Group A from MIL-PRF-55365.

For Space Level applications, AVX SRC9000 qualification is recommended. Please refer to the TBJ COTS-Plus SRC9000 Datasheet for part number availability.

There are five termination finishes available: solder plated, fused solder plated, hot solder dipped, 100% Tin and gold plated (these correspond to "H", "K", "C", "7" and "B" termination, respectively). The molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

### CASE DIMENSIONS: millimeters (inches)

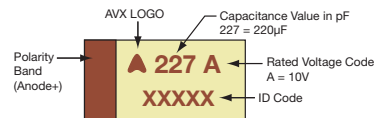


Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	1206	3216-18	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	1210	3528-21	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	2312	6032-28	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	2917	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	2917	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
V	2924	7361-38	7.30 (0.287)	6.10 (0.240)	3.55 (0.140)	3.10 (0.120)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

### MARKING

#### A, B, C, D, E, V CASE



### HOW TO ORDER

#### AVX PART NUMBER:

TBJ	D	227	*	035	C	B	S	Z	0	0	00
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b>	<b>Capacitance Tolerance</b>	<b>Voltage Code</b>	<b>ESR</b>	<b>Packaging</b>	<b>Inspection Level</b>	<b>Reliability Grade</b>	<b>Qualification Level</b>	<b>Termination Finish</b>	<b>Surge Test Option</b>
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	K = ±10% M = ±20%	002 = 2Vdc 004 = 4Vdc 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	C = Std ESR L = Low ESR	B = Bulk R = 7° T&R S = 13° T&R W = Waffle	S = Std. Conformance L = Group A	Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. Z = Non-ER	0 = N/A	H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull



For RoHS compliant products, please select correct termination style.

### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C										
Capacitance Range:	0.10 µF to 1500 µF										
Capacitance Tolerance:	±10%; ±20%										
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	2	4	6	10	16	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ 125°C:	1.4	2.7	4	7	10	13	17	23	33	
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	2.6	5.2	8	13	20	26	32	46	65	
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	1.7	3.4	5	8	13	16	20	28	40	
Temperature Range:	-55°C to +125°C										



### CAPACITANCE AND RATED VOLTAGE, $V_R$ (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC ( $V_R$ ) to 85°C									
$\mu\text{F}$	Code	2V	4V	6V	10V	15V	16V	20V	25V	35V	50V
0.10	104									A(24000)	A(22000)
0.15	154									A(21000)	A(9000, 21000) B(17000)
0.22	224									A(6000, 18000)	A(7000, 18000) B(14000)
0.33	334									A(6000, 15000)	B(12000)
0.47	474							A(14000)	A(7000, 14000)	A(6000, 12000) B(4000, 10000)	C(8000)
0.68	684					A(12000)	A(12000)	A(12000)	A(6000, 10000) B(7500)	A(6000, 8000) B(8000)	A(7900) C(7000)
1.0	105				A(10000)	A(10000)	A(10000)	A(3000, 10000)	A(8000) B(6500)	A(3000, 7500) B(2000, 6500)	C(2500, 6000)
1.5	155			A(8000)	A(8000)	A(8000)		A(6500) B(6000)	A(3000, 7500) B(1800, 6500)	A(7500) B(2500, 5200) C(4500)	C(1500, 5000) D(4000)
2.2	225		A(8000)	A(8000)	A(1800, 8000)	B(5500)	A(1800, 5500) B(5000)	A(3000, 5300) B(5000)	A(7000) B(900, 4500) C(3500)	A(1500, 4500) B(2000, 4200) C(1000, 3500)	D(1200, 2500)
3.3	335			A(8000)	A(5500) B(5500)	B(5000)	A(3500, 5000) B(4500)	A(2500) B(1300, 4000)	A(2800) B(750, 3500) C(3500)	B(1000, 3500) C(700, 2500)	D(800, 2000)
4.7	475		A(8000)	A(6000) B(5500)	A(1400, 5000) B(4500)	B(4000)	A(2000, 4000) B(800, 3100)	A(1800, 4000) B(750, 3000) C(3000)	A(2800) B(1500, 2300) C(2500)	B(700, 3100) C(600, 2200) D(500, 1500)	D(300, 1500)
6.8	685		A(6500) B(5500)	A(1800, 5000) B(4500)	A(1800, 4000) B(3500)		A(1500, 2500) B(60, 2500) C(2500)	A(1000) B(600, 2500) C(700, 2400)	B(700, 2800) C(500, 2000) D(1400)	C(350, 1800) D(500, 1300)	D(500, 1000)
10	106		A(6000) B(4000)	A(1500, 4000) B(3500)	A(1800, 3000) B(2500) C(2500)	C(2500)	A(1000, 3000) B(500, 2800) C(500, 2500)	B(1000, 2100) C(500, 1900)	C(500, 1800) D(1200)	C(600, 1600) D(300, 1000) E(200, 250)	E(400, 500) V(650)
15	156		A(4000) B(3500)	A(1500, 3500) B(3500) C(3000)	A(1000, 3200) B(450, 2800) C(2500)		B(800, 2500) C(1800)	B(500, 2000) C(400, 1700) D(1100)	C(220, 300) D(300, 1000)	C(350, 1400) D(300, 900)	D(600) E(250, 600)
22	226		A(3500)	A(500, 3000) B(375, 2500) C(2200)	B(700, 2400) C(300, 1000)	D(1100)	B(600, 2300) C(375, 1600) D(1100)	B(400, 600) C(150, 1600) D(200, 900)	C(275, 1400) D(200, 900)	D(400, 900) E(300, 900)	V(390, 600)
33	336		A(3000) B(2800) C(2200)	A(600) B(600, 2200) C(1800)	A(700, 1700) B(250, 1800) C(150, 1600) D(1100)	D(900)	B(350) C(300, 1500) D(200, 900)	C(300, 1500) D(100, 900)	D(100, 900) E(300, 900)	D(300, 900) E(100, 250) V(200)	
47	476		A(500) B(2400)	A(800) B(250, 350) C(300, 1600) D(1100)	B(250, 350) C(200, 1200) D(100, 900)		C(350, 1500) D(150, 900)	D(100, 200) E(70, 250)	D(250, 900) E(80, 100)	E(200, 250) V(200, 400)	
68	686		C(1600) D(1100)	B(250, 1800) C(150, 1600) D(900)	B(600) C(80, 1200) D(100, 900)		C(125, 200) D(70, 900)	D(70, 900) E(150, 900)	E(125, 200) V(95)	V(150, 200)	
100	107		A(1400) B(200, 1600) C(1300)	B(250, 400) C(150, 900) D(900)	B(400) C(200, 1200) D(100, 900) E(125)		D(125, 900) E(100, 900)	D(85, 100) E(100, 150) V(85, 200)	V(100)		
150	157	B(150)	B(250) C(70, 80)	C(50, 90) D(50, 900)	D(150, 900) E(100)		D(150, 900) E(100, 300) V(45, 75)	E(300) V(80)			
220	227	B(150, 200) D(45)	D(40, 900)	C(70, 1200) D(100, 900) E(100)	D(150, 900) E(100, 900)		E(100, 150) V(75, 150)				
330	337		C(100) D(35, 45) E(900)	D(45, 50) E(100, 900) V(100)	D(150, 900) E(60, 900) V(60, 100)						
470	477	D(35)	D(45, 100) E(35)	D(45, 60) E(50, 900) V(55, 100)	E(50, 900) V(60, 100)						
680	687	D(35, 50) E(35, 50)	D(45, 60) E(40, 60)	E(45, 60) V(35, 40)							
1000	108	E(30, 40)	E(60) V(25, 35)	V(40, 50)							
1500	158	D(100) E(50) V(30, 40)	E(50, 75) V(50, 75)								

Available Ratings: ESR limits quoted in brackets (mOhms)

Notes: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards.

# TBJ Series

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per MIL-PRF-55365/4									Typical Power Dissipation			
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple Current A (100kHz)	85°C Ripple Current A (100kHz)	125°C Ripple Current A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85°C (%)	+125°C (%)				
TBJB157*002L□#@0^++	B	150	2	0.15	3	30	60	10	12	14	0.085	0.753	0.677	0.3
TBJB227*002C□#@0^++	B	220	2	0.2	4.4	44	88	16	19	21	0.085	0.652	0.587	0.2
TBJB227*002L□#@0^++	B	220	2	0.15	4.4	44	88	16	19	21	0.085	0.753	0.677	0.3
TBJD227*002L□#@0^++	D	220	2	0.045	4.4	44	88	8	10	12	0.150	1.826	1.643	0.7
TBJD477*002L□#@0^++	D	470	2	0.035	9.4	94	188	8	10	12	0.150	2.070	1.863	0.8
TBJD687*002C□#@0^++	D	680	2	0.05	13.6	136	272	16	19	21	0.150	1.732	1.559	0.6
TBJD687*002L□#@0^++	D	680	2	0.035	13.6	136	272	16	19	21	0.150	2.070	1.863	0.8
TBJE687*002C□#@0^++	E	680	2	0.05	13.6	136	272	10	12	14	0.165	1.817	1.635	0.7
TBJE687*002L□#@0^++	E	680	2	0.035	13.6	136	272	10	12	14	0.165	2.171	1.954	0.8
TBJE108*002C□#@0^++	E	1000	2	0.04	20	200	400	14	17	20	0.165	2.031	1.828	0.8
TBJE108*002L□#@0^++	E	1000	2	0.03	20	200	400	14	17	20	0.165	2.345	2.111	0.9
TBJD158*002L□#@0^++	D	1500	2	0.1	30	300	600	60	90	90	0.150	1.225	1.102	0.4
TBJE158*002L□#@0^++	E	1500	2	0.05	30	300	600	20	24	28	0.165	1.817	1.635	0.7
TBJV158*002C□#@0^++	V	1500	2	0.04	30	300	600	20	24	28	0.250	2.600	2.250	1.0
TBJV158*002L□#@0^++	V	1500	2	0.03	30	300	600	20	24	28	0.250	2.887	2.598	1.1
TBJA225*004C□#@0^++	A	2.2	4	8	0.088	0.88	1.76	6	9	9	0.075	0.097	0.087	0.0
TBJA475*004C□#@0^++	A	4.7	4	8	0.188	1.88	3.76	6	9	9	0.075	0.097	0.087	0.0
TBJA685*004C□#@0^++	A	6.8	4	6.5	0.272	2.72	5.44	6	9	10	0.075	0.107	0.097	0.0
TBJB685*004C□#@0^++	B	6.8	4	5.5	0.272	2.72	5.44	6	9	9	0.085	0.124	0.112	0.0
TBJA106*004C□#@0^++	A	10	4	6	0.4	4	8	6	9	10	0.075	0.112	0.101	0.0
TBJB106*004C□#@0^++	B	10	4	4	0.4	4	8	6	9	9	0.085	0.146	0.131	0.0
TBJA156*004C□#@0^++	A	15	4	4	0.6	6	12	6	9	10	0.075	0.137	0.123	0.0
TBJB156*004C□#@0^++	B	15	4	3.5	0.6	6	12	6	9	9	0.085	0.156	0.140	0.0
TBJA226*004C□#@0^++	A	22	4	3.5	0.88	8.8	17.6	6	9	10	0.075	0.146	0.132	0.0
TBJA336*004C□#@0^++	A	33	4	3	1.32	13.2	26.4	6	9	9	0.075	0.158	0.142	0.0
TBJB336*004C□#@0^++	B	33	4	2.8	1.32	13.2	26.4	6	9	10	0.085	0.174	0.157	0.0
TBJC336*004C□#@0^++	C	33	4	2.2	1.32	13.2	26.4	6	9	9	0.110	0.224	0.201	0.0
TBJA476*004L□#@0^++	A	47	4	0.5	1.88	18.8	37.6	6	10	12	0.075	0.387	0.349	0.1
TBJB476*004C□#@0^++	B	47	4	2.4	1.88	18.8	37.6	6	10	10	0.085	0.188	0.169	0.0
TBJC686*004C□#@0^++	C	68	4	1.6	2.72	27.2	54.4	6	9	10	0.110	0.262	0.236	0.1
TBJD686*004C□#@0^++	D	68	4	1.1	2.72	27.2	54.4	6	9	9	0.150	0.369	0.332	0.1
TBJA107*004C□#@0^++	A	100	4	1.4	4	40	80	30	36	42	0.075	0.231	0.208	0.0
TBJB107*004C□#@0^++	B	100	4	1.6	4	40	80	8	10	12	0.085	0.230	0.207	0.0
TBJB107*004L□#@0^++	B	100	4	0.2	4	40	80	8	10	12	0.085	0.652	0.587	0.2
TBJC107*004C□#@0^++	C	100	4	1.3	4	40	80	6	9	10	0.110	0.291	0.262	0.1
TBJB157*004L□#@0^++	B	150	4	0.25	6	60	120	10	12	12	0.085	0.583	0.525	0.2
TBJC157*004C□#@0^++	C	150	4	0.08	6	60	120	6	9	10	0.110	1.173	1.055	0.4
TBJC157*004L□#@0^++	C	150	4	0.07	6	60	120	6	9	10	0.110	1.254	1.128	0.5
TBJD227*004C□#@0^++	D	220	4	0.9	8.8	88	176	8	10	12	0.150	0.408	0.367	0.1
TBJD227*004L□#@0^++	D	220	4	0.04	8.8	88	176	8	10	12	0.150	1.936	1.743	0.7
TBJC337*004L□#@0^++	C	330	4	0.1	13.2	132	264	8	10	12	0.110	1.049	0.944	0.4
TBJD337*004C□#@0^++	D	330	4	0.045	13.2	132	264	8	10	12	0.150	1.826	1.643	0.7
TBJD337*004L□#@0^++	D	330	4	0.035	13.2	132	264	8	10	12	0.150	2.070	1.863	0.8
TBJE337*004C□#@0^++	E	330	4	0.9	13.2	132	264	8	10	12	0.165	0.428	0.385	0.1
TBJD477*004C□#@0^++	D	470	4	0.1	18.8	188	376	12	14	16	0.150	1.225	1.102	0.4
TBJD477*004L□#@0^++	D	470	4	0.045	18.8	188	376	12	14	16	0.150	1.826	1.643	0.7
TBJE477*004L□#@0^++	E	470	4	0.035	18.8	188	376	12	14	16	0.165	2.171	1.954	0.8
TBJD687*004C□#@0^++	D	680	4	0.06	27.2	272	544	14	17	20	0.150	1.581	1.423	0.6
TBJD687*004L□#@0^++	D	680	4	0.045	27.2	272	544	14	17	20	0.150	1.826	1.643	0.7
TBJE687*004C□#@0^++	E	680	4	0.06	27.2	272	544	10	12	14	0.165	1.658	1.492	0.6
TBJE687*004L□#@0^++	E	680	4	0.04	27.2	272	544	10	12	14	0.165	2.031	1.828	0.8
TBJE108*004L□#@0^++	E	1000	4	0.06	40	400	800	14	17	20	0.165	1.658	1.492	0.6
TBJV108*004C□#@0^++	V	1000	4	0.035	40	400	800	16	19	21	0.250	2.673	2.405	1.0
TBJV108*004L□#@0^++	V	1000	4	0.025	40	400	800	16	18	20	0.250	3.162	2.846	1.2
TBJE158*004C□#@0^++	E	1500	4	0.075	60	600	1200	30	36	42	0.165	1.483	1.335	0.5
TBJE158*004L□#@0^++	E	1500	4	0.05	60	600	1200	30	36	42	0.165	1.817	1.635	0.7

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.  
**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBJ Series

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per MIL-PRF-55365/4									Typical Power Dissipation			
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR Ohms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple Current A (100kHz)	85°C Ripple Current A (100kHz)	125°C Ripple Current A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)				
TBJV158*004C□#@0^++	V	1500	4	0.075	60	600	1200	30	36	42	0.250	1.826	1.643	0.7
TBJV158*004L□#@0^++	V	1500	4	0.05	60	600	1200	30	36	42	0.250	2.236	2.012	0.8
TBJA155*006C□#@0^++	A	1.5	6	8	0.09	0.9	1.08	6	9	9	0.075	0.097	0.087	0.0
TBJA225*006C□#@0^++	A	2.2	6	8	0.132	1.32	1.584	6	9	9	0.075	0.097	0.087	0.0
TBJA335*006C□#@0^++	A	3.3	6	8	0.198	1.98	2.376	6	9	9	0.075	0.097	0.087	0.0
TBJA475*006C□#@0^++	A	4.7	6	6	0.282	2.82	5.64	6	9	10	0.075	0.112	0.101	0.0
TBJB475*006C□#@0^++	B	4.7	6	5.5	0.282	2.82	3.384	6	9	9	0.085	0.124	0.112	0.0
TBJA685*006C□#@0^++	A	6.8	6	5	0.408	4.08	8.16	6	9	10	0.075	0.122	0.110	0.0
TBJA685*006L□#@0^++	A	6.8	6	1.8	0.408	4.08	8.16	6	9	10	0.075	0.204	0.184	0.0
TBJB685*006C□#@0^++	B	6.8	6	4.5	0.408	4.08	4.896	6	9	9	0.085	0.137	0.124	0.0
TBJA106*006C□#@0^++	A	10	6	4	0.6	6	12	6	9	10	0.075	0.137	0.123	0.0
TBJA106*006L□#@0^++	A	10	6	1.5	0.6	6	12	6	9	10	0.075	0.224	0.201	0.0
TBJB106*006C□#@0^++	B	10	6	3.5	0.6	6	7.2	6	9	9	0.085	0.156	0.140	0.0
TBJA156*006C□#@0^++	A	15	6	3.5	0.9	9	18	6	9	10	0.075	0.146	0.132	0.0
TBJA156*006L□#@0^++	A	15	6	1.5	0.9	9	18	6	9	10	0.075	0.224	0.201	0.0
TBJB156*006C□#@0^++	B	15	6	3.5	0.225	2.25	4.5	6	9	10	0.085	0.156	0.140	0.0
TBJC156*006C□#@0^++	C	15	6	3	0.9	9	10.8	6	6	9	0.110	0.191	0.172	0.0
TBJA226*006C□#@0^++	A	22	6	3	1.32	13.2	26.4	6	6	10	0.075	0.158	0.142	0.0
TBJA226*006L□#@0^++	A	22	6	0.5	1.32	13.2	26.4	6	9	10	0.075	0.387	0.349	0.1
TBJB226*006C□#@0^++	B	22	6	2.5	1.32	13.2	26.4	6	9	10	0.085	0.184	0.166	0.0
TBJB226*006L□#@0^++	B	22	6	0.375	1.32	13.2	26.4	6	9	10	0.085	0.476	0.428	0.1
TBJC226*006C□#@0^++	C	22	6	2.2	1.32	13.2	15.84	6	9	9	0.110	0.224	0.201	0.0
TBJA336*006L□#@0^++	A	33	6	0.6	1.98	19.8	39.6	8	10	12	0.075	0.354	0.318	0.1
TBJB336*006C□#@0^++	B	33	6	2.2	1.98	19.8	39.6	6	9	10	0.085	0.197	0.177	0.0
TBJB336*006L□#@0^++	B	33	6	0.6	1.98	19.8	39.6	6	9	10	0.085	0.376	0.339	0.1
TBJC336*006C□#@0^++	C	33	6	1.8	1.98	19.8	39.6	6	9	10	0.110	0.247	0.222	0.0
TBJA476*006L□#@0^++	A	47	6	0.8	2.82	28.2	56.4	10	12	14	0.075	0.306	0.276	0.1
TBJB476*006C□#@0^++	B	47	6	0.35	2.82	28.2	56.4	6	9	10	0.085	0.493	0.444	0.1
TBJB476*006L□#@0^++	B	47	6	0.25	2.82	28.2	56.4	6	9	10	0.085	0.583	0.525	0.2
TBJC476*006C□#@0^++	C	47	6	1.6	2.82	28.2	56.4	6	9	10	0.110	0.262	0.236	0.1
TBJC476*006L□#@0^++	C	47	6	0.3	2.82	28.2	56.4	6	9	10	0.110	0.606	0.545	0.2
TBJD476*006C□#@0^++	D	47	6	1.1	2.82	28.2	33.84	6	6	9	0.150	0.369	0.332	0.1
TBJB686*006C□#@0^++	B	68	6	1.8	4.08	40.8	81.6	8	10	12	0.085	0.217	0.196	0.0
TBJB686*006L□#@0^++	B	68	6	0.25	4.08	40.8	81.6	8	9	10	0.085	0.583	0.525	0.2
TBJC686*006C□#@0^++	C	68	6	1.6	4.08	40.8	81.6	6	9	10	0.110	0.262	0.236	0.1
TBJC686*006L□#@0^++	C	68	6	0.15	4.08	40.8	81.6	6	9	10	0.110	0.856	0.771	0.3
TBJD686*006C□#@0^++	D	68	6	0.9	4.08	40.8	48.96	6	9	9	0.150	0.408	0.367	0.1
TBJB107*006C□#@0^++	B	100	6	0.4	6	60	120	10	12	14	0.085	0.461	0.415	0.1
TBJB107*006L□#@0^++	B	100	6	0.25	6	60	120	10	12	14	0.085	0.583	0.525	0.2
TBJC107*006C□#@0^++	C	100	6	0.9	6	60	120	6	9	10	0.110	0.350	0.315	0.1
TBJC107*006L□#@0^++	C	100	6	0.15	6	60	120	6	9	10	0.110	0.856	0.771	0.3
TBJD107*006C□#@0^++	D	100	6	0.9	6	60	120	6	9	10	0.150	0.408	0.367	0.1
TBJC157*006C□#@0^++	C	150	6	0.09	9	90	180	6	9	10	0.110	1.106	0.995	0.4
TBJC157*006L□#@0^++	C	150	6	0.05	9	90	180	6	9	10	0.110	1.483	1.335	0.5
TBJD157*006C□#@0^++	D	150	6	0.9	9	90	180	6	9	10	0.150	0.408	0.367	0.1
TBJD157*006L□#@0^++	D	150	6	0.05	9	90	180	6	9	10	0.150	1.732	1.559	0.6
TBJC227*006C□#@0^++	C	220	6	1.2	13.2	132	264	10	12	14	0.110	0.303	0.272	0.1
TBJC227*006L□#@0^++	C	220	6	0.07	13.2	132	264	8	10	12	0.110	1.254	1.128	0.5
TBJD227*006C□#@0^++	D	220	6	0.9	13.2	132	264	8	10	12	0.150	0.408	0.367	0.1
TBJD227*006L□#@0^++	D	220	6	0.1	13.2	132	264	8	10	12	0.150	1.225	1.102	0.4
TBJE227*006L□#@0^++	E	220	6	0.1	13.2	132	264	8	10	12	0.165	1.285	1.156	0.5
TBJD337*006C□#@0^++	D	330	6	0.05	19.8	198	396	8	10	12	0.150	1.732	1.559	0.6
TBJD337*006L□#@0^++	D	330	6	0.045	19.8	198	396	8	10	12	0.150	1.826	1.643	0.7
TBJE337*006C□#@0^++	E	330	6	0.9	19.8	198	396	8	10	12	0.165	0.428	0.385	0.1
TBJE337*006L□#@0^++	E	330	6	0.1	19.8	198	396	8	10	12	0.165	1.285	1.156	0.5
TBJV337*006L□#@0^++	V	330	6	0.1	19.8	198	396	8	10	12	0.250	1.581	1.423	0.6

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.  
**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBJ Series

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per MIL-PRF-55365/4									Typical Power Dissipation			
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple Current A (100kHz)	85°C Ripple Current A (100kHz)	125°C Ripple Current A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85°C (%)	+125°C (%)				
TBJD477*006C□#@0^++	D	470	6	0.06	28.2	282	564	12	14	16	0.150	1.581	1.423	0.7
TBJD477*006L□#@0^++	D	470	6	0.045	28.2	282	564	12	14	16	0.150	1.826	1.643	0.7
TBJE477*006C□#@0^++	E	470	6	0.9	28.2	282	564	10	12	14	0.165	0.428	0.385	0.7
TBJE477*006L□#@0^++	E	470	6	0.05	28.2	282	564	10	12	14	0.165	1.817	1.635	0.7
TBJV477*006C□#@0^++	V	470	6	0.1	28.2	282	564	10	12	12	0.250	1.581	1.423	0.6
TBJV477*006L□#@0^++	V	470	6	0.055	28.2	282	564	10	12	14	0.250	2.132	1.919	0.8
TBJE687*006C□#@0^++	E	680	6	0.06	40.8	408	816	10	12	14	0.165	1.658	1.492	0.6
TBJE687*006L□#@0^++	E	680	6	0.045	40.8	408	816	10	12	14	0.165	1.915	1.723	0.7
TBJV687*006C□#@0^++	V	680	6	0.04	40.8	408	816	10	12	14	0.250	2.500	2.250	1.0
TBJV687*006L□#@0^++	V	680	6	0.035	40.8	408	816	14	17	20	0.250	2.673	2.405	1.0
TBJV108*006C□#@0^++	V	1000	6	0.05	60	600	1200	16	19	21	0.250	2.236	2.012	0.8
TBJV108*006L□#@0^++	V	1000	6	0.04	60	600	1200	16	19	21	0.250	2.500	2.250	1.0
TBJA105*010C□#@0^++	A	1	10	10	0.1	1	1.2	4	6	6	0.075	0.087	0.078	0.0
TBJA155*010C□#@0^++	A	1.5	10	8	0.15	1.5	1.8	6	6	9	0.075	0.097	0.087	0.0
TBJA225*010C□#@0^++	A	2.2	10	8	0.22	2.2	2.64	6	9	9	0.075	0.097	0.087	0.0
TBJA225*010L□#@0^++	A	2.2	10	1.8	0.22	2.2	4.4	6	9	10	0.075	0.204	0.184	0.0
TBJA335*010C□#@0^++	A	3.3	10	5.5	0.33	3.3	6.6	6	9	10	0.075	0.117	0.105	0.0
TBJB335*010C□#@0^++	B	3.3	10	5.5	0.33	3.3	3.96	6	9	9	0.085	0.124	0.112	0.0
TBJA475*010C□#@0^++	A	4.7	10	5	0.47	4.7	9.4	6	9	10	0.075	0.122	0.110	0.0
TBJA475*010L□#@0^++	A	4.7	10	1.4	0.47	4.7	9.4	6	9	10	0.075	0.231	0.208	0.0
TBJB475*010C□#@0^++	B	4.7	10	4.5	0.47	4.7	5.64	6	9	9	0.085	0.137	0.124	0.0
TBJA685*010C□#@0^++	A	6.8	10	4	0.68	6.8	13.6	6	9	10	0.075	0.137	0.123	0.0
TBJA685*010L□#@0^++	A	6.8	10	1.8	0.68	6.8	13.6	6	9	10	0.075	0.204	0.184	0.0
TBJB685*010C□#@0^++	B	6.8	10	3.5	0.68	6.8	8.16	6	9	9	0.085	0.156	0.140	0.0
TBJA106*010C□#@0^++	A	10	10	3	1	10	20	6	9	10	0.075	0.158	0.142	0.0
TBJA106*010L□#@0^++	A	10	10	1.8	1	10	20	6	9	10	0.075	0.204	0.184	0.0
TBJB106*010C□#@0^++	B	10	10	2.5	1	10	20	6	9	10	0.085	0.184	0.166	0.0
TBJC106*010C□#@0^++	C	10	10	2.5	1	10	20	6	9	10	0.110	0.210	0.189	0.0
TBJA156*010C□#@0^++	A	15	10	3.2	1.5	15	30	6	9	10	0.075	0.153	0.138	0.0
TBJA156*010L□#@0^++	A	15	10	1	1.5	15	30	6	9	10	0.075	0.274	0.246	0.0
TBJB156*010C□#@0^++	B	15	10	2.8	1.5	15	30	6	9	10	0.085	0.174	0.157	0.0
TBJB156*010L□#@0^++	B	15	10	0.45	1.5	15	30	6	9	10	0.085	0.435	0.391	0.1
TBJC156*010C□#@0^++	C	15	10	2.5	1.5	15	18	6	6	9	0.110	0.210	0.189	0.0
TBJB226*010C□#@0^++	B	22	10	2.4	2.2	22	44	6	9	10	0.085	0.188	0.169	0.0
TBJB226*010L□#@0^++	B	22	10	0.7	2.2	22	44	6	9	10	0.085	0.348	0.314	0.1
TBJC226*010C□#@0^++	C	22	10	1	2.2	22	44	6	9	10	0.110	0.332	0.298	0.1
TBJC226*010L□#@0^++	C	22	10	0.3	2.2	22	44	6	9	10	0.110	0.606	0.545	0.2
TBJA336*010C□#@0^++	A	33	10	1.7	3.3	33	66	8	10	12	0.075	0.210	0.189	0.0
TBJA336*010L□#@0^++	A	33	10	0.7	3.3	33	66	8	10	12	0.075	0.327	0.295	0.1
TBJB336*010C□#@0^++	B	33	10	1.8	3.3	33	66	6	9	10	0.085	0.217	0.196	0.0
TBJB336*010L□#@0^++	B	33	10	0.25	3.3	33	66	6	8	10	0.085	0.583	0.525	0.2
TBJC336*010C□#@0^++	C	33	10	1.6	3.3	33	66	6	9	10	0.110	0.262	0.236	0.1
TBJC336*010L□#@0^++	C	33	10	0.15	3.3	33	66	6	9	10	0.110	0.856	0.771	0.3
TBJD336*010C□#@0^++	D	33	10	1.1	3.3	33	39.6	6	9	9	0.150	0.369	0.332	0.1
TBJB476*010C□#@0^++	B	47	10	0.35	4.7	47	94	8	10	12	0.085	0.493	0.444	0.1
TBJB476*010L□#@0^++	B	47	10	0.25	4.7	47	94	8	10	12	0.085	0.583	0.525	0.2
TBJC476*010C□#@0^++	C	47	10	1.2	4.7	47	94	6	9	10	0.110	0.303	0.272	0.1
TBJC476*010L□#@0^++	C	47	10	0.2	4.7	47	94	6	9	10	0.110	0.742	0.667	0.2
TBJD476*010C□#@0^++	D	47	10	0.9	4.7	47	56.4	6	9	9	0.150	0.408	0.367	0.1
TBJD476*010L□#@0^++	D	47	10	0.1	4.7	47	94	6	9	10	0.150	1.225	1.102	0.4
TBJB686*010C□#@0^++	B	68	10	0.6	6.8	68	136	8	10	12	0.085	0.376	0.339	0.1
TBJC686*010C□#@0^++	C	68	10	1.2	6.8	68	136	6	10	12	0.110	0.303	0.272	0.1
TBJC686*010L□#@0^++	C	68	10	0.08	6.8	68	136	6	10	12	0.110	1.173	1.055	0.4
TBJD686*010C□#@0^++	D	68	10	0.9	6.8	68	136	6	9	10	0.150	0.408	0.367	0.1
TBJD686*010L□#@0^++	D	68	10	0.1	6.8	68	136	6	9	10	0.150	1.225	1.102	0.4
TBJB107*010C□#@0^++	B	100	10	0.4	10	100	200	8	10	12	0.085	0.461	0.415	0.1

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**





# TBJ Series

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per MIL-PRF-55365/4									Typical Power Dissipation			
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR Ohms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple Current A (100kHz)	85°C Ripple Current A (100kHz)	125°C Ripple Current A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)				
AVX COTS-Plus P/N	Case													
TBJC107*010C□#@0^++	C	100	10	1.2	10	100	200	8	10	12	0.110	0.303	0.272	0.1
TBJC107*010L□#@0^++	C	100	10	0.2	10	100	200	8	10	12	0.110	0.742	0.667	0.2
TBJD107*010C□#@0^++	D	100	10	0.9	10	100	200	6	9	10	0.150	0.408	0.367	0.1
TBJD107*010L□#@0^++	D	100	10	0.1	10	100	200	6	9	10	0.150	1.225	1.102	0.4
TBJE107*010C□#@0^++	E	100	10	0.125	10	100	200	6	9	10	0.165	1.285	1.156	0.5
TBJD157*010C□#@0^++	D	150	10	0.9	15	150	300	8	10	12	0.150	0.408	0.367	0.1
TBJD157*010L□#@0^++	D	150	10	0.1	15	150	300	8	10	12	0.150	1.225	1.102	0.4
TBJE157*010C□#@0^++	E	150	10	0.1	15	150	300	8	10	12	0.165	1.285	1.156	0.5
TBJD227*010C□#@0^++	D	220	10	0.9	22	220	440	8	10	12	0.150	0.408	0.367	0.1
TBJD227*010L□#@0^++	D	220	10	0.15	22	220	440	8	10	12	0.150	1.000	0.900	0.4
TBJE227*010C□#@0^++	E	220	10	0.9	22	220	440	8	10	12	0.165	0.428	0.385	0.1
TBJE227*010L□#@0^++	E	220	10	0.1	22	220	440	8	10	12	0.165	1.285	1.156	0.5
TBJD337*010L□#@0^++	D	330	10	0.15	33	330	660	8	10	12	0.150	1.000	0.900	0.4
TBJE337*010C□#@0^++	E	330	10	0.9	33	330	660	8	10	12	0.165	0.428	0.385	0.1
TBJE337*010L□#@0^++	E	330	10	0.06	33	330	660	8	10	12	0.165	1.658	1.492	0.6
TBJV337*010C□#@0^++	V	330	10	0.1	33	330	660	8	10	12	0.250	1.581	1.423	0.6
TBJV337*010L□#@0^++	V	330	10	0.06	33	330	660	10	10	12	0.250	2.041	1.837	0.8
TBJE477*010C□#@0^++	E	470	10	0.9	47	470	940	10	12	14	0.165	0.428	0.385	0.1
TBJE477*010L□#@0^++	E	470	10	0.05	47	470	940	10	12	14	0.165	1.817	1.635	0.7
TBJV477*010C□#@0^++	V	470	10	0.1	47	470	940	10	12	14	0.250	1.581	1.423	0.6
TBJV477*010L□#@0^++	V	470	10	0.06	47	470	940	10	12	14	0.250	2.041	1.837	0.8
TBJA684*015C□#@0^++	A	0.68	15	12	0.102	1.02	1.224	4	6	6	0.075	0.079	0.071	0.0
TBJA105*015C□#@0^++	A	1	15	10	0.15	1.5	1.8	4	6	6	0.075	0.087	0.078	0.0
TBJA155*015C□#@0^++	A	1.5	15	8	0.225	2.25	2.7	6	9	9	0.075	0.097	0.087	0.0
TBJB225*015C□#@0^++	B	2.2	15	5.5	0.33	3.3	3.96	6	9	9	0.085	0.124	0.112	0.0
TBJB335*015C□#@0^++	B	3.3	15	5	0.495	4.95	5.94	6	8	9	0.085	0.130	0.117	0.0
TBJB475*015C□#@0^++	B	4.7	15	4	0.705	7.05	8.46	6	8	8	0.085	0.146	0.131	0.0
TBJC106*015C□#@0^++	C	10	15	2.5	1.5	15	18	6	8	9	0.110	0.210	0.189	0.0
TBJD226*015C□#@0^++	D	22	15	1.1	3.3	33	39.6	6	8	9	0.150	0.369	0.332	0.1
TBJD336*015C□#@0^++	D	33	15	0.9	4.95	49.5	59.4	6	8	10	0.150	0.408	0.367	0.1
TBJD157*015L□#@0^++	D	150	15	0.05	5.625	56.25	112.5	6	9	10	0.150	1.732	1.559	0.6
TBJA684*016C□#@0^++	A	0.68	16	12	0.109	1.088	2.176	4	6	6	0.075	0.079	0.071	0.0
TBJA105*016C□#@0^++	A	1	16	10	0.16	1.6	3.2	4	6	6	0.075	0.087	0.078	0.0
TBJA225*016C□#@0^++	A	2.2	16	5.5	0.352	3.52	7.04	6	9	10	0.075	0.117	0.105	0.0
TBJA225*016L□#@0^++	A	2.2	16	1.8	0.352	3.52	7.04	6	9	10	0.075	0.204	0.184	0.0
TBJB225*016C□#@0^++	B	2.2	16	5	0.352	3.52	7.04	6	8	8	0.085	0.130	0.117	0.0
TBJA335*016C□#@0^++	A	3.3	16	5	0.528	5.28	10.56	6	9	10	0.075	0.122	0.110	0.0
TBJA335*016L□#@0^++	A	3.3	16	3.5	0.528	5.28	10.56	6	9	10	0.075	0.146	0.132	0.0
TBJB335*016C□#@0^++	B	3.3	16	4.5	0.528	5.28	10.56	6	9	10	0.085	0.137	0.124	0.0
TBJA475*016C□#@0^++	A	4.7	16	4	0.752	7.52	15.04	6	9	10	0.075	0.137	0.123	0.0
TBJA475*016L□#@0^++	A	4.7	16	2	0.752	7.52	15.04	6	9	10	0.075	0.194	0.174	0.0
TBJB475*016C□#@0^++	B	4.7	16	3.1	0.752	7.52	15.04	6	8	8	0.085	0.166	0.149	0.0
TBJB475*016L□#@0^++	B	4.7	16	0.8	0.752	7.52	15.04	6	9	10	0.085	0.326	0.293	0.1
TBJA685*016C□#@0^++	A	6.8	16	2.5	1.088	10.88	21.76	6	9	10	0.075	0.173	0.156	0.0
TBJA685*016L□#@0^++	A	6.8	16	1.5	1.088	10.88	21.76	6	9	10	0.075	0.224	0.201	0.0
TBJB685*016C□#@0^++	B	6.8	16	2.5	1.088	10.88	21.76	6	9	10	0.085	0.184	0.166	0.0
TBJB685*016L□#@0^++	B	6.8	16	0.6	1.088	10.88	21.76	6	9	10	0.085	0.376	0.339	0.1
TBJC685*016C□#@0^++	C	6.8	16	2.5	1.088	10.88	21.76	6	9	10	0.110	0.210	0.189	0.0
TBJA106*016C□#@0^++	A	10	16	3	1.6	16	32	8	10	12	0.075	0.158	0.142	0.0
TBJA106*016L□#@0^++	A	10	16	1	1.6	16	32	8	10	12	0.075	0.274	0.246	0.1
TBJB106*016C□#@0^++	B	10	16	2.8	1.6	16	32	6	9	10	0.085	0.174	0.157	0.0
TBJB106*016L□#@0^++	B	10	16	0.5	1.6	16	32	6	9	10	0.085	0.412	0.371	0.1
TBJC106*016C□#@0^++	C	10	16	2.5	1.6	16	32	6	8	10	0.110	0.210	0.189	0.0
TBJC106*016L□#@0^++	C	10	16	0.5	1.6	16	32	6	9	10	0.110	0.469	0.422	0.1
TBJB156*016C□#@0^++	B	15	16	2.5	2.4	24	48	6	9	10	0.085	0.184	0.166	0.0
TBJB156*016L□#@0^++	B	15	16	0.8	2.4	24	48	6	9	10	0.085	0.326	0.293	0.1

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.  
**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBJ Series

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per MIL-PRF-55365/4									Typical Power Dissipation			
AVX COTS-Plus P/N	Case	Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR Ohms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple Current A (100kHz)	85°C Ripple Current A (100kHz)	125°C Ripple Current A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)				
TBJC156*016C□#@0^++	C	15	16	1.8	2.4	24	48	6	9	10	0.110	0.247	0.222	0.0
TBJB226*016C□#@0^++	B	22	16	2.3	3.52	35.2	70.4	6	9	10	0.085	0.192	0.173	0.0
TBJB226*016L□#@0^++	B	22	16	0.6	3.52	35.2	70.4	6	9	10	0.085	0.376	0.339	0.1
TBJC226*016C□#@0^++	C	22	16	1.6	3.52	35.2	70.4	6	9	10	0.110	0.262	0.236	0.1
TBJC226*016L□#@0^++	C	22	16	0.375	3.52	35.2	70.4	6	9	10	0.110	0.542	0.487	0.2
TBJD226*016C□#@0^++	D	22	16	1.1	3.52	35.2	70.4	6	8	9	0.150	0.369	0.332	0.1
TBJB336*016L□#@0^++	B	33	16	0.35	5.28	52.8	105.6	8	10	12	0.085	0.493	0.444	0.1
TBJC336*016C□#@0^++	C	33	16	1.5	5.28	52.8	105.6	6	9	10	0.110	0.271	0.244	0.1
TBJC336*016L□#@0^++	C	33	16	0.3	5.28	52.8	105.6	6	9	10	0.110	0.606	0.545	0.2
TBJD336*016C□#@0^++	D	33	16	0.9	5.28	52.8	105.6	6	9	10	0.150	0.408	0.367	0.1
TBJD336*016L□#@0^++	D	33	16	0.2	5.28	52.8	105.6	6	9	10	0.150	0.866	0.779	0.3
TBJC476*016C□#@0^++	C	47	16	1.5	7.52	75.2	150.4	6	9	10	0.110	0.271	0.244	0.1
TBJC476*016L□#@0^++	C	47	16	0.35	7.52	75.2	150.4	6	9	10	0.110	0.561	0.505	0.2
TBJD476*016C□#@0^++	D	47	16	0.9	7.52	75.2	150.4	6	9	10	0.150	0.408	0.367	0.1
TBJD476*016L□#@0^++	D	47	16	0.15	7.52	75.2	150.4	6	9	10	0.150	1.000	0.900	0.4
TBJC686*016C□#@0^++	C	68	16	0.2	10.88	108.8	217.6	6	9	10	0.110	0.742	0.667	0.2
TBJC686*016L□#@0^++	C	68	16	0.125	10.88	108.8	217.6	6	9	10	0.110	0.938	0.844	0.3
TBJD686*016C□#@0^++	D	68	16	0.9	10.88	108.8	217.6	6	9	10	0.150	0.408	0.367	0.1
TBJD686*016L□#@0^++	D	68	16	0.07	10.88	108.8	217.6	6	9	10	0.150	1.464	1.317	0.5
TBJD107*016C□#@0^++	D	100	16	0.9	16	160	320	6	9	10	0.150	0.408	0.367	0.1
TBJD107*016L□#@0^++	D	100	16	0.125	16	160	320	6	9	10	0.150	1.095	0.986	0.4
TBJE107*016C□#@0^++	E	100	16	0.9	16	160	320	6	9	10	0.165	0.428	0.385	0.1
TBJE107*016L□#@0^++	E	100	16	0.1	16	160	320	6	9	10	0.165	1.285	1.156	0.5
TBJD157*016C□#@0^++	D	150	16	0.9	24	240	480	6	9	10	0.150	0.408	0.367	0.1
TBJD157*016L□#@0^++	D	150	16	0.15	24	240	480	6	9	10	0.150	1.000	0.900	0.4
TBJE157*016C□#@0^++	E	150	16	0.3	24	240	480	6	9	10	0.165	0.742	0.667	0.2
TBJE157*016L□#@0^++	E	150	16	0.1	24	240	480	6	9	10	0.165	1.285	1.156	0.5
TBJV157*016C□#@0^++	V	150	16	0.075	24	240	480	8	10	12	0.250	1.826	1.643	0.7
TBJV157*016L□#@0^++	V	150	16	0.045	24	240	480	6	8	8	0.250	2.357	2.121	0.9
TBJE227*016C□#@0^++	E	220	16	0.15	35.2	352	704	10	12	14	0.165	1.049	0.944	0.4
TBJE227*016L□#@0^++	E	220	16	0.1	35.2	352	704	10	12	14	0.165	1.285	1.156	0.5
TBJV227*016C□#@0^++	V	220	16	0.15	35.2	352	704	8	10	12	0.250	1.291	1.162	0.5
TBJV227*016L□#@0^++	V	220	16	0.075	35.2	352	704	8	10	12	0.250	1.826	1.643	0.7
TBJA474*020C□#@0^++	A	0.47	20	14	0.5	5	10	4	6	6	0.075	0.073	0.066	0.0
TBJA684*020C□#@0^++	A	0.68	20	12	0.136	1.36	1.632	4	6	6	0.075	0.079	0.071	0.0
TBJA105*020C□#@0^++	A	1	20	10	0.2	2	2.4	4	6	6	0.075	0.087	0.078	0.0
TBJA105*020L□#@0^++	A	1	20	3	0.2	2	4	4	6	6	0.075	0.158	0.142	0.0
TBJA155*020C□#@0^++	A	1.5	20	6.5	0.3	3	6	4	8	10	0.075	0.107	0.097	0.0
TBJB155*020C□#@0^++	B	1.5	20	6	0.3	3	3.6	6	9	9	0.085	0.119	0.107	0.0
TBJA225*020C□#@0^++	A	2.2	20	5.3	0.44	4.4	8.8	6	8	8	0.075	0.158	0.142	0.0
TBJA225*020L□#@0^++	A	2.2	20	3	0.44	4.4	8.8	6	9	10	0.075	0.158	0.142	0.0
TBJB225*020C□#@0^++	B	2.2	20	5	0.44	4.4	5.28	6	8	9	0.085	0.130	0.117	0.0
TBJA335*020L□#@0^++	A	3.3	20	2.5	0.66	6.6	13.2	6	9	10	0.075	0.173	0.156	0.0
TBJB335*020C□#@0^++	B	3.3	20	4	0.66	6.6	7.92	6	9	9	0.085	0.146	0.131	0.0
TBJB335*020L□#@0^++	B	3.3	20	1.3	0.66	6.6	13.2	6	9	10	0.085	0.256	0.230	0.1
TBJA475*020C□#@0^++	A	4.7	20	4	0.94	9.4	18.8	6	8	10	0.075	0.137	0.123	0.0
TBJA475*020L□#@0^++	A	4.7	20	1.8	0.94	9.4	18.8	6	8	10	0.075	0.204	0.184	0.0
TBJB475*020C□#@0^++	B	4.7	20	3	0.94	9.4	18.8	6	8	10	0.085	0.168	0.151	0.0
TBJB475*020L□#@0^++	B	4.7	20	0.75	0.94	9.4	18.8	6	9	10	0.085	0.337	0.303	0.1
TBJC475*020C□#@0^++	C	4.7	20	3	0.94	9.4	11.28	6	8	9	0.110	0.191	0.172	0.0
TBJA685*020L□#@0^++	A	6.8	20	1	1.36	13.6	27.2	6	9	10	0.075	0.274	0.246	0.1
TBJB685*020C□#@0^++	B	6.8	20	2.5	1.36	13.6	27.2	6	8	10	0.085	0.184	0.166	0.0
TBJB685*020L□#@0^++	B	6.8	20	0.6	1.36	13.6	27.2	6	9	10	0.085	0.376	0.339	0.1
TBJC685*020C□#@0^++	C	6.8	20	2.4	1.36	13.6	16.32	6	9	9	0.110	0.214	0.193	0.0
TBJC685*020L□#@0^++	C	6.8	20	0.7	1.36	13.6	27.2	6	9	10	0.110	0.396	0.357	0.1
TBJB106*020C□#@0^++	B	10	20	2.1	2	20	40	6	8	10	0.085	0.201	0.181	0.0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TBJ Series

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per MIL-PRF-55365/4									Typical Power Dissipation			
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple Current A (100kHz)	85°C Ripple Current A (100kHz)	125°C Ripple Current A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85°C (%)	+125°C (%)				
TBJ106*020L□#@0^++	B	10	20	1	2	20	40	6	8	10	0.085	0.292	0.262	0.1
TBJC106*020C□#@0^++	C	10	20	1.9	2	20	40	6	8	10	0.110	0.241	0.217	0.0
TBJC106*020L□#@0^++	C	10	20	0.5	2	20	40	6	9	10	0.110	0.469	0.422	0.1
TBJB156*020C□#@0^++	B	15	20	2	3	30	60	6	8	10	0.085	0.206	0.186	0.0
TBJB156*020L□#@0^++	B	15	20	0.5	3	30	60	6	9	10	0.085	0.412	0.371	0.1
TBJC156*020C□#@0^++	C	15	20	1.7	3	30	60	6	8	10	0.110	0.254	0.229	0.1
TBJC156*020L□#@0^++	C	15	20	0.4	3	30	60	6	8	10	0.110	0.524	0.472	0.2
TBJD156*020C□#@0^++	D	15	20	1.1	3	30	36	6	8	9	0.150	0.369	0.332	0.1
TBJB226*020C□#@0^++	B	22	20	0.6	4.4	44	88	6	9	10	0.085	0.376	0.339	0.1
TBJB226*020L□#@0^++	B	22	20	0.4	4.4	44	88	6	9	10	0.085	0.461	0.415	0.1
TBJC226*020C□#@0^++	C	22	20	1.6	4.4	44	88	6	8	10	0.110	0.262	0.236	0.1
TBJC226*020L□#@0^++	C	22	20	0.15	4.4	44	88	6	8	10	0.110	0.856	0.771	0.3
TBJD226*020C□#@0^++	D	22	20	0.9	4.4	44	52.8	6	9	9	0.150	0.408	0.367	0.1
TBJD226*020L□#@0^++	D	22	20	0.2	4.4	44	88	6	9	10	0.150	0.866	0.779	0.3
TBJC336*020C□#@0^++	C	33	20	1.5	6.6	66	132	6	8	10	0.110	0.271	0.244	0.1
TBJC336*020L□#@0^++	C	33	20	0.3	6.6	66	132	6	9	10	0.110	0.606	0.545	0.2
TBJD336*020C□#@0^++	D	33	20	0.9	6.6	66	132	6	8	10	0.150	0.408	0.367	0.1
TBJD336*020L□#@0^++	D	33	20	0.1	6.6	66	132	6	8	10	0.150	1.225	1.102	0.4
TBJD476*020C□#@0^++	D	47	20	0.2	9.4	94	188	6	8	10	0.150	0.866	0.779	0.3
TBJD476*020L□#@0^++	D	47	20	0.1	9.4	94	188	6	8	10	0.150	1.225	1.102	0.4
TBJE476*020C□#@0^++	E	47	20	0.25	9.4	94	188	6	8	8	0.165	0.812	0.731	0.3
TBJE476*020L□#@0^++	E	47	20	0.07	9.4	94	188	6	9	10	0.165	1.535	1.382	0.6
TBJD686*020C□#@0^++	D	68	20	0.9	13.6	136	272	6	8	10	0.150	0.408	0.367	0.1
TBJD686*020L□#@0^++	D	68	20	0.07	13.6	136	272	6	9	10	0.150	1.464	1.317	0.5
TBJE686*020C□#@0^++	E	68	20	0.9	13.6	136	272	6	8	10	0.165	0.428	0.385	0.1
TBJE686*020L□#@0^++	E	68	20	0.15	13.6	136	272	6	8	10	0.165	1.049	0.944	0.4
TBJD107*020C□#@0^++	D	100	20	0.1	20	200	400	6	9	10	0.150	1.225	1.102	0.4
TBJD107*020L□#@0^++	D	100	20	0.085	20	200	400	6	9	10	0.150	1.328	1.196	0.5
TBJE107*020C□#@0^++	E	100	20	0.15	20	200	400	6	9	10	0.165	1.049	0.944	0.4
TBJE107*020L□#@0^++	E	100	20	0.1	20	200	400	6	9	10	0.165	1.285	1.156	0.5
TBJV107*020C□#@0^++	V	100	20	0.2	20	200	400	8	10	12	0.250	1.118	1.006	0.4
TBJV107*020L□#@0^++	V	100	20	0.085	20	200	400	8	10	12	0.250	1.715	1.543	0.6
TBJE157*020C□#@0^++	E	150	20	0.3	30	300	600	8	10	10	0.165	0.742	0.667	0.2
TBJV157*020L□#@0^++	V	150	20	0.08	30	300	600	8	10	12	0.250	1.768	1.591	0.7
TBJA334*025C□#@0^++	A	0.33	25	15	0.083	0.825	0.99	4	6	6	0.075	0.071	0.064	0.0
TBJA474*025C□#@0^++	A	0.47	25	14	0.118	1.175	1.41	4	6	6	0.075	0.073	0.066	0.0
TBJA474*025L□#@0^++	A	0.47	25	7	0.118	1.175	2.35	4	6	6	0.075	0.104	0.093	0.0
TBJA684*025C□#@0^++	A	0.68	25	10	0.68	6.8	13.6	4	6	8	0.075	0.087	0.078	0.0
TBJA684*025L□#@0^++	A	0.68	25	6	0.17	1.7	3.4	4	6	6	0.075	0.112	0.101	0.0
TBJB684*025C□#@0^++	B	0.68	25	7.5	0.17	1.7	2.04	4	6	6	0.085	0.106	0.096	0.0
TBJA105*025C□#@0^++	A	1	25	8	0.25	2.5	5	4	6	6	0.075	0.097	0.087	0.0
TBJB105*025C□#@0^++	B	1	25	6.5	0.25	2.5	3	4	6	6	0.085	0.114	0.103	0.0
TBJA155*025C□#@0^++	A	1.5	25	7.5	0.375	3.75	7.5	6	8	10	0.075	0.100	0.090	0.0
TBJA155*025L□#@0^++	A	1.5	25	3	0.375	3.75	7.5	6	8	10	0.075	0.158	0.142	0.0
TBJB155*025C□#@0^++	B	1.5	25	6.5	0.375	3.75	4.5	6	8	9	0.085	0.114	0.103	0.0
TBJB155*025L□#@0^++	B	1.5	25	1.8	0.375	3.75	7.5	6	8	10	0.085	0.217	0.196	0.0
TBJB225*025C□#@0^++	B	2.2	25	4.5	0.55	5.5	11	6	8	10	0.085	0.137	0.124	0.0
TBJB225*025L□#@0^++	B	2.2	25	0.9	0.55	5.5	11	6	9	10	0.085	0.307	0.277	0.1
TBJC225*025C□#@0^++	C	2.2	25	3.5	0.55	5.5	6.6	6	9	9	0.110	0.177	0.160	0.0
TBJA335*025C□#@0^++	A	3.3	25	1.5	0.825	8.25	16.5	6	9	10	0.075	0.224	0.201	0.0
TBJA335*025L□#@0^++	A	3.3	25	1	0.825	8.25	16.5	6	9	10	0.075	0.274	0.246	0.1
TBJB335*025C□#@0^++	B	3.3	25	3.5	0.825	8.25	16.5	6	8	10	0.085	0.156	0.140	0.0
TBJB335*025L□#@0^++	B	3.3	25	0.75	0.825	8.25	16.5	6	9	10	0.085	0.337	0.303	0.1
TBJC335*025C□#@0^++	C	3.3	25	3.5	0.825	8.25	9.9	6	8	9	0.110	0.177	0.160	0.0
TBJA475*025C□#@0^++	A	4.7	25	2.8	1.175	11.75	23.5	6	9	10	0.075	0.164	0.147	0.0
TBJB475*025C□#@0^++	B	4.7	25	2.8	1.175	11.75	23.5	6	8	10	0.085	0.174	0.157	0.0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TBJ Series

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per MIL-PRF-55365/4									Typical Power Dissipation			
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR Ohms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple Current A (100kHz)	85°C Ripple Current A (100kHz)	125°C Ripple Current A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85°C (%)	+125°C (%)				
TBJB475*025L□#@0^++	B	4.7	25	1.5	1.175	11.75	23.5	6	8	10	0.085	0.238	0.214	0.0
TBJC475*025C□#@0^++	C	4.7	25	2.5	1.175	11.75	14.1	6	9	9	0.110	0.210	0.189	0.0
TBJB685*025C□#@0^++	B	6.8	25	2.8	1.7	17	34	6	8	10	0.085	0.174	0.157	0.0
TBJB685*025L□#@0^++	B	6.8	25	0.7	1.7	17	34	6	9	10	0.085	0.348	0.314	0.1
TBJC685*025C□#@0^++	C	6.8	25	2	1.7	17	34	6	8	10	0.110	0.235	0.211	0.0
TBJC685*025L□#@0^++	C	6.8	25	0.5	1.7	17	34	6	9	10	0.110	0.469	0.422	0.1
TBJD685*025C□#@0^++	D	6.8	25	1.4	1.7	17	20.4	6	9	9	0.150	0.327	0.295	0.1
TBJC106*025C□#@0^++	C	10	25	1.8	2.5	25	50	6	8	10	0.110	0.247	0.222	0.0
TBJC106*025L□#@0^++	C	10	25	0.5	2.5	25	50	6	8	10	0.110	0.469	0.422	0.1
TBJD106*025C□#@0^++	D	10	25	1.2	2.5	25	30	6	8	9	0.150	0.354	0.318	0.1
TBJC156*025C□#@0^++	C	15	25	0.3	3.75	37.5	75	6	9	10	0.110	0.606	0.545	0.2
TBJC156*025L□#@0^++	C	15	25	0.22	3.75	37.5	75	6	9	10	0.110	0.707	0.636	0.2
TBJD156*025C□#@0^++	D	15	25	1	3.75	37.5	45	6	9	9	0.150	0.387	0.349	0.1
TBJD156*025L□#@0^++	D	15	25	0.3	3.75	37.5	75	6	8	9	0.150	0.707	0.636	0.2
TBJC226*025C□#@0^++	C	22	25	1.4	5.5	55	110	6	8	10	0.110	0.280	0.252	0.1
TBJC226*025L□#@0^++	C	22	25	0.275	5.5	55	110	6	8	10	0.110	0.632	0.569	0.2
TBJD226*025C□#@0^++	D	22	25	0.9	5.5	55	110	6	8	10	0.150	0.408	0.367	0.1
TBJD226*025L□#@0^++	D	22	25	0.2	5.5	55	110	6	8	10	0.150	0.866	0.779	0.3
TBJD336*025C□#@0^++	D	33	25	0.9	8.25	82.5	165	6	8	10	0.150	0.408	0.367	0.1
TBJD336*025L□#@0^++	D	33	25	0.1	8.25	82.5	165	6	8	10	0.150	1.225	1.102	0.4
TBJE336*025C□#@0^++	E	33	25	0.9	8.25	82.5	165	6	8	10	0.165	0.428	0.385	0.1
TBJE336*025L□#@0^++	E	33	25	0.3	8.25	82.5	165	6	8	10	0.165	0.742	0.667	0.2
TBJD476*025C□#@0^++	D	47	25	0.9	11.75	117.5	235	6	8	10	0.150	0.408	0.367	0.1
TBJD476*025L□#@0^++	D	47	25	0.25	11.75	117.5	235	6	8	10	0.150	0.775	0.697	0.3
TBJE476*025C□#@0^++	E	47	25	0.1	11.75	117.5	235	6	9	10	0.165	1.285	1.156	0.5
TBJE476*025L□#@0^++	E	47	25	0.08	11.75	117.5	235	6	9	10	0.165	1.436	1.293	0.5
TBJE686*025C□#@0^++	E	68	25	0.2	17	170	340	6	9	10	0.165	0.908	0.817	0.3
TBJE686*025L□#@0^++	E	68	25	0.125	17	170	340	6	9	10	0.165	1.149	1.034	0.4
TBJV686*025L□#@0^++	V	68	25	0.095	17	170	340	6	9	10	0.250	1.622	1.460	0.6
TBJV107*025L□#@0^++	V	100	25	0.1	25	250	500	8	10	12	0.250	1.581	1.423	0.6
TBJA104*035C□#@0^++	A	0.1	35	24	0.035	0.35	0.42	4	6	6	0.075	0.056	0.050	0.0
TBJA154*035C□#@0^++	A	0.15	35	21	0.5	5	10	4	6	6	0.075	0.060	0.054	0.0
TBJA224*035C□#@0^++	A	0.22	35	18	0.5	5	10	4	6	6	0.075	0.065	0.058	0.0
TBJA224*035L□#@0^++	A	0.22	35	6	0.077	0.77	1.54	4	6	6	0.075	0.112	0.101	0.0
TBJA334*035C□#@0^++	A	0.33	35	15	0.5	5	10	4	6	6	0.075	0.071	0.064	0.0
TBJA334*035L□#@0^++	A	0.33	35	6	0.116	1.155	2.31	4	6	6	0.075	0.112	0.101	0.0
TBJA474*035C□#@0^++	A	0.47	35	12	0.165	1.645	3.29	4	6	8	0.075	0.079	0.071	0.0
TBJA474*035L□#@0^++	A	0.47	35	6	0.165	1.645	3.29	4	6	6	0.075	0.112	0.101	0.0
TBJB474*035C□#@0^++	B	0.47	35	10	0.165	1.645	1.974	4	6	6	0.085	0.092	0.083	0.0
TBJB474*035L□#@0^++	B	0.47	35	4	0.165	1.645	3.29	4	6	6	0.085	0.146	0.131	0.0
TBJA684*035C□#@0^++	A	0.68	35	8	0.238	2.38	4.76	4	6	8	0.075	0.097	0.087	0.0
TBJA684*035L□#@0^++	A	0.68	35	6	0.238	2.38	4.76	4	6	6	0.075	0.112	0.101	0.0
TBJB684*035C□#@0^++	B	0.68	35	8	0.238	2.38	2.856	4	6	6	0.085	0.103	0.093	0.0
TBJA105*035C□#@0^++	A	1	35	7.5	0.35	3.5	7	4	6	6	0.075	0.100	0.090	0.0
TBJA105*035L□#@0^++	A	1	35	3	0.35	3.5	7	4	6	6	0.075	0.158	0.142	0.0
TBJB105*035C□#@0^++	B	1	35	6.5	0.35	3.5	4.2	4	6	6	0.085	0.114	0.103	0.0
TBJB105*035L□#@0^++	B	1	35	2	0.35	3.5	7	4	6	6	0.085	0.206	0.186	0.0
TBJA155*035C□#@0^++	A	1.5	35	7.5	0.525	5.25	10.5	6	8	9	0.075	0.100	0.090	0.0
TBJB155*035C□#@0^++	B	1.5	35	5.2	0.525	5.25	10.5	6	8	9	0.085	0.128	0.115	0.0
TBJB155*035L□#@0^++	B	1.5	35	2.5	0.525	5.25	10.5	6	9	10	0.085	0.184	0.166	0.0
TBJC155*035C□#@0^++	C	1.5	35	4.5	0.525	5.25	6.3	6	8	9	0.110	0.156	0.141	0.0
TBJA225*035C□#@0^++	A	2.2	35	4.5	0.77	7.7	15.4	6	9	9	0.075	0.129	0.116	0.0
TBJA225*035L□#@0^++	A	2.2	35	1.5	0.77	7.7	15.4	6	9	10	0.075	0.224	0.201	0.0
TBJB225*035C□#@0^++	B	2.2	35	4.2	0.77	7.7	15.4	6	8	9	0.085	0.142	0.128	0.0
TBJB225*035L□#@0^++	B	2.2	35	2	0.77	7.7	15.4	6	8	9	0.085	0.206	0.186	0.0
TBJC225*035C□#@0^++	C	2.2	35	3.5	0.77	7.7	9.24	6	8	9	0.110	0.177	0.160	0.0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TBJ Series

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per MIL-PRF-55365/4									Typical Power Dissipation			
		Cap @ 120Hz @ 25°C	DC Rated Voltage @ +85°C	ESR @ 100kHz @ +25°C	DCL max			DF Max			Power Dissipation	25°C Ripple Current	85°C Ripple Current	125°C Ripple Current
AVX COTS-Plus P/N	Case	µF	V	Ohms	+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)	W	A (100kHz)	A (100kHz)	A (100kHz)
TBJC225*035L□#@0^++	C	2.2	35	1	0.77	7.7	15.4	6	9	10	0.110	0.332	0.298	0.1
TBJB335*035C□#@0^++	B	3.3	35	3.5	1.155	11.55	23.1	6	8	9	0.085	0.156	0.140	0.0
TBJB335*035L□#@0^++	B	3.3	35	1	1.155	11.55	23.1	6	9	10	0.085	0.292	0.262	0.1
TBJC335*035C□#@0^++	C	3.3	35	2.5	1.155	11.55	13.86	6	8	9	0.110	0.210	0.189	0.0
TBJC335*035L□#@0^++	C	3.3	35	0.7	1.155	11.55	23.1	6	9	10	0.110	0.396	0.357	0.1
TBJB475*035C□#@0^++	B	4.7	35	3.1	1.645	16.45	32.9	6	8	9	0.085	0.166	0.149	0.0
TBJB475*035L□#@0^++	B	4.7	35	0.7	1.645	16.45	32.9	6	8	8	0.085	0.348	0.314	0.1
TBJC475*035C□#@0^++	C	4.7	35	2.2	1.645	16.45	32.9	6	8	9	0.110	0.224	0.201	0.0
TBJC475*035L□#@0^++	C	4.7	35	0.6	1.645	16.45	32.9	6	8	9	0.110	0.428	0.385	0.1
TBJD475*035C□#@0^++	D	4.7	35	1.5	1.645	16.45	19.74	6	8	9	0.150	0.316	0.285	0.1
TBJD475*035L□#@0^++	D	4.7	35	0.5	1.645	16.45	32.9	6	8	9	0.150	0.548	0.493	0.2
TBJC685*035C□#@0^++	C	6.8	35	1.8	2.38	23.8	47.6	6	9	9	0.110	0.247	0.222	0.0
TBJC685*035L□#@0^++	C	6.8	35	0.35	2.38	23.8	47.6	6	9	10	0.110	0.561	0.505	0.2
TBJD685*035C□#@0^++	D	6.8	35	1.3	2.38	23.8	28.56	6	9	9	0.150	0.340	0.306	0.1
TBJD685*035L□#@0^++	D	6.8	35	0.5	2.38	23.8	47.6	6	9	9	0.150	0.548	0.493	0.2
TBJC106*035C□#@0^++	C	10	35	1.6	3.5	35	70	6	9	9	0.110	0.262	0.236	0.1
TBJC106*035L□#@0^++	C	10	35	0.6	3.5	35	70	6	9	9	0.110	0.428	0.385	0.1
TBJD106*035C□#@0^++	D	10	35	1	3.5	35	70	6	9	9	0.150	0.387	0.349	0.1
TBJD106*035L□#@0^++	D	10	35	0.3	3.5	35	70	6	9	9	0.150	0.707	0.636	0.2
TBJE106*035C□#@0^++	E	10	35	0.25	3.5	35	70	6	9	10	0.165	0.812	0.731	0.3
TBJE106*035L□#@0^++	E	10	35	0.2	3.5	35	70	6	9	10	0.165	0.908	0.817	0.3
TBJC156*035C□#@0^++	C	15	35	1.4	5.25	52.5	105	6	9	9	0.110	0.280	0.252	0.1
TBJC156*035L□#@0^++	C	15	35	0.35	5.25	52.5	105	6	9	10	0.110	0.561	0.505	0.2
TBJD156*035C□#@0^++	D	15	35	0.9	5.25	52.5	105	6	9	9	0.150	0.408	0.367	0.1
TBJD156*035L□#@0^++	D	15	35	0.3	5.25	52.5	105	6	9	9	0.150	0.707	0.636	0.2
TBJD226*035C□#@0^++	D	22	35	0.9	7.7	77	154	6	9	9	0.150	0.408	0.367	0.1
TBJD226*035L□#@0^++	D	22	35	0.4	7.7	77	154	6	9	9	0.150	0.612	0.551	0.2
TBJE226*035C□#@0^++	E	22	35	0.9	7.7	77	154	6	9	9	0.165	0.428	0.385	0.1
TBJE226*035L□#@0^++	E	22	35	0.3	7.7	77	154	6	9	9	0.165	0.742	0.667	0.2
TBJD336*035C□#@0^++	D	33	35	0.9	11.55	115.5	231	6	9	9	0.150	0.408	0.367	0.1
TBJD336*035L□#@0^++	D	33	35	0.3	11.55	115.5	231	6	9	9	0.150	0.707	0.636	0.2
TBJE336*035C□#@0^++	E	33	35	0.25	11.55	115.5	231	6	9	10	0.165	0.812	0.731	0.3
TBJE336*035L□#@0^++	E	33	35	0.1	11.55	115.5	231	6	8	10	0.165	1.285	1.156	0.5
TBJV336*035L□#@0^++	V	33	35	0.2	11.55	115.5	231	6	9	10	0.250	1.118	1.006	0.4
TBJE476*035C□#@0^++	E	47	35	0.25	16.45	164.5	329	6	8	10	0.165	0.812	0.731	0.3
TBJE476*035L□#@0^++	E	47	35	0.2	16.45	164.5	329	6	9	9	0.165	0.908	0.817	0.3
TBJV476*035C□#@0^++	V	47	35	0.4	16.45	164.5	329	6	9	10	0.250	0.791	0.712	0.3
TBJV476*035L□#@0^++	V	47	35	0.2	16.45	164.5	329	6	10	10	0.250	1.118	1.006	0.4
TBJV686*035C□#@0^++	V	68	35	0.2	23.8	238	476	6	9	10	0.250	1.118	1.006	0.4
TBJV686*035L□#@0^++	V	68	35	0.15	23.8	238	476	6	9	10	0.250	1.291	1.162	0.5
TBJA104*050C□#@0^++	A	0.1	50	22	0.05	0.5	0.6	6	8	8	0.075	0.058	0.053	0.0
TBJA154*050C□#@0^++	A	0.15	50	21	0.02	0.2	0.4	4	6	6	0.075	0.060	0.054	0.0
TBJA154*050L□#@0^++	A	0.15	50	9	0.075	0.75	1.5	4	6	6	0.075	0.091	0.082	0.0
TBJB154*050C□#@0^++	B	0.15	50	17	0.075	0.75	0.9	4	6	6	0.085	0.071	0.064	0.0
TBJA224*050C□#@0^++	A	0.22	50	18	0.11	1.1	2.2	4	6	6	0.075	0.065	0.058	0.0
TBJA224*050L□#@0^++	A	0.22	50	7	0.11	1.1	2.2	4	6	6	0.075	0.104	0.093	0.0
TBJB224*050C□#@0^++	B	0.22	50	14	0.11	1.1	1.32	4	6	6	0.085	0.078	0.070	0.0
TBJB334*050C□#@0^++	B	0.33	50	12	0.165	1.65	1.98	4	6	6	0.085	0.084	0.076	0.0
TBJC474*050C□#@0^++	C	0.47	50	8	0.235	2.35	2.82	4	6	6	0.110	0.117	0.106	0.0
TBJA684*050C□#@0^++	A	0.68	50	7.9	0.34	3.4	6.8	4	6	6	0.075	0.097	0.088	0.0
TBJC684*050C□#@0^++	C	0.68	50	7	0.34	3.4	4.08	4	6	6	0.110	0.125	0.113	0.0
TBJC105*050C□#@0^++	C	1	50	6	0.5	5	6	4	6	6	0.110	0.135	0.122	0.0
TBJC105*050L□#@0^++	C	1	50	2.5	0.5	5	10	4	6	6	0.110	0.210	0.189	0.0
TBJC155*050C□#@0^++	C	1.5	50	5	0.75	7.5	15	6	8	9	0.110	0.148	0.133	0.0
TBJC155*050L□#@0^++	C	1.5	50	1.5	0.75	7.5	15	6	9	10	0.110	0.271	0.244	0.1
TBJD155*050C□#@0^++	D	1.5	50	4	0.75	7.5	9	6	8	9	0.150	0.194	0.174	0.0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.  
**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBJ Series

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per MIL-PRF-55365/4									Typical Power Dissipation			
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple Current A (100kHz)	85°C Ripple Current A (100kHz)	125°C Ripple Current A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)				
AVX COTS-Plus P/N	Case													
TBJD225*050C□#@0^++	D	2.2	50	2.5	1.1	11	13.2	6	8	9	0.150	0.245	0.220	0.0
TBJD225*050L□#@0^++	D	2.2	50	1.2	1.1	11	22	6	9	10	0.150	0.354	0.318	0.1
TBJD335*050C□#@0^++	D	3.3	50	2	1.65	16.5	19.8	6	9	9	0.150	0.274	0.246	0.1
TBJD335*050L□#@0^++	D	3.3	50	0.8	1.65	16.5	33	6	9	10	0.150	0.433	0.390	0.1
TBJD475*050C□#@0^++	D	4.7	50	1.5	2.35	23.5	28.2	6	9	9	0.150	0.316	0.285	0.1
TBJD475*050L□#@0^++	D	4.7	50	0.3	2.35	23.5	47	6	9	9	0.150	0.707	0.636	0.2
TBJD685*050C□#@0^++	D	6.8	50	1	3.4	34	68	6	9	9	0.150	0.387	0.349	0.1
TBJD685*050L□#@0^++	D	6.8	50	0.5	3.4	34	68	6	9	9	0.150	0.548	0.493	0.2
TBJE106*050C□#@0^++	E	10	50	0.5	5	50	100	6	9	10	0.165	0.574	0.517	0.2
TBJE106*050L□#@0^++	E	10	50	0.4	5	50	100	6	9	10	0.165	0.642	0.578	0.2
TBJV106*050C□#@0^++	V	10	50	0.65	5	50	100	3			0.250	0.620	0.558	0.2
TBJD156*050C□#@0^++	D	15	50	0.6	7.5	75	150	4	6	6	0.150	0.500	0.450	0.2
TBJE156*050C□#@0^++	E	15	50	0.6	7.5	75	150	8	10	12	0.165	0.524	0.472	0.2
TBJE156*050L□#@0^++	E	15	50	0.25	7.5	75	150	6	9	10	0.165	0.812	0.731	0.3
TBJV226*050C□#@0^++	V	22	50	0.6	11	110	220	8	10	12	0.250	0.645	0.581	0.2
TBJV226*050L□#@0^++	V	22	50	0.39	11	110	220	8	10	12	0.250	0.801	0.721	0.3

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.  
**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**

# TBJ Series



## COTS-Plus – SRC9000 Space Level



The TBJ COTS-Plus – SRC9000 series has been refined to incorporate only those commercially up-screened ratings which have been deemed suitable for mission critical and space level applications.

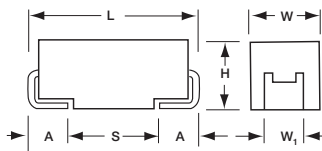
These capacitors have a more conservative design approach when compared to other up-screened components utilizing established CV powders and higher dielectric formation ratios. The DCL is typically 25% lower while still offering aggressive ESR values.

Currently there are 5 case sizes available with a 6th in development to expand the maximum capacitance available in a given voltage range.

These ratings are available with Weibull grading (B and C), surge current testing MIL-PRF-55365 Rev. G (A, B, C), optional Group A from MIL-PRF-55365, and the extensive SRC9000 space level screening.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

### CASE DIMENSIONS: millimeters (inches)

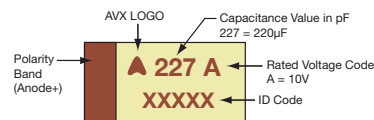


Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	1206	3216-18	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	1210	3528-21	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	2312	6032-28	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	2917	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	2917	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
U	2924	7361-43	7.30 (0.287)	6.10 (0.240)	4.10 (0.162)	3.10 (0.120)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

### MARKING

#### A, B, C, D, E, U CASE



### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C						
µF	Code	6.3V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
0.10	104						A(20000)	
0.15	154						A(6000, 16470)	
0.22	224						A(6000, 13710)	A(7000, 7500)
0.33	334						A(6000, 11280)	A(7000)
0.47	474					A(7000, 9530)	A(4000, 9530)	B(5000)
0.68	684					A(6000, 7980)	A(6000, 8000)	B(2000, 4000)
1.0	105			A(10000)	A(3000, 6630)		A(3000, 6630) B(2000, 3400)	B(2000, 3400) C(3000)
1.5	155		A(7000)		A(3000, 5640)		A(3000, 5640) B(5000)	C(1500, 2500)
2.2	225		A(7000)	A(3500, 4550)	A(3000, 4550)		B(2000, 4550)	C(1000, 1700) D(1200, 2000)
3.3	335			A(3500, 3750) B(4500)	A(2500, 3750) B(1300, 3740)	B(2000, 3740)	B(1000, 3740) C(800, 1840) D(2000)	C(1000, 1400) D(800, 1100)
4.7	475		A(2000, 2900)	A(2000, 3160) B(1500, 3160)	A(1800, 2500) B(1000, 3160)	B(1000, 3160)	B(1500, 2200) C(600, 1410) D(1500)	D(600, 900)
6.8	685		A(1800, 4000) B(3000)	A(1500, 2000) B(1200, 2650) C(2500)	B(1000, 2650) C(2000)	B(1000, 1500) C(600, 1070)	C(600, 1070) D(1300)	D(700)
10	106	A(1500, 2000) B(3000)	A(1800, 2200) B(800, 2200)	B(800, 2200) C(2000)	B(1000, 2200) C(500, 800)	C(600, 800) D(1200)	C(600, 800) D(250, 800)	E(300, 700)
15	156	A(1500, 2030) B(700, 2030)	A(1000, 1800) B(600, 2030) C(2000)	B(800, 2000)	B(500, 1400) C(400, 750) D(1100)	C(500, 720) D(300, 720)	D(225, 720)	U*
22	226	A(900, 1700) B(600, 1880) C(2000)	B(700, 1800)	B(600, 1100) C(350, 700) D(1100)	C(400, 650) D(150, 650)	D(300, 650)	D(200, 650)	
33	336	B(600, 1740) C(1800)	B(650, 1000) C(300, 590) D(1100)	C(300, 590)	C(300, 590) D(250, 590)	D(400, 590)	E(250, 590)	
47	476	B(500, 1620) C(250, 540)	C(300, 540) D(400)	C(350, 540) D(200, 340)	D(200, 540)	D(250, 540) E(150, 540)	U(200,400)	
68	686	C(200, 490)	C(300, 490)	D(150, 490)	D(200, 490) E(125, 490)	U*		
100	107	C(300, 440)	C(200, 500) D(150, 440) E(100, 440)	D(150, 450) E(150, 450)	E(150, 300)			
150	157	C(300, 500) D(150, 400)	D(150, 400) E(150, 400)	E(150, 300)	U*			
220	227	D(150, 360)	D(500) E(150, 360)	U(200,500)				
330	337	D(400) E(150, 330)	E(100, 300) U*					
470	477	E(200, 250)						

Available Ratings: ESR limits quoted in brackets (mOhms)

Engineering samples - please contact manufacturer

\*Codes under development - subject to change.

Notes: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards.



# TBJ Series



## COTS-Plus – SRC9000 Space Level

### HOW TO ORDER

#### AVX PART NUMBER:

TBJ	D	227	*	035	R	B	S	Z	0	0	00
Type	Case Size	Capacitance Code	Capacitance Tolerance	Voltage Code	ESR	Packaging	Inspection Level	Reliability Grade	Qualification Level	Termination Finish	Surge Test Option
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = ±20% K = ±10%	006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	R = Std ESR J = Low ESR	B = Bulk R = 7" T&R S = 13" T&R W = Waffle*	S = Std. Conformance L = Group A	Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. Z = Non-ER	0 = N/A <b>9 = SRC9000</b>	H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

\*Waffle packaging not available for the TBJ U case



#### SPACE LEVEL OPTIONS TO SRC9000\*:

TBJ	D	227	*	035	R	B	L	C	9	0	45
Type	Case Size	Capacitance Code	Capacitance Tolerance	Voltage Code	ESR	Packaging	Inspection Level	Reliability Grade	Qualification Level	Termination Finish	Surge Test Option
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = ±20% K = ±10%		R = Std ESR J = Low ESR	B = Bulk R = 7" T&R S = 13" T&R W = Waffle*	L = Group A	C = 0.01%/1000 hrs. 90% conf.	9 = SRC9000	H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	45 = 10 cycles, -55°C & +85°C before Weibull

\*Waffle packaging not available for the TBJ U case

\*Contact factory for AVX SRC9000 Space Level SCD details.



### TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of 25°C								
Capacitance Range:	0.10 µF to 470 µF								
Capacitance Tolerance:	±10%; ±20%								
Leakage Current DCL:	0.0075CV								
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	6.3	10	16	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ 125°C:	4	7	10	13	17	23	33	
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	8	13	20	26	32	46	65	
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	5	8	13	16	20	28	40	
Temperature Range:	-55°C to +125°C								





# TBJ Series

## COTS-Plus – SRC9000 Space Level

RATING & PART NUMBER REFERENCE			Parametric Specifications by Rating									Power Dissipation W	25°C Ripple mA (100kHz)	Typical 8 Ri (10
			Cap @ 120Hz μF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max					
AVX P/N	AVX SRC9000 P/N	Case				+25°C (μA)	+85°C (μA)	+125°C (μA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)			
TBJA106*006 R□# @ 0^++	TBJA106*006 R□LC9^45	A	10	6.3	2200	0.45	4.5	9	6	9	10	0.075	185	1
TBJA106*006 J□# @ 0^++	TBJA106*006 J□LC9^45	A	10	6.3	1500	0.45	4.5	9	6	9	10	0.075	224	2
TBJB106*006 R□# @ 0^++	TBJB106*006 R□LC9^45	B	10	6.3	3000	0.45	4.5	9	6	9	10	0.085	168	1
TBJA156*006 R□# @ 0^++	TBJA156*006 R□LC9^45	A	15	6.3	2030	0.68	6.8	13.6	6	9	10	0.075	192	1
TBJA156*006 J□# @ 0^++	TBJA156*006 J□LC9^45	A	15	6.3	1500	0.68	6.8	13.6	6	9	10	0.075	224	2
TBJB156*006 R□# @ 0^++	TBJB156*006 R□LC9^45	B	15	6.3	2030	0.68	6.8	13.6	6	9	10	0.085	205	1
TBJB156*006 J□# @ 0^++	TBJB156*006 J□LC9^45	B	15	6.3	700	0.68	6.8	13.6	6	9	10	0.085	348	3
TBJA226*006 R□# @ 0^++	TBJA226*006 R□LC9^45	A	22	6.3	1700	0.99	9.9	19.8	6	9	10	0.075	210	1
TBJA226*006 J□# @ 0^++	TBJA226*006 J□LC9^45	A	22	6.3	900	0.99	9.9	19.8	6	9	10	0.075	289	2
TBJB226*006 R□# @ 0^++	TBJB226*006 R□LC9^45	B	22	6.3	1880	0.99	9.9	19.8	6	9	10	0.085	213	1
TBJB226*006 J□# @ 0^++	TBJB226*006 J□LC9^45	B	22	6.3	600	0.99	9.9	19.8	6	9	10	0.085	376	3
TBJC226*006 R□# @ 0^++	TBJC226*006 R□LC9^45	C	22	6.3	2000	0.99	9.9	19.8	6	9	10	0.110	235	2
TBJB336*006 R□# @ 0^++	TBJB336*006 R□LC9^45	B	33	6.3	1740	1.5	15	30	6	9	10	0.085	221	1
TBJB336*006 J□# @ 0^++	TBJB336*006 J□LC9^45	B	33	6.3	600	1.5	15	30	6	9	10	0.085	376	3
TBJC336*006 R□# @ 0^++	TBJC336*006 R□LC9^45	C	33	6.3	1800	1.5	15	30	6	9	10	0.110	247	2
TBJB476*006 R□# @ 0^++	TBJB476*006 R□LC9^45	B	47	6.3	1620	2.1	21	42	6	9	10	0.085	229	2
TBJB476*006 J□# @ 0^++	TBJB476*006 J□LC9^45	B	47	6.3	500	2.1	21	42	6	9	10	0.085	412	3
TBJC476*006 R□# @ 0^++	TBJC476*006 R□LC9^45	C	47	6.3	540	2.1	21	42	6	9	10	0.110	451	4
TBJC476*006 J□# @ 0^++	TBJC476*006 J□LC9^45	C	47	6.3	250	2.1	21	42	6	9	10	0.110	663	5
TBJC686*006 R□# @ 0^++	TBJC686*006 R□LC9^45	C	68	6.3	490	3.1	31	62	6	9	10	0.110	474	4
TBJC686*006 J□# @ 0^++	TBJC686*006 J□LC9^45	C	68	6.3	200	3.1	31	62	6	9	10	0.110	742	6
TBJC107*006 R□# @ 0^++	TBJC107*006 R□LC9^45	C	100	6.3	440	4.5	45	90	6	9	10	0.110	500	4
TBJC107*006 J□# @ 0^++	TBJC107*006 J□LC9^45	C	100	6.3	300	4.5	45	90	6	9	10	0.110	606	5
TBJC157*006 R□# @ 0^++	TBJC157*006 R□LC9^45	C	150	6.3	500	6.8	68	136	8	10	12	0.110	469	4
TBJC157*006 J□# @ 0^++	TBJC157*006 J□LC9^45	C	150	6.3	300	6.8	68	136	8	10	12	0.110	606	5
TBJD157*006 R□# @ 0^++	TBJD157*006 R□LC9^45	D	150	6.3	400	6.8	68	136	6	9	10	0.150	612	5
TBJD157*006 J□# @ 0^++	TBJD157*006 J□LC9^45	D	150	6.3	150	6.8	68	136	6	9	10	0.150	1000	9
TBJD227*006 R□# @ 0^++	TBJD227*006 R□LC9^45	D	220	6.3	360	9.9	99	198	8	10	12	0.150	645	5
TBJD227*006 J□# @ 0^++	TBJD227*006 J□LC9^45	D	220	6.3	150	9.9	99	198	8	10	12	0.150	1000	9
TBJD337*006 R□# @ 0^++	TBJD337*006 R□LC9^45	D	330	6.3	400	14	140	280	8	10	12	0.150	612	5
TBJE337*006 R□# @ 0^++	TBJE337*006 R□LC9^45	E	330	6.3	330	14	140	280	8	10	12	0.165	707	6
TBJE337*006 J□# @ 0^++	TBJE337*006 J□LC9^45	E	330	6.3	150	14	140	280	8	10	12	0.165	1049	9
TBJE477*006 R□# @ 0^++	TBJE477*006 R□LC9^45	E	470	6.3	250	21	210	420	8	10	12	0.165	812	7
TBJE477*006 J□# @ 0^++	TBJE477*006 J□LC9^45	E	470	6.3	200	21	210	420	8	10	12	0.165	908	8
TBJA155*010 R□# @ 0^++	TBJA155*010 R□LC9^45	A	1.5	10	7000	0.3	3	6	6	9	10	0.075	104	1
TBJA225*010 R□# @ 0^++	TBJA225*010 R□LC9^45	A	2.2	10	7000	0.3	3	6	6	9	10	0.075	104	1
TBJA475*010 R□# @ 0^++	TBJA475*010 R□LC9^45	A	4.7	10	2900	0.35	3.5	7	6	9	10	0.075	161	1
TBJA475*010 J□# @ 0^++	TBJA475*010 J□LC9^45	A	4.7	10	2000	0.35	3.5	7	6	9	10	0.075	194	1
TBJA685*010 R□# @ 0^++	TBJA685*010 R□LC9^45	A	6.8	10	2650	0.51	5.1	10.2	6	9	10	0.075	168	1
TBJA685*010 J□# @ 0^++	TBJA685*010 J□LC9^45	A	6.8	10	1800	0.51	5.1	10.2	6	9	10	0.075	204	1
TBJB685*010 R□# @ 0^++	TBJB685*010 R□LC9^45	B	6.8	10	3000	0.51	5.1	10.2	6	9	10	0.085	168	1
TBJA106*010 R□# @ 0^++	TBJA106*010 R□LC9^45	A	10	10	2200	0.75	7.5	15	6	9	10	0.075	185	1
TBJA106*010 J□# @ 0^++	TBJA106*010 J□LC9^45	A	10	10	1800	0.75	7.5	15	6	9	10	0.075	204	1
TBJB106*010 R□# @ 0^++	TBJB106*010 R□LC9^45	B	10	10	2200	0.75	7.5	15	6	9	10	0.085	197	1
TBJB106*010 J□# @ 0^++	TBJB106*010 J□LC9^45	B	10	10	800	0.75	7.5	15	6	9	10	0.085	326	2
TBJA156*010 R□# @ 0^++	TBJA156*010 R□LC9^45	A	15	10	1800	1.1	11	22	6	9	10	0.075	204	1
TBJA156*010 J□# @ 0^++	TBJA156*010 J□LC9^45	A	15	10	1000	1.1	11	22	6	9	10	0.075	274	2
TBJB156*010 R□# @ 0^++	TBJB156*010 R□LC9^45	B	15	10	2030	1.1	11	22	6	9	10	0.085	205	1
TBJB156*010 J□# @ 0^++	TBJB156*010 J□LC9^45	B	15	10	600	1.1	11	22	6	9	10	0.085	376	3
TBJC156*010 R□# @ 0^++	TBJC156*010 R□LC9^45	C	15	10	2000	1.1	11	22	6	9	10	0.110	235	2
TBJB226*010 R□# @ 0^++	TBJB226*010 R□LC9^45	B	22	10	1880	1.7	17	34	6	9	10	0.085	213	1

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBJ Series

## COTS-Plus – SRC9000 Space Level

RATING & PART NUMBER REFERENCE			Parametric Specifications by Rating									Power Dissipation W	25°C Ripple mA (100kHz)	Typical Ripple mA (100kHz)
			Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max					
AVX P/N	AVX SRC9000 P/N	Case				+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)			
TBJB226*010 J □ # @ 0 ^ ++	TBJB226*010 J □ LC 9 ^ 45	B	22	10	700	1.7	17	34	6	9	10	0.085	348	3
TBJB336*010 R □ # @ 0 ^ ++	TBJB336*010 R □ LC 9 ^ 45	B	33	10	1000	2.5	25	50	6	9	10	0.085	292	2
TBJB336*010 J □ # @ 0 ^ ++	TBJB336*010 J □ LC 9 ^ 45	B	33	10	650	2.5	25	50	6	9	10	0.085	362	3
TBJC336*010 R □ # @ 0 ^ ++	TBJC336*010 R □ LC 9 ^ 45	C	33	10	590	2.5	25	50	6	9	10	0.110	432	3
TBJC336*010 J □ # @ 0 ^ ++	TBJC336*010 J □ LC 9 ^ 45	C	33	10	300	2.5	25	50	6	9	10	0.110	606	5
TBJD336*010 R □ # @ 0 ^ ++	TBJD336*010 R □ LC 9 ^ 45	D	33	10	1100	2.5	25	50	6	9	10	0.150	369	3
TBJC476*010 R □ # @ 0 ^ ++	TBJC476*010 R □ LC 9 ^ 45	C	47	10	540	3.5	35	70	6	9	10	0.110	451	4
TBJC476*010 J □ # @ 0 ^ ++	TBJC476*010 J □ LC 9 ^ 45	C	47	10	300	3.5	35	70	6	9	10	0.110	606	5
TBJD476*010 R □ # @ 0 ^ ++	TBJD476*010 R □ LC 9 ^ 45	D	47	10	400	3.5	35	70	6	9	10	0.150	612	5
TBJC686*010 R □ # @ 0 ^ ++	TBJC686*010 R □ LC 9 ^ 45	C	68	10	490	5.1	51	102	6	9	10	0.110	474	4
TBJC686*010 J □ # @ 0 ^ ++	TBJC686*010 J □ LC 9 ^ 45	C	68	10	300	5.1	51	102	6	9	10	0.110	606	5
TBJC107*010 R □ # @ 0 ^ ++	TBJC107*010 R □ LC 9 ^ 45	C	100	10	500	7.5	75	150	8	10	12	0.110	469	4
TBJC107*010 J □ # @ 0 ^ ++	TBJC107*010 J □ LC 9 ^ 45	C	100	10	200	7.5	75	150	8	10	12	0.110	742	6
TBJD107*010 R □ # @ 0 ^ ++	TBJD107*010 R □ LC 9 ^ 45	D	100	10	440	7.5	75	150	6	9	10	0.150	584	5
TBJD107*010 J □ # @ 0 ^ ++	TBJD107*010 J □ LC 9 ^ 45	D	100	10	150	7.5	75	150	6	9	10	0.150	1000	9
TBJE107*010 R □ # @ 0 ^ ++	TBJE107*010 R □ LC 9 ^ 45	E	100	10	440	7.5	75	150	6	9	10	0.165	612	5
TBJE107*010 J □ # @ 0 ^ ++	TBJE107*010 J □ LC 9 ^ 45	E	100	10	100	7.5	75	150	6	9	10	0.165	1285	1
TBJD157*010 R □ # @ 0 ^ ++	TBJD157*010 R □ LC 9 ^ 45	D	150	10	400	11	110	220	8	10	12	0.150	612	5
TBJD157*010 J □ # @ 0 ^ ++	TBJD157*010 J □ LC 9 ^ 45	D	150	10	150	11	110	220	8	10	12	0.150	1000	9
TBJE157*010 R □ # @ 0 ^ ++	TBJE157*010 R □ LC 9 ^ 45	E	150	10	400	11	110	220	8	10	12	0.165	642	5
TBJE157*010 J □ # @ 0 ^ ++	TBJE157*010 J □ LC 9 ^ 45	E	150	10	150	11	110	220	8	10	12	0.165	1049	9
TBJD227*010 R □ # @ 0 ^ ++	TBJD227*010 R □ LC 9 ^ 45	D	220	10	500	17	170	340	8	10	12	0.150	548	4
TBJE227*010 R □ # @ 0 ^ ++	TBJE227*010 R □ LC 9 ^ 45	E	220	10	360	17	170	340	8	10	12	0.165	677	6
TBJE227*010 J □ # @ 0 ^ ++	TBJE227*010 J □ LC 9 ^ 45	E	220	10	150	17	170	340	8	10	12	0.165	1049	9
TBJE337*010 R □ # @ 0 ^ ++	TBJE337*010 R □ LC 9 ^ 45	E	330	10	300	25	250	500	8	10	12	0.165	742	6
TBJE337*010 J □ # @ 0 ^ ++	TBJE337*010 J □ LC 9 ^ 45	E	330	10	100	25	250	500	8	10	12	0.165	1285	1
TBJA105*016 R □ # @ 0 ^ ++	TBJA105*016 R □ LC 9 ^ 45	A	1	16	10000	0.3	3	6	6	9	10	0.075	87	1
TBJA225*016 R □ # @ 0 ^ ++	TBJA225*016 R □ LC 9 ^ 45	A	2.2	16	4550	0.3	3	6	6	9	10	0.075	128	1
TBJA225*016 J □ # @ 0 ^ ++	TBJA225*016 J □ LC 9 ^ 45	A	2.2	16	3500	0.3	3	6	6	9	10	0.075	146	1
TBJA335*016 R □ # @ 0 ^ ++	TBJA335*016 R □ LC 9 ^ 45	A	3.3	16	3740	0.4	4	8	6	9	10	0.075	142	1
TBJA335*016 J □ # @ 0 ^ ++	TBJA335*016 J □ LC 9 ^ 45	A	3.3	16	3500	0.4	4	8	6	9	10	0.075	146	1
TBJB335*016 R □ # @ 0 ^ ++	TBJB335*016 R □ LC 9 ^ 45	B	3.3	16	4500	0.4	4	8	6	9	10	0.085	137	1
TBJA475*016 R □ # @ 0 ^ ++	TBJA475*016 R □ LC 9 ^ 45	A	4.7	16	3160	0.56	5.6	11.2	6	9	10	0.075	154	1
TBJA475*016 J □ # @ 0 ^ ++	TBJA475*016 J □ LC 9 ^ 45	A	4.7	16	2000	0.56	5.6	11.2	6	9	10	0.075	194	1
TBJB475*016 R □ # @ 0 ^ ++	TBJB475*016 R □ LC 9 ^ 45	B	4.7	16	3160	0.56	5.6	11.2	6	9	10	0.085	164	1
TBJB475*016 J □ # @ 0 ^ ++	TBJB475*016 J □ LC 9 ^ 45	B	4.7	16	1500	0.56	5.6	11.2	6	9	10	0.085	238	2
TBJA685*016 R □ # @ 0 ^ ++	TBJA685*016 R □ LC 9 ^ 45	A	6.8	16	2000	0.82	8.2	16.4	4	6	8	0.075	194	1
TBJA685*016 J □ # @ 0 ^ ++	TBJA685*016 J □ LC 9 ^ 45	A	6.8	16	1500	0.82	8.2	16.4	4	6	8	0.075	224	2
TBJB685*016 R □ # @ 0 ^ ++	TBJB685*016 R □ LC 9 ^ 45	B	6.8	16	2650	0.82	8.2	16.4	6	9	10	0.085	179	1
TBJB685*016 J □ # @ 0 ^ ++	TBJB685*016 J □ LC 9 ^ 45	B	6.8	16	1200	0.82	8.2	16.4	6	9	10	0.085	266	2
TBJC685*016 R □ # @ 0 ^ ++	TBJC685*016 R □ LC 9 ^ 45	C	6.8	16	2500	0.82	8.2	16.4	6	9	10	0.110	210	1
TBJB106*016 R □ # @ 0 ^ ++	TBJB106*016 R □ LC 9 ^ 45	B	10	16	2200	1.2	12	24	6	9	10	0.085	197	1
TBJB106*016 J □ # @ 0 ^ ++	TBJB106*016 J □ LC 9 ^ 45	B	10	16	800	1.2	12	24	6	9	10	0.085	326	2
TBJC106*016 R □ # @ 0 ^ ++	TBJC106*016 R □ LC 9 ^ 45	C	10	16	2000	1.2	12	24	6	9	10	0.110	235	2
TBJB156*016 R □ # @ 0 ^ ++	TBJB156*016 R □ LC 9 ^ 45	B	15	16	2030	1.8	18	36	6	9	10	0.085	205	1
TBJB156*016 J □ # @ 0 ^ ++	TBJB156*016 J □ LC 9 ^ 45	B	15	16	800	1.8	18	36	6	9	10	0.085	326	2
TBJB226*016 R □ # @ 0 ^ ++	TBJB226*016 R □ LC 9 ^ 45	B	22	16	1100	2.6	26	52	6	9	10	0.085	278	2
TBJB226*016 J □ # @ 0 ^ ++	TBJB226*016 J □ LC 9 ^ 45	B	22	16	600	2.6	26	52	6	9	10	0.085	376	3
TBJC226*016 R □ # @ 0 ^ ++	TBJC226*016 R □ LC 9 ^ 45	C	22	16	700	2.6	26	52	6	9	10	0.110	396	3
TBJC226*016 J □ # @ 0 ^ ++	TBJC226*016 J □ LC 9 ^ 45	C	22	16	350	2.6	26	52	6	9	10	0.110	561	5
TBJD226*016 R □ # @ 0 ^ ++	TBJD226*016 R □ LC 9 ^ 45	D	22	16	1100	2.6	26	52	6	9	10	0.150	369	3
TBJC336*016 R □ # @ 0 ^ ++	TBJC336*016 R □ LC 9 ^ 45	C	33	16	590	4	40	80	6	9	10	0.110	432	3
TBJC336*016 J □ # @ 0 ^ ++	TBJC336*016 J □ LC 9 ^ 45	C	33	16	300	4	40	80	6	9	10	0.110	606	5

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TBJ Series

## COTS-Plus – SRC9000 Space Level

RATING & PART NUMBER REFERENCE			Parametric Specifications by Rating									Power Dissipation W	25°C Ripple mA (100kHz)	8 Ri (10
			Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max					
AVX P/N	AVX SRC9000 P/N	Case				+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)			
TBJC476*016 R□# @ 0^++	TBJC476*016 R□LC 9^45	C	47	16	540	5.6	56	112	6	9	10	0.110	451	4
TBJC476*016 J□# @ 0^++	TBJC476*016 J□LC 9^45	C	47	16	350	5.6	56	112	6	9	10	0.110	561	5
TBJD476*016 R□# @ 0^++	TBJD476*016 R□LC 9^45	D	47	16	540	5.6	56	112	6	9	10	0.150	527	4
TBJD476*016 J□# @ 0^++	TBJD476*016 J□LC 9^45	D	47	16	200	5.6	56	112	6	9	10	0.150	866	7
TBJD686*016 R□# @ 0^++	TBJD686*016 R□LC 9^45	D	68	16	490	8.2	82	164	6	9	10	0.150	553	4
TBJD686*016 J□# @ 0^++	TBJD686*016 J□LC 9^45	D	68	16	150	8.2	82	164	6	9	10	0.150	1000	9
TBJD107*016 R□# @ 0^++	TBJD107*016 R□LC 9^45	D	100	16	440	12	120	240	6	9	10	0.150	584	5
TBJD107*016 J□# @ 0^++	TBJD107*016 J□LC 9^45	D	100	16	150	12	120	240	6	9	10	0.150	1000	9
TBJE107*016 R□# @ 0^++	TBJE107*016 R□LC 9^45	E	100	16	440	12	120	240	6	9	10	0.165	612	5
TBJE107*016 J□# @ 0^++	TBJE107*016 J□LC 9^45	E	100	16	150	12	120	240	6	9	10	0.165	1049	9
TBJE157*016 R□# @ 0^++	TBJE157*016 R□LC 9^45	E	150	16	300	16	160	320	6	9	10	0.165	742	6
TBJE157*016 J□# @ 0^++	TBJE157*016 J□LC 9^45	E	150	16	150	16	160	320	6	9	10	0.165	1049	9
TBJU227*016 R□# @ 0^++	TBJU227*016 R□LC 9^45	U	220	16	500	26.4	264	528	12	15	15	0.165	574	5
TBJU227*016 J□# @ 0^++	TBJU227*016 J□LC 9^45	U	220	16	200	26.4	264	528	12	15	15	0.165	908	8
TBJA105*020 R□# @ 0^++	TBJA105*020 R□LC 9^45	A	1	20	6630	0.3	3	6	4	6	8	0.075	106	1
TBJA105*020 J□# @ 0^++	TBJA105*020 J□LC 9^45	A	1	20	3000	0.3	3	6	4	6	8	0.075	158	1
TBJA155*020 R□# @ 0^++	TBJA155*020 R□LC 9^45	A	1.5	20	5460	0.3	3	6	6	9	10	0.075	117	1
TBJA155*020 J□# @ 0^++	TBJA155*020 J□LC 9^45	A	1.5	20	3000	0.3	3	6	6	9	10	0.075	158	1
TBJA225*020 R□# @ 0^++	TBJA225*020 R□LC 9^45	A	2.2	20	4550	0.33	3.3	6.6	6	9	10	0.075	128	1
TBJA225*020 J□# @ 0^++	TBJA225*020 J□LC 9^45	A	2.2	20	3000	0.33	3.3	6.6	6	9	10	0.075	158	1
TBJA335*020 R□# @ 0^++	TBJA335*020 R□LC 9^45	A	3.3	20	3740	0.5	5	10	6	9	10	0.075	142	1
TBJA335*020 J□# @ 0^++	TBJA335*020 J□LC 9^45	A	3.3	20	2500	0.5	5	10	6	9	10	0.075	173	1
TBJB335*020 R□# @ 0^++	TBJB335*020 R□LC 9^45	B	3.3	20	3740	0.5	5	10	6	9	10	0.085	151	1
TBJB335*020 J□# @ 0^++	TBJB335*020 J□LC 9^45	B	3.3	20	1300	0.5	5	10	6	9	10	0.085	256	2
TBJA475*020 R□# @ 0^++	TBJA475*020 R□LC 9^45	A	4.7	20	2500	0.71	7.1	14.2	5	8	10	0.075	173	1
TBJA475*020 J□# @ 0^++	TBJA475*020 J□LC 9^45	A	4.7	20	1800	0.71	7.1	14.2	5	8	10	0.075	204	1
TBJB475*020 R□# @ 0^++	TBJB475*020 R□LC 9^45	B	4.7	20	3160	0.71	7.1	14.2	6	9	10	0.085	164	1
TBJB475*020 J□# @ 0^++	TBJB475*020 J□LC 9^45	B	4.7	20	1000	0.71	7.1	14.2	6	9	10	0.085	292	2
TBJB685*020 R□# @ 0^++	TBJB685*020 R□LC 9^45	B	6.8	20	2650	1	10	20	6	9	10	0.085	179	1
TBJB685*020 J□# @ 0^++	TBJB685*020 J□LC 9^45	B	6.8	20	1000	1	10	20	6	9	10	0.085	292	2
TBJC685*020 R□# @ 0^++	TBJC685*020 R□LC 9^45	C	6.8	20	2000	1	10	20	6	9	10	0.110	235	2
TBJB106*020 R□# @ 0^++	TBJB106*020 R□LC 9^45	B	10	20	2200	1.5	15	30	6	9	10	0.085	197	1
TBJB106*020 J□# @ 0^++	TBJB106*020 J□LC 9^45	B	10	20	1000	1.5	15	30	6	9	10	0.085	292	2
TBJC106*020 R□# @ 0^++	TBJC106*020 R□LC 9^45	C	10	20	800	1.5	15	30	6	9	10	0.110	371	3
TBJC106*020 J□# @ 0^++	TBJC106*020 J□LC 9^45	C	10	20	500	1.5	15	30	6	9	10	0.110	469	4
TBJB156*020 R□# @ 0^++	TBJB156*020 R□LC 9^45	B	15	20	1400	2.3	23	46	6	9	10	0.085	246	2
TBJB156*020 J□# @ 0^++	TBJB156*020 J□LC 9^45	B	15	20	500	2.3	23	46	6	9	10	0.085	412	3
TBJC156*020 R□# @ 0^++	TBJC156*020 R□LC 9^45	C	15	20	720	2.3	23	46	6	9	10	0.110	391	3
TBJC156*020 J□# @ 0^++	TBJC156*020 J□LC 9^45	C	15	20	400	2.3	23	46	6	9	10	0.110	524	4
TBJD156*020 R□# @ 0^++	TBJD156*020 R□LC 9^45	D	15	20	1100	2.3	23	46	6	9	10	0.150	369	3
TBJC226*020 R□# @ 0^++	TBJC226*020 R□LC 9^45	C	22	20	650	3.3	33	66	6	9	10	0.110	411	3
TBJC226*020 J□# @ 0^++	TBJC226*020 J□LC 9^45	C	22	20	400	3.3	33	66	6	9	10	0.110	524	4
TBJD226*020 R□# @ 0^++	TBJD226*020 R□LC 9^45	D	22	20	650	3.3	33	66	6	9	10	0.150	480	4
TBJD226*020 J□# @ 0^++	TBJD226*020 J□LC 9^45	D	22	20	150	3.3	33	66	6	9	10	0.150	1000	9
TBJC336*020 R□# @ 0^++	TBJC336*020 R□LC 9^45	C	33	20	590	5	50	100	6	9	10	0.110	432	3
TBJC336*020 J□# @ 0^++	TBJC336*020 J□LC 9^45	C	33	20	300	5	50	100	6	9	10	0.110	606	5
TBJD336*020 R□# @ 0^++	TBJD336*020 R□LC 9^45	D	33	20	590	5	50	100	6	9	10	0.150	504	4
TBJD336*020 J□# @ 0^++	TBJD336*020 J□LC 9^45	D	33	20	250	5	50	100	6	9	10	0.150	775	6
TBJD476*020 R□# @ 0^++	TBJD476*020 R□LC 9^45	D	47	20	540	7.1	71	142	6	9	10	0.150	527	4
TBJD476*020 J□# @ 0^++	TBJD476*020 J□LC 9^45	D	47	20	200	7.1	71	142	6	9	10	0.150	866	7
TBJD686*020 R□# @ 0^++	TBJD686*020 R□LC 9^45	D	68	20	490	10	100	200	6	9	10	0.150	553	4
TBJD686*020 J□# @ 0^++	TBJD686*020 J□LC 9^45	D	68	20	200	10	100	200	6	9	10	0.150	866	7
TBJE686*020 R□# @ 0^++	TBJE686*020 R□LC 9^45	E	68	20	490	10	100	200	6	9	10	0.165	580	5
TBJE686*020 J□# @ 0^++	TBJE686*020 J□LC 9^45	E	68	20	120	10	100	200	6	9	10	0.165	1173	10
TBJE107*020 R□# @ 0^++	TBJE107*020 R□LC 9^45	E	100	20	300	15	150	300	6	9	10	0.165	742	6

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBJ Series

## COTS-Plus – SRC9000 Space Level

RATING & PART NUMBER REFERENCE			Parametric Specifications by Rating									Power Dissipation W	25°C Ripple mA (100kHz)	Typical Ripple mA (100kHz)
			Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max					
AVX P/N	AVX SRC9000 P/N	Case				+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+ (85/125)°C (%)	-55°C (%)			
TBJE107*020 J □ # @ 0 ^ ++	TBJE107*020 J □ LC 9 ^ 45	E	100	20	150	15	150	300	6	9	10	0.165	1049	9
TBJA474*025 R □ # @ 0 ^ ++	TBJA474*025 R □ LC 9 ^ 45	A	0.47	25	9530	0.3	3	6	4	6	8	0.075	89	3
TBJA474*025 J □ # @ 0 ^ ++	TBJA474*025 J □ LC 9 ^ 45	A	0.47	25	7000	0.3	3	6	4	6	8	0.075	104	3
TBJA684*025 R □ # @ 0 ^ ++	TBJA684*025 R □ LC 9 ^ 45	A	0.68	25	7980	0.3	3	6	4	6	8	0.075	97	3
TBJA684*025 J □ # @ 0 ^ ++	TBJA684*025 J □ LC 9 ^ 45	A	0.68	25	6000	0.3	3	6	4	6	8	0.075	112	3
TBJA105*025 R □ # @ 0 ^ ++	TBJA105*025 R □ LC 9 ^ 45	A	1	25	6630	0.3	3	6	4	6	8	0.075	106	3
TBJA105*025 J □ # @ 0 ^ ++	TBJA105*025 J □ LC 9 ^ 45	A	1	25	3000	0.3	3	6	4	6	8	0.075	158	3
TBJA155*025 R □ # @ 0 ^ ++	TBJA155*025 R □ LC 9 ^ 45	A	1.5	25	5460	0.3	3	6	6	9	10	0.075	117	3
TBJA155*025 J □ # @ 0 ^ ++	TBJA155*025 J □ LC 9 ^ 45	A	1.5	25	3000	0.3	3	6	6	9	10	0.075	158	3
TBJB155*025 R □ # @ 0 ^ ++	TBJB155*025 R □ LC 9 ^ 45	B	1.5	25	5000	0.3	3	6	6	9	10	0.085	130	3
TBJA225*025 R □ # @ 0 ^ ++	TBJA225*025 R □ LC 9 ^ 45	A	2.2	25	2900	0.41	4.1	8.2	6	9	10	0.075	161	3
TBJA225*025 J □ # @ 0 ^ ++	TBJA225*025 J □ LC 9 ^ 45	A	2.2	25	1600	0.41	4.1	8.2	6	9	10	0.075	217	3
TBJB225*025 R □ # @ 0 ^ ++	TBJB225*025 R □ LC 9 ^ 45	B	2.2	25	4550	0.41	4.1	8.2	6	9	10	0.085	137	3
TBJB225*025 J □ # @ 0 ^ ++	TBJB225*025 J □ LC 9 ^ 45	B	2.2	25	1200	0.41	4.1	8.2	6	9	10	0.085	266	2
TBJB335*025 R □ # @ 0 ^ ++	TBJB335*025 R □ LC 9 ^ 45	B	3.3	25	3740	0.62	6.2	12.4	6	9	10	0.085	151	3
TBJB335*025 J □ # @ 0 ^ ++	TBJB335*025 J □ LC 9 ^ 45	B	3.3	25	2000	0.62	6.2	12.4	6	9	10	0.085	206	3
TBJB475*025 R □ # @ 0 ^ ++	TBJB475*025 R □ LC 9 ^ 45	B	4.7	25	3160	0.88	8.8	17.6	6	9	10	0.085	164	3
TBJB475*025 J □ # @ 0 ^ ++	TBJB475*025 J □ LC 9 ^ 45	B	4.7	25	1000	0.88	8.8	17.6	6	9	10	0.085	292	2
TBJB685*025 R □ # @ 0 ^ ++	TBJB685*025 R □ LC 9 ^ 45	B	6.8	25	1500	1.3	13	26	6	9	10	0.085	238	2
TBJB685*025 J □ # @ 0 ^ ++	TBJB685*025 J □ LC 9 ^ 45	B	6.8	25	1000	1.3	13	26	6	9	10	0.085	292	2
TBJC685*025 R □ # @ 0 ^ ++	TBJC685*025 R □ LC 9 ^ 45	C	6.8	25	1070	1.3	13	26	6	9	10	0.110	321	2
TBJC685*025 J □ # @ 0 ^ ++	TBJC685*025 J □ LC 9 ^ 45	C	6.8	25	600	1.3	13	26	6	9	10	0.110	428	3
TBJC106*025 R □ # @ 0 ^ ++	TBJC106*025 R □ LC 9 ^ 45	C	10	25	800	1.9	19	38	6	9	10	0.110	371	3
TBJC106*025 J □ # @ 0 ^ ++	TBJC106*025 J □ LC 9 ^ 45	C	10	25	600	1.9	19	38	6	9	10	0.110	428	3
TBJD106*025 R □ # @ 0 ^ ++	TBJD106*025 R □ LC 9 ^ 45	D	10	25	1200	1.9	19	38	6	9	10	0.150	354	3
TBJC156*025 R □ # @ 0 ^ ++	TBJC156*025 R □ LC 9 ^ 45	C	15	25	720	2.8	28	56	6	9	10	0.110	391	3
TBJC156*025 J □ # @ 0 ^ ++	TBJC156*025 J □ LC 9 ^ 45	C	15	25	500	2.8	28	56	6	9	10	0.110	469	4
TBJD156*025 R □ # @ 0 ^ ++	TBJD156*025 R □ LC 9 ^ 45	D	15	25	720	2.8	28	56	6	9	10	0.150	456	4
TBJD156*025 J □ # @ 0 ^ ++	TBJD156*025 J □ LC 9 ^ 45	D	15	25	300	2.8	28	56	6	9	10	0.150	707	6
TBJD226*025 R □ # @ 0 ^ ++	TBJD226*025 R □ LC 9 ^ 45	D	22	25	650	4.1	41	82	6	9	10	0.150	480	4
TBJD226*025 J □ # @ 0 ^ ++	TBJD226*025 J □ LC 9 ^ 45	D	22	25	300	4.1	41	82	6	9	10	0.150	707	6
TBJD336*025 R □ # @ 0 ^ ++	TBJD336*025 R □ LC 9 ^ 45	D	33	25	590	6.2	62	124	6	9	10	0.150	504	4
TBJD336*025 J □ # @ 0 ^ ++	TBJD336*025 J □ LC 9 ^ 45	D	33	25	400	6.2	62	124	6	9	10	0.150	612	5
TBJD476*025 R □ # @ 0 ^ ++	TBJD476*025 R □ LC 9 ^ 45	D	47	25	540	8.8	88	176	6	9	10	0.150	527	4
TBJD476*025 J □ # @ 0 ^ ++	TBJD476*025 J □ LC 9 ^ 45	D	47	25	250	8.8	88	176	6	9	10	0.150	775	6
TBJE476*025 R □ # @ 0 ^ ++	TBJE476*025 R □ LC 9 ^ 45	E	47	25	540	8.8	88	176	6	9	10	0.165	553	4
TBJE476*025 J □ # @ 0 ^ ++	TBJE476*025 J □ LC 9 ^ 45	E	47	25	150	8.8	88	176	6	9	10	0.165	1049	9
TBJA104*035 R □ # @ 0 ^ ++	TBJA104*035 R □ LC 9 ^ 45	A	0.1	35	20000	0.3	3	6	4	6	8	0.075	61	3
TBJA154*035 R □ # @ 0 ^ ++	TBJA154*035 R □ LC 9 ^ 45	A	0.15	35	16470	0.3	3	6	4	6	8	0.075	67	3
TBJA154*035 J □ # @ 0 ^ ++	TBJA154*035 J □ LC 9 ^ 45	A	0.15	35	6000	0.3	3	6	4	6	8	0.075	112	3
TBJA224*035 R □ # @ 0 ^ ++	TBJA224*035 R □ LC 9 ^ 45	A	0.22	35	13710	0.3	3	6	4	6	8	0.075	74	3
TBJA224*035 J □ # @ 0 ^ ++	TBJA224*035 J □ LC 9 ^ 45	A	0.22	35	6000	0.3	3	6	4	6	8	0.075	112	3
TBJA334*035 R □ # @ 0 ^ ++	TBJA334*035 R □ LC 9 ^ 45	A	0.33	35	11280	0.3	3	6	4	6	8	0.075	82	3
TBJA334*035 J □ # @ 0 ^ ++	TBJA334*035 J □ LC 9 ^ 45	A	0.33	35	6000	0.3	3	6	4	6	8	0.075	112	3
TBJA474*035 R □ # @ 0 ^ ++	TBJA474*035 R □ LC 9 ^ 45	A	0.47	35	9530	0.3	3	6	4	6	8	0.075	89	3
TBJA474*035 J □ # @ 0 ^ ++	TBJA474*035 J □ LC 9 ^ 45	A	0.47	35	4000	0.3	3	6	4	6	8	0.075	137	3
TBJA684*035 R □ # @ 0 ^ ++	TBJA684*035 R □ LC 9 ^ 45	A	0.68	35	7980	0.3	3	6	4	6	8	0.075	97	3
TBJA684*035 J □ # @ 0 ^ ++	TBJA684*035 J □ LC 9 ^ 45	A	0.68	35	6000	0.3	3	6	4	6	8	0.075	112	3
TBJA105*035 R □ # @ 0 ^ ++	TBJA105*035 R □ LC 9 ^ 45	A	1	35	6630	0.3	3	6	4	6	8	0.075	106	3
TBJA105*035 J □ # @ 0 ^ ++	TBJA105*035 J □ LC 9 ^ 45	A	1	35	3000	0.3	3	6	4	6	8	0.075	158	3
TBJB105*035 R □ # @ 0 ^ ++	TBJB105*035 R □ LC 9 ^ 45	B	1	35	3400	0.3	3	6	4	6	8	0.085	158	3
TBJB105*035 J □ # @ 0 ^ ++	TBJB105*035 J □ LC 9 ^ 45	B	1	35	2000	0.3	3	6	4	6	8	0.085	206	3
TBJA155*035 R □ # @ 0 ^ ++	TBJA155*035 R □ LC 9 ^ 45	A	1.5	35	3100	0.39	3.9	7.8	6	9	10	0.075	156	3

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TBJ Series

## COTS-Plus – SRC9000 Space Level

RATING & PART NUMBER REFERENCE			Parametric Specifications by Rating									Power Dissipation W	25°C Ripple mA (100kHz)	Typical Ripple mA (100kHz)
			Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max					
AVX P/N	AVX SRC9000 P/N	Case				+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+ (85/125)°C (%)	-55°C (%)			
TBJA155*035 J □ # @ 0 ^ ++	TBJA155*035 J □ LC 9 ^ 45	A	1.5	35	2000	0.39	3.9	7.8	6	9	10	0.075	194	1
TBJB155*035 R □ # @ 0 ^ ++	TBJB155*035 R □ LC 9 ^ 45	B	1.5	35	5460	0.39	3.9	7.8	6	9	10	0.085	125	1
TBJB155*035 J □ # @ 0 ^ ++	TBJB155*035 J □ LC 9 ^ 45	B	1.5	35	2500	0.39	3.9	7.8	6	9	10	0.085	184	1
TBJB225*035 R □ # @ 0 ^ ++	TBJB225*035 R □ LC 9 ^ 45	B	2.2	35	4550	0.58	5.8	11.6	6	9	10	0.085	137	1
TBJB225*035 J □ # @ 0 ^ ++	TBJB225*035 J □ LC 9 ^ 45	B	2.2	35	2000	0.58	5.8	11.6	6	9	10	0.085	206	1
TBJB335*035 R □ # @ 0 ^ ++	TBJB335*035 R □ LC 9 ^ 45	B	3.3	35	3740	0.87	8.7	17.4	6	9	10	0.085	151	1
TBJB335*035 J □ # @ 0 ^ ++	TBJB335*035 J □ LC 9 ^ 45	B	3.3	35	1000	0.87	8.7	17.4	6	9	10	0.085	292	2
TBJC335*035 R □ # @ 0 ^ ++	TBJC335*035 R □ LC 9 ^ 45	C	3.3	35	1840	0.87	8.7	17.4	6	9	10	0.110	245	2
TBJC335*035 J □ # @ 0 ^ ++	TBJC335*035 J □ LC 9 ^ 45	C	3.3	35	800	0.87	8.7	17.4	6	9	10	0.110	371	3
TBJD335*035 R □ # @ 0 ^ ++	TBJD335*035 R □ LC 9 ^ 45	D	3.3	35	2000	0.87	8.7	17.4	6	9	10	0.150	274	2
TBJB475*035 R □ # @ 0 ^ ++	TBJB475*035 R □ LC 9 ^ 45	B	4.7	35	2200	1.2	12	24	6	9	10	0.085	197	1
TBJB475*035 J □ # @ 0 ^ ++	TBJB475*035 J □ LC 9 ^ 45	B	4.7	35	1500	1.2	12	24	6	9	10	0.085	238	2
TBJC475*035 R □ # @ 0 ^ ++	TBJC475*035 R □ LC 9 ^ 45	C	4.7	35	1410	1.2	12	24	6	9	10	0.110	279	2
TBJC475*035 J □ # @ 0 ^ ++	TBJC475*035 J □ LC 9 ^ 45	C	4.7	35	600	1.2	12	24	6	9	10	0.110	428	3
TBJD475*035 R □ # @ 0 ^ ++	TBJD475*035 R □ LC 9 ^ 45	D	4.7	35	1500	1.2	12	24	6	9	10	0.150	316	2
TBJC685*035 R □ # @ 0 ^ ++	TBJC685*035 R □ LC 9 ^ 45	C	6.8	35	1070	1.8	18	36	6	9	10	0.110	321	2
TBJC685*035 J □ # @ 0 ^ ++	TBJC685*035 J □ LC 9 ^ 45	C	6.8	35	600	1.8	18	36	6	9	10	0.110	428	3
TBJD685*035 R □ # @ 0 ^ ++	TBJD685*035 R □ LC 9 ^ 45	D	6.8	35	1300	1.8	18	36	6	9	10	0.150	340	3
TBJC106*035 R □ # @ 0 ^ ++	TBJC106*035 R □ LC 9 ^ 45	C	10	35	800	2.6	26	52	6	9	10	0.110	371	3
TBJC106*035 J □ # @ 0 ^ ++	TBJC106*035 J □ LC 9 ^ 45	C	10	35	600	2.6	26	52	6	9	10	0.110	428	3
TBJD106*035 R □ # @ 0 ^ ++	TBJD106*035 R □ LC 9 ^ 45	D	10	35	800	2.6	26	52	6	9	10	0.150	433	3
TBJD106*035 J □ # @ 0 ^ ++	TBJD106*035 J □ LC 9 ^ 45	D	10	35	250	2.6	26	52	6	9	10	0.150	775	6
TBJD156*035 R □ # @ 0 ^ ++	TBJD156*035 R □ LC 9 ^ 45	D	15	35	720	3.9	39	78	6	9	10	0.150	456	4
TBJD156*035 J □ # @ 0 ^ ++	TBJD156*035 J □ LC 9 ^ 45	D	15	35	225	3.9	39	78	6	9	10	0.150	816	7
TBJD226*035 R □ # @ 0 ^ ++	TBJD226*035 R □ LC 9 ^ 45	D	22	35	650	5.8	58	116	6	9	10	0.150	480	4
TBJD226*035 J □ # @ 0 ^ ++	TBJD226*035 J □ LC 9 ^ 45	D	22	35	200	5.8	58	116	6	9	10	0.150	866	7
TBJE336*035 R □ # @ 0 ^ ++	TBJE336*035 R □ LC 9 ^ 45	E	33	35	590	8.7	87	174	6	9	10	0.165	529	4
TBJE336*035 J □ # @ 0 ^ ++	TBJE336*035 J □ LC 9 ^ 45	E	33	35	250	8.7	87	174	6	9	10	0.165	812	7
TBJU476*035 R □ # @ 0 ^ ++	TBJU476*035 R □ LC 9 ^ 45	U	47	35	400	12.3	123	246	10	12	12	0.165	642	5
TBJU476*035 J □ # @ 0 ^ ++	TBJU476*035 J □ LC 9 ^ 45	U	47	35	200	12.3	123	246	10	12	12	0.165	908	8
TBJA224*050 R □ # @ 0 ^ ++	TBJA224*050 R □ LC 9 ^ 45	A	0.22	50	7500	0.3	3	6	4	6	8	0.075	100	1
TBJA224*050 J □ # @ 0 ^ ++	TBJA224*050 J □ LC 9 ^ 45	A	0.22	50	7000	0.3	3	6	4	6	8	0.075	104	1
TBJA334*050 R □ # @ 0 ^ ++	TBJA334*050 R □ LC 9 ^ 45	A	0.33	50	7000	0.3	3	6	4	6	8	0.075	104	1
TBJB474*050 R □ # @ 0 ^ ++	TBJB474*050 R □ LC 9 ^ 45	B	0.47	50	5000	0.3	3	6	4	6	8	0.085	130	1
TBJB684*050 R □ # @ 0 ^ ++	TBJB684*050 R □ LC 9 ^ 45	B	0.68	50	4000	0.3	3	6	4	6	8	0.085	146	1
TBJB684*050 J □ # @ 0 ^ ++	TBJB684*050 J □ LC 9 ^ 45	B	0.68	50	2000	0.3	3	6	4	6	8	0.085	206	1
TBJB105*050 R □ # @ 0 ^ ++	TBJB105*050 R □ LC 9 ^ 45	B	1	50	3400	0.4	4	8	4	6	8	0.085	158	1
TBJB105*050 J □ # @ 0 ^ ++	TBJB105*050 J □ LC 9 ^ 45	B	1	50	2000	0.4	4	8	4	6	8	0.085	206	1
TBJC105*050 R □ # @ 0 ^ ++	TBJC105*050 R □ LC 9 ^ 45	C	1	50	3000	0.4	4	8	4	6	8	0.110	191	1
TBJC155*050 R □ # @ 0 ^ ++	TBJC155*050 R □ LC 9 ^ 45	C	1.5	50	2500	0.6	6	12	6	9	10	0.110	210	1
TBJC155*050 J □ # @ 0 ^ ++	TBJC155*050 J □ LC 9 ^ 45	C	1.5	50	1500	0.6	6	12	6	9	10	0.110	271	2
TBJC225*050 R □ # @ 0 ^ ++	TBJC225*050 R □ LC 9 ^ 45	C	2.2	50	1700	0.8	8	16	6	9	10	0.110	254	2
TBJC225*050 J □ # @ 0 ^ ++	TBJC225*050 J □ LC 9 ^ 45	C	2.2	50	1000	0.8	8	16	6	9	10	0.110	332	2
TBJD225*050 R □ # @ 0 ^ ++	TBJD225*050 R □ LC 9 ^ 45	D	2.2	50	2000	0.8	8	16	4.5	7	9	0.150	274	2
TBJD225*050 J □ # @ 0 ^ ++	TBJD225*050 J □ LC 9 ^ 45	D	2.2	50	1200	0.8	8	16	4.5	7	9	0.150	354	3
TBJC335*050 R □ # @ 0 ^ ++	TBJC335*050 R □ LC 9 ^ 45	C	3.3	50	1400	1.2	12	24	6	9	10	0.110	280	2
TBJC335*050 J □ # @ 0 ^ ++	TBJC335*050 J □ LC 9 ^ 45	C	3.3	50	1000	1.2	12	24	6	9	10	0.110	332	2
TBJD335*050 R □ # @ 0 ^ ++	TBJD335*050 R □ LC 9 ^ 45	D	3.3	50	1100	1.2	12	24	4.5	7	9	0.150	369	3
TBJD335*050 J □ # @ 0 ^ ++	TBJD335*050 J □ LC 9 ^ 45	D	3.3	50	800	1.2	12	24	4.5	7	9	0.150	433	3
TBJD475*050 R □ # @ 0 ^ ++	TBJD475*050 R □ LC 9 ^ 45	D	4.7	50	900	1.8	18	36	4.5	7	9	0.150	408	3
TBJD475*050 J □ # @ 0 ^ ++	TBJD475*050 J □ LC 9 ^ 45	D	4.7	50	600	1.8	18	36	4.5	7	9	0.150	500	4
TBJD685*050 R □ # @ 0 ^ ++	TBJD685*050 R □ LC 9 ^ 45	D	6.8	50	700	2.6	26	52	4.5	7	9	0.150	463	4
TBJE106*050 R □ # @ 0 ^ ++	TBJE106*050 R □ LC 9 ^ 45	E	10	50	700	3.8	38	76	4.5	7	9	0.165	486	4
TBJE106*050 J □ # @ 0 ^ ++	TBJE106*050 J □ LC 9 ^ 45	E	10	50	300	3.8	38	76	4.5	7	9	0.165	742	6

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

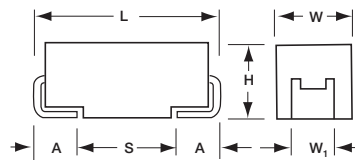
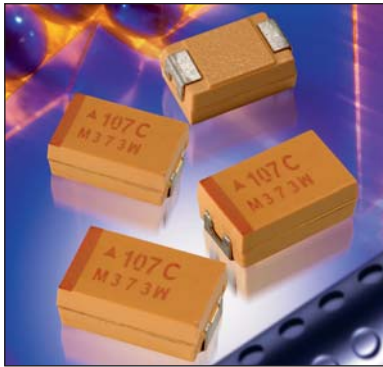
**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# DSCC DwgS 07016 & 95158



## COTS-Plus



### MARKING

(Brown marking on gold body)



**Polarity Stripe (+)**  
**Capacitance Code**  
**Rated Voltage**  
**Manufacturer's ID**  
**Lot Number**

The DSCC 07016 & 95158 families, based on the CWR11 form factor, are high reliability series encompassing the current range of EIA Low ESR ratings. DSCC 07016 has the widest range of case sizes, capacitance / voltage ratings, and is offered with Weibull Grade "B" and "C" reliability with all MIL-PRF-55365 Rev. G surge test options ("A", "B" & "C").

For Space Level applications, AVX SRC9000 qualification is recommend. Please refer to the TBJ COTS-Plus SRC9000 datasheet for part number availability.

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these correspond to "H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365).

The molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	1206	3216-18	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	1210	3528-21	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	2312	6032-28	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	2917	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	2917	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
V	2924	7361-38	7.30 (0.287)	6.10 (0.240)	3.55 (0.140)	3.10 (0.120)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (EIA VOLTAGE CODE) RANGE LETTER DENOTES CASE SIZE (ESR LIMITS IN PARENTHESES)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C							
µF	Code	4V (G)	6V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
0.15	154								A(15000)
0.22	224								A(18000)
0.47	474							A(12000)	A(9500)/B(9500)
0.68	684						A(10000)	A(8000)	A(7900)
1.0	105						A(8000)	A(7500)	A(6600)/B(7000)
1.5	155					A(6500)	A(3000,7500)	A(7500)/B(5200)	C(2000)/D(1500)
2.2	225				A(5500)	A(3000)	A(7000)/B(2000)	B(2000)	D(1200)
3.3	335		A(8000)		A(3500,5000)		B(2000)	B(1000)	D(800)
4.7	475		A(6000)	A(5000)	A(2000)	A(1800,4000) B(1000)	A(3100) B(700,1500)	B(1500) C(600)/D(450)	D(300)
6.8	685		A(5000)	A(4000)	A(1500)/B(1200)	B(1000)	B(700,2800) C(700)	C(350)/D(400) E(300)	D(300,600)
10	106		A(4000)	A(1800,3000)	A(3000)/B(900)	B(500,1000) C(700)	C(300,500)	C(1600)/D(125,300) E(250)	
15	156		A(3500)	A(1000,3200) B(600)	B(500,800)	B(500)/C(450) D(275)	D(275)/E(200)	C(450)/D(100,300) E(225)	
22	226		A(3000)/B(600)	B(500,700) C(300)	B(500,600) C(150,375)	B(600)/C(400) D(275)	C(275,400) D(100,200)/E(225)	D(125,400) E(125,300)	
33	336	A(3000)	B(600)	A(700)/B(425,650) C(500)	C(100,300) D(250)	C(300) D(100,200)	D(90,300) E(100,175)	D(200,300) E(300)	
47	476		C(300)	C(200,350) D(200)	C(110,350) D(80,200)	D(100,200) E(150)	D(175,250)	E(250)/V(200)	
68	686	A(1500)	B(500)/C(200) D(175)	C(80,300) D(150)/E(150)	D(150)	D(70,200) E(150,200)	V(95)		
100	107	A(1400) B(900)	C(75,150)	C(75,200) D(50,100)/E(100)	D(50,125) E(125)	V(60)			
150	157		D(125)/E(125)	D(50,100)/E(100)	D(60,150)/V(45)				
220	227		D(100,125) E(100)	D(50,150) E(50,100)	V(50)				
330	337		E(50,150)	D(50,150) E(50,100)/V(40)					
470	477		E(50,200)/V(40)	E(50,200)/V(40)					
1000	108	E(200)							

NOTE: EIA standards for Low ESR solid tantalum capacitors allow an ESR movement of 1.25 times initial limit post mounting.



# DSCC Dwgs 07016 & 95158



## COTS-Plus

### HOW TO ORDER

#### DSCC DWG P/N:

**07016**  
DSCC DWG  
07016

**-001**  
Dash  
Number  
See Rating  
Tables

**K**  
Capacitance  
Tolerance  
K = ±10%  
M = ±20%

**B**  
Reliability  
Grade  
B = B Weibull  
C = C Weibull  
D = D Weibull

**C**  
Termination Finish  
B = Gold Plated (10 microinch minimum)  
H = Solder Plated (50 microinch minimum)  
C = Hot Solder Dip (60 microinch minimum)

**A**  
Surge Test  
Option  
A = 10 cycles, +25°C  
B = 10 cycles,  
-55°C & +85°C  
C = 10 cycles,  
-55°C & +85°C  
before Weibull  
Z = None required  
Per MIL-PRF-55365



**95158**  
DSCC DWG  
95158

**-01**  
Dash  
Number  
See Rating  
Tables

**K**  
Capacitance  
Tolerance  
K = ±10%  
M = ±20%

**H**  
Termination Finish  
B = Gold Plated (10 microinch minimum)  
H = Solder Plated (100 microinch minimum)



### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	0.15 µF to 1000 µF									
Capacitance Tolerance:	±10%; ±20%									
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	4	6	10	16	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ 125°C:	2.7	4	7	10	13	17	23	33	
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	5.2	8	13	20	26	32	46	65	
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	3.4	5	8	12	16	20	28	40	
Temperature Range:	-55°C to +125°C									

# DSCC Dwgs 07016 & 95158

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per DSCC 95158 or 07016 where applicable									Typical Ripple				
DSCC P/N	Case	Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple A (100kHz)	85°C Ripple A (100kHz)	125°C Ripple A (100kHz)	
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)					
07016 001	* @ ^ +	A	33	4	3000	1.4	14	17	6	9	9	0.075	0.16	0.14	0.
07016 002	* @ ^ +	A	68	4	1500	2.7	27	32	10	12	14	0.075	0.22	0.20	0.
07016 003	* @ ^ +	A	100	4	1400	4	40	48	30	36	42	0.075	0.23	0.21	0.
07016 004	* @ ^ +	B	100	4	900	4	40	48	8	10	12	0.085	0.31	0.28	0.
07016 005	* @ ^ +	E	1,000	4	200	40	400	480	60	90	90	0.165	0.91	0.82	0.
07016 006	* @ ^ +	A	3.3	6	8000	0.5	5	6	6	9	9	0.075	0.10	0.09	0.
07016 007	* @ ^ +	A	4.7	6	6000	0.5	5	6	6	9	10	0.075	0.11	0.10	0.
07016 008	* @ ^ +	A	6.8	6	5000	0.5	5	6	6	9	10	0.075	0.12	0.11	0.
07016 009	* @ ^ +	A	10	6	4000	0.6	10	11	6	9	10	0.075	0.14	0.12	0.
07016 010	* @ ^ +	A	15	6	3500	0.9	10	11	6	9	10	0.075	0.15	0.13	0.
07016 011	* @ ^ +	A	22	6	3000	1.4	14	17	6	9	10	0.075	0.16	0.14	0.
07016 012	* @ ^ +	B	22	6	600	1.4	14	17	6	9	10	0.085	0.38	0.34	0.
07016 013	* @ ^ +	B	33	6	600	2.1	21	25	6	9	10	0.085	0.38	0.34	0.
07016 014	* @ ^ +	C	47	6	300	3	30	36	6	9	10	0.110	0.61	0.54	0.
07016 015	* @ ^ +	B	68	6	500	4.3	43	51	8	10	12	0.085	0.41	0.37	0.
07016 016	* @ ^ +	C	68	6	200	4.3	43	51	6	9	10	0.110	0.74	0.67	0.
95158 01	* ^	D	68	6	175	3.3	19.8	33	4	6	6	0.150	0.93	0.83	0.
07016 017	* @ ^ +	C	100	6	150	6.3	63	76	6	9	10	0.110	0.86	0.77	0.
07016 018	* @ ^ +	C	100	6	75	6.3	63	76	6	9	10	0.110	1.21	1.09	0.
07016 019	* @ ^ +	D	150	6	125	9.5	95	113	6	9	10	0.150	1.10	0.99	0.
95158 02	* ^	E	150	6	125	7.2	43.2	72	6	8	8	0.165	1.15	1.03	0.
07016 020	* @ ^ +	D	220	6	125	13.9	139	166	8	10	12	0.150	1.10	0.99	0.
95158 25	* ^	D	220	6	100	13.2	132	165	8	10	12	0.150	1.22	1.10	0.
95158 03	* ^	E	220	6	100	13.2	132	165	8	12	12	0.165	1.28	1.16	0.
07016 021	* @ ^ +	E	330	6	150	20.8	208	249	8	10	12	0.165	1.05	0.94	0.
07016 022	* @ ^ +	E	330	6	50	20.8	208	249	8	10	12	0.165	1.82	1.63	0.
07016 023	M @ ^ +	E	470	6	200	29.6	296	355	10	12	14	0.165	0.91	0.82	0.
07016 024	M @ ^ +	E	470	6	50	29.6	296	355	10	12	14	0.165	1.82	1.63	0.
07016 025	* @ ^ +	V	470	6	40	29.6	296	355	10	12	12	0.250	2.50	2.25	1.
07016 026	* @ ^ +	A	4.7	10	5000	0.5	5	6	6	9	10	0.075	0.12	0.11	0.
07016 027	* @ ^ +	A	6.8	10	4000	0.7	7	8	6	9	10	0.075	0.14	0.12	0.
07016 028	* @ ^ +	A	10	10	3000	1	10	12	6	9	10	0.075	0.16	0.14	0.
07016 029	* @ ^ +	A	10	10	1800	1	10	12	6	9	10	0.075	0.20	0.18	0.
07016 030	* @ ^ +	A	15	10	3200	1.6	16	19	6	9	10	0.075	0.15	0.14	0.
07016 031	* @ ^ +	A	15	10	1000	1.6	16	19	6	9	10	0.075	0.27	0.25	0.
07016 032	* @ ^ +	B	15	10	600	1.6	16	19	6	9	10	0.085	0.38	0.34	0.
07016 033	* @ ^ +	B	22	10	700	2.2	22	26	6	9	10	0.085	0.35	0.31	0.
07016 034	* @ ^ +	B	22	10	500	2.2	22	26	6	9	10	0.085	0.41	0.37	0.
07016 035	* @ ^ +	C	22	10	300	2.2	22	26	6	9	10	0.110	0.61	0.54	0.
07016 036	* @ ^ +	A	33	10	700	3.3	33	40	8	10	12	0.075	0.33	0.29	0.
07016 037	* @ ^ +	B	33	10	650	3.3	33	40	6	9	10	0.085	0.36	0.33	0.
07016 038	* @ ^ +	B	33	10	425	3.3	33	40	6	9	10	0.085	0.45	0.40	0.
07016 039	* @ ^ +	C	33	10	500	3.3	33	40	6	9	10	0.110	0.47	0.42	0.
07016 040	* @ ^ +	C	47	10	350	4.7	47	56	6	9	10	0.110	0.56	0.50	0.
07016 041	* @ ^ +	C	47	10	200	4.7	47	56	6	9	10	0.110	0.74	0.67	0.
95158 -04	* ^	D	47	10	200	3.8	22.8	38	4	6	6	0.150	0.87	0.78	0.
07016 042	* @ ^ +	C	68	10	300	6.8	68	82	8	10	12	0.110	0.61	0.54	0.
07016 043	* @ ^ +	C	68	10	80	6.8	68	82	8	10	12	0.110	1.17	1.06	0.
07016 044	* @ ^ +	D	68	10	150	6.8	68	82	6	9	10	0.150	1.00	0.90	0.
95158 05	* ^	E	68	10	150	5.4	32.4	54	4	6	6	0.165	1.05	0.94	0.
07016 045	* @ ^ +	C	100	10	200	10	100	120	8	10	12	0.110	0.74	0.67	0.
07016 046	* @ ^ +	C	100	10	75	10	100	120	8	10	12	0.110	1.21	1.09	0.
95158 06	* ^	D	100	10	100	10	100	125	8	12	12	0.150	1.22	1.10	0.
07016 047	* @ ^ +	D	100	10	50	10	100	120	6	9	10	0.150	1.73	1.56	0.
95158 07	* ^	E	100	10	100	8	48	80	6	8	8	0.165	1.28	1.16	0.

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.





# DSCC Dwgs 07016 & 95158

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per DSCC 95158 or 07016 where applicable									Typical Ripple				
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple A (100kHz)	85°C Ripple A (100kHz)	125°C Ripple A (100kHz)	
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)					
95158 26	* ^ A	D	150	10	100	15	150	187.5	8	10	12	0.150	1.22	1.10	0.90
07016 048	* @ ^ +	D	150	10	50	15	150	180	8	10	12	0.150	1.73	1.56	0.90
95158 08	* ^ A	E	150	10	100	15	150	187.5	8	12	12	0.165	1.28	1.16	0.90
07016 049	* @ ^ +	D	220	10	150	22	220	264	8	10	12	0.150	1.00	0.90	0.90
07016 050	M @ ^ +	D	220	10	50	15	150	180	8	10	12	0.150	1.73	1.56	0.90
95158 28	* ^ A	E	220	10	100	15	150	187.5	8	10	12	0.165	1.28	1.16	0.90
07016 051	* @ ^ +	E	220	10	50	22	220	264	8	10	12	0.165	1.82	1.63	0.90
07016 052	M @ ^ +	D	330	10	150	33	330	396	8	10	12	0.150	1.00	0.90	0.90
07016 053	M @ ^ +	D	330	10	50	33	330	396	8	10	12	0.150	1.73	1.56	0.90
07016 054	* @ ^ +	E	330	10	100	33	330	396	8	10	12	0.165	1.28	1.16	0.90
07016 055	* @ ^ +	E	330	10	50	33	330	396	8	10	12	0.165	1.82	1.63	0.90
07016 056	* @ ^ +	V	330	10	40	33	330	396	8	10	12	0.250	2.50	2.25	1.10
07016 057	M @ ^ +	E	470	10	200	47	470	564	10	12	14	0.165	0.91	0.82	0.90
07016 058	M @ ^ +	E	470	10	50	47	470	564	10	12	14	0.165	1.82	1.63	0.90
07016 059	* @ ^ +	V	470	10	40	47	470	564	10	12	14	0.250	2.50	2.25	1.10
07016 060	* @ ^ +	A	2.2	16	5500	0.5	5	6	6	9	10	0.075	0.12	0.11	0.90
07016 061	* @ ^ +	A	3.3	16	5000	0.5	5	6	6	9	10	0.075	0.12	0.11	0.90
07016 062	* @ ^ +	A	3.3	16	3500	0.5	5	6	6	9	10	0.075	0.15	0.13	0.90
07016 063	* @ ^ +	A	4.7	16	2000	0.8	8	10	6	9	10	0.075	0.19	0.17	0.90
07016 064	* @ ^ +	A	6.8	16	1500	1.1	11	13	6	9	10	0.075	0.22	0.20	0.90
07016 065	* @ ^ +	B	6.8	16	1200	1.1	11	13	6	9	10	0.085	0.27	0.24	0.90
07016 066	* @ ^ +	A	10	16	3000	1.6	16	19	6	9	10	0.075	0.16	0.14	0.90
07016 067	* @ ^ +	B	10	16	900	1.6	16	19	6	9	10	0.085	0.32	0.29	0.90
07016 068	* @ ^ +	B	15	16	800	2.4	24	29	6	9	10	0.085	0.33	0.29	0.90
07016 069	* @ ^ +	B	15	16	500	2.4	24	29	6	9	10	0.085	0.41	0.37	0.90
07016 070	* @ ^ +	B	22	16	600	3.6	36	43	6	9	10	0.085	0.38	0.34	0.90
07016 071	* @ ^ +	C	22	16	375	3.6	36	43	6	9	10	0.110	0.54	0.49	0.90
07016 072	* @ ^ +	C	22	16	150	3.6	36	43	6	9	10	0.110	0.86	0.77	0.90
07016 073	* @ ^ +	B	22	16	500	3.6	36	43	6	9	10	0.085	0.41	0.37	0.90
07016 074	* @ ^ +	C	33	16	300	5.3	53	64	6	9	10	0.110	0.61	0.54	0.90
07016 075	* @ ^ +	C	33	16	100	5.3	53	64	6	9	10	0.110	1.05	0.94	0.90
95158 09	* ^ A	D	33	16	250	4.2	25.2	42	4	6	6	0.150	0.77	0.70	0.90
07016 076	* @ ^ +	C	47	16	350	7.6	76	91	6	9	10	0.110	0.56	0.50	0.90
07016 077	* @ ^ +	C	47	16	110	7.6	76	91	6	9	10	0.110	1.00	0.90	0.90
07016 078	* @ ^ +	D	47	16	80	7.6	76	91	6	9	10	0.150	1.37	1.23	0.90
95158 10	* ^ A	D	47	16	200	7.5	75	94	6	9	9	0.150	0.87	0.78	0.90
07016 079	* @ ^ +	D	68	16	150	10.9	109	131	6	9	10	0.150	1.00	0.90	0.90
07016 080	* @ ^ +	D	100	16	125	16	160	192	6	9	10	0.150	1.10	0.99	0.90
07016 081	* @ ^ +	D	100	16	50	16	160	192	6	9	10	0.150	1.73	1.56	0.90
95158 11	* ^ A	E	100	16	125	16	160	200	8	12	12	0.165	1.15	1.03	0.90
07016 082	M @ ^ +	D	150	16	150	24	240	288	6	9	10	0.150	1.00	0.90	0.90
07016 083	M @ ^ +	D	150	16	60	24	240	288	6	9	10	0.150	1.58	1.42	0.90
07016 084	* @ ^ +	V	150	16	45	24	480	288	6	8	10	0.250	2.36	2.12	0.90
07016 085	* @ ^ +	V	220	16	50	35.2	352	422	8	10	12	0.250	2.24	2.01	0.90
07016 086	* @ ^ +	A	1.5	20	6500	0.5	5	6	6	8	10	0.075	0.11	0.10	0.90
07016 087	* @ ^ +	A	2.2	20	3000	0.5	5	6	6	8	10	0.075	0.16	0.14	0.90
07016 088	* @ ^ +	A	4.7	20	4000	1	10	12	6	8	10	0.075	0.14	0.12	0.90
07016 089	* @ ^ +	A	4.7	20	1800	1	10	12	6	8	10	0.075	0.20	0.18	0.90
07016 090	* @ ^ +	B	4.7	20	1000	2	20	24	6	8	10	0.085	0.29	0.26	0.90
07016 091	* @ ^ +	B	6.8	20	1000	1.4	14	17	6	8	10	0.085	0.29	0.26	0.90
07016 092	* @ ^ +	B	10	20	1000	0.7	7	8	6	8	10	0.085	0.29	0.26	0.90
07016 093	* @ ^ +	B	10	20	500	0.7	7	8	6	8	10	0.085	0.41	0.37	0.90
07016 094	* @ ^ +	C	10	20	700	1.4	14	17	6	8	10	0.110	0.40	0.36	0.90
07016 095	* @ ^ +	B	15	20	500	3	30	36	6	8	10	0.085	0.41	0.37	0.90
07016 096	* @ ^ +	C	15	20	450	3	30	36	6	8	10	0.110	0.49	0.44	0.90
95158 12	* ^ A	D	15	20	275	2.4	14.4	24	4	6	6	0.150	0.74	0.66	0.90

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# DSCC Dwgs 07016 & 95158

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per DSCC 95158 or 07016 where applicable									Typical Ripple			
		Cap @ 120Hz @ 25°C	DC Rated Voltage @ +85°C	ESR @ 100kHz @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple A (100kHz)	85°C Ripple A (100kHz)	125°C Ripple A (100kHz)
DSCC P/N	Case	µF	V	mOhms	+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)				
07016 097	* @ ^ + B	22	20	600	4.4	44	53	6	8	10	0.085	0.38	0.34	0.0
07016 098	* @ ^ + C	22	20	400	4.4	44	53	6	8	10	0.110	0.52	0.47	0.0
95158 13	* ^ A D	22	20	275	3.5	21	35	4	6	6	0.150	0.74	0.66	0.0
07016 099	* @ ^ + C	33	20	300	6.6	66	79	6	8	10	0.110	0.61	0.54	0.0
07016 100	* @ ^ + D	33	20	200	6.6	66	79	6	8	10	0.150	0.87	0.78	0.0
07016 101	* @ ^ + D	33	20	100	6.6	66	79	6	8	10	0.150	1.22	1.10	0.0
07016 102	* @ ^ + D	47	20	200	9.4	94	113	6	8	10	0.150	0.87	0.78	0.0
07016 103	* @ ^ + D	47	20	100	9.4	94	113	6	8	10	0.150	1.22	1.10	0.0
95158 14	* ^ A E	47	20	150	7.5	45	75	4	6	6	0.165	1.05	0.94	0.0
07016 104	* @ ^ + D	68	20	200	13.6	136	163	6	8	10	0.150	0.87	0.78	0.0
07016 105	* @ ^ + D	68	20	70	13.6	136	163	6	8	10	0.150	1.46	1.32	0.0
07016 106	* @ ^ + E	68	20	200	13.6	136	163	6	8	10	0.165	0.91	0.82	0.0
95158 15	* ^ A E	68	20	150	13.6	136	170	6	8	9	0.165	1.05	0.94	0.0
07016 107	* @ ^ + V	100	20	60	20	200	240	8	10	12	0.250	2.04	1.84	0.0
07016 108	M @ ^ + A	0.7	25	10000	0.5	5	6	4	6	8	0.075	0.09	0.08	0.0
07016 109	* @ ^ + A	1.0	25	8000	0.5	5	6	4	6	8	0.075	0.10	0.09	0.0
07016 110	* @ ^ + A	1.5	25	7500	0.5	5	6	6	8	10	0.075	0.10	0.09	0.0
07016 111	* @ ^ + A	1.5	25	3000	0.5	5	6	6	8	10	0.075	0.16	0.14	0.0
07016 112	* @ ^ + A	2.2	25	7000	0.5	5	6	6	8	10	0.075	0.10	0.09	0.0
07016 113	* @ ^ + B	2.2	25	2000	0.5	5	6	6	8	10	0.085	0.21	0.19	0.0
07016 114	* @ ^ + B	3.3	25	2000	0.5	5	6	6	8	10	0.085	0.21	0.19	0.0
07016 115	* @ ^ + A	4.7	25	3100	1.2	12	14	6	9	10	0.075	0.16	0.14	0.0
07016 116	* @ ^ + B	4.7	25	1500	1.2	12	14	6	8	10	0.085	0.24	0.21	0.0
07016 117	* @ ^ + B	4.7	25	700	1.2	12	14	6	8	10	0.085	0.35	0.31	0.0
07016 118	* @ ^ + B	6.8	25	2800	1.7	17	20	6	8	10	0.085	0.17	0.16	0.0
07016 119	* @ ^ + B	6.8	25	700	1.7	17	20	6	8	10	0.085	0.35	0.31	0.0
07016 120	* @ ^ + C	6.8	25	700	1.7	17	20	6	8	10	0.110	0.40	0.36	0.0
07016 121	* @ ^ + C	10	25	500	2.5	25	30	6	8	10	0.110	0.47	0.42	0.0
07016 122	* @ ^ + C	10	25	300	2.5	25	30	6	8	10	0.110	0.61	0.54	0.0
95158 16	* ^ A D	15	25	275	3.8	38	46.9	6	9	9	0.150	0.74	0.66	0.0
95158 17	* ^ A E	15	25	200	3	18	30	4	6	6	0.165	0.91	0.82	0.0
07016 123	* @ ^ + C	22	25	400	5.5	55	66	6	8	10	0.110	0.52	0.47	0.0
07016 124	* @ ^ + C	22	25	275	5.5	55	66	6	8	10	0.110	0.63	0.57	0.0
07016 125	* @ ^ + D	22	25	200	5.5	55	66	6	8	10	0.150	0.87	0.78	0.0
07016 126	* @ ^ + D	22	25	100	5.5	55	66	6	8	10	0.150	1.22	1.10	0.0
95158 18	* ^ A E	22	25	225	4.4	26.4	44	4	6	6	0.165	0.86	0.77	0.0
07016 127	* @ ^ + D	33	25	300	8.3	83	100	6	8	10	0.150	0.71	0.64	0.0
07016 128	* @ ^ + D	33	25	90	8.3	83	100	6	8	10	0.150	1.22	1.10	0.0
95158 19	* ^ A E	33	25	175	6.6	39.6	66	4	6	6	0.165	0.97	0.87	0.0
07016 129	* @ ^ + E	33	25	100	8.3	83	100	6	8	10	0.165	1.35	1.22	0.0
07016 130	M @ ^ + D	47	25	250	11.8	118	142	6	8	10	0.150	0.77	0.70	0.0
07016 131	M @ ^ + D	47	25	175	11.8	118	142	6	8	10	0.150	0.93	0.83	0.0
07016 132	* @ ^ + V	68	25	95	17	170	204	8	10	12	0.250	1.62	1.46	0.0
07016 133	M @ ^ + A	0.47	35	12000	0.5	5	6	4	6	8	0.075	0.08	0.07	0.0
07016 134	M @ ^ + A	0.68	35	8000	0.5	5	6	4	6	8	0.075	0.10	0.09	0.0
07016 135	* @ ^ + A	1.0	35	7500	0.5	5	6	4	6	6	0.075	0.10	0.09	0.0
07016 136	* @ ^ + A	1.5	35	7500	0.5	5	6	6	8	9	0.075	0.10	0.09	0.0
07016 137	* @ ^ + B	1.5	35	5200	0.5	5	6	6	8	9	0.085	0.13	0.12	0.0
07016 138	* @ ^ + B	2.2	35	2000	0.8	8	10	6	8	9	0.085	0.21	0.19	0.0
07016 139	* @ ^ + B	3.3	35	1000	1.2	12	14	6	8	9	0.085	0.29	0.26	0.0
07016 140	* @ ^ + B	4.7	35	1500	1.6	16	19	6	8	9	0.085	0.24	0.21	0.0
95158 29	* ^ A C	4.7	35	600	1.7	10.2	17	6	8	9	0.110	0.43	0.39	0.0
07016 141	* @ ^ + D	4.7	35	450	1.6	16	20	6	8	9	0.110	0.49	0.44	0.0
07016 142	* @ ^ + C	6.8	35	350	2.4	24	29	6	9	9	0.150	0.65	0.59	0.0
07016 143	* @ ^ + D	6.8	35	400	2.4	24	29	6	9	9	0.165	0.64	0.58	0.0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

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# DSCC Dwgs 07016 & 95158

## COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating per DSCC 95158 or 07016 where applicable									Typical Ripple			
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple A (100kHz)	85°C Ripple A (100kHz)	125°C Ripple A (100kHz)
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)				
DSCC P/N	Case													
95158 20	* ^ E	6.8	35	300	1.9	11.4	19	4	6	6	0.165	0.74	0.67	0.
07016 144	* @ ^ + C	10	35	1600	3.5	35	42	6	9	9	0.110	0.26	0.24	0.
95158 27	* ^ D	10	35	300	3.5	35	42	4	6	6	0.150	0.71	0.64	0.
07016 145	* @ ^ + D	10	35	125	3.5	35	42	6	9	9	0.150	1.10	0.99	0.
95158 21	* ^ E	10	35	250	2.8	16.8	28	4	6	6	0.165	0.81	0.73	0.
07016 146	* @ ^ + C	15	35	450	5.3	53	64	6	9	9	0.110	0.49	0.44	0.
07016 147	* @ ^ + D	15	35	300	5.3	53	64	6	9	9	0.150	0.71	0.64	0.
07016 148	* @ ^ + D	15	35	100	5.3	53	64	6	9	9	0.150	1.22	1.10	0.
95158 22	* ^ E	15	35	225	5.3	53	65.6	6	9	9	0.165	0.86	0.77	0.
07016 149	* @ ^ + D	22	35	400	7.7	77	92	6	9	9	0.150	0.61	0.55	0.
07016 150	* @ ^ + D	22	35	125	7.7	77	92	6	9	9	0.150	1.10	0.99	0.
95158 23	* ^ E	22	35	300	7.7	77	96.3	6	9	9	0.165	0.74	0.67	0.
07016 151	* @ ^ + E	22	35	125	7.7	77	92	6	9	9	0.165	1.15	1.03	0.
07016 152	M @ ^ + D	33	35	300	11.6	116	139	6	9	9	0.150	0.71	0.64	0.
07016 153	M @ ^ + D	33	35	200	11.6	116	139	6	9	9	0.150	0.87	0.78	0.
07016 154	M @ ^ + E	33	35	300	11.6	116	139	6	9	9	0.165	0.74	0.67	0.
07016 155	M @ ^ + E	47	35	250	16.5	165	197	6	9	9	0.165	0.81	0.73	0.
07016 156	M @ ^ + V	47	35	200	16.5	165	197	6	9	9	0.250	1.12	1.01	0.
07016 157	M @ ^ + A	0.15	50	15000	0.5	5	6	4	6	6	0.075	0.07	0.06	0.
07016 158	M @ ^ + A	0.22	50	18000	0.5	5	6	4	6	6	0.075	0.06	0.06	0.
07016 159	* @ ^ + A	0.47	50	9500	0.5	5	6	4	6	6	0.075	0.09	0.08	0.
07016 160	* @ ^ + B	0.47	50	9500	0.5	5	6	4	6	6	0.085	0.09	0.09	0.
07016 161	* @ ^ + A	0.68	50	7900	0.5	5	6	4	6	6	0.075	0.10	0.09	0.
07016 162	M @ ^ + A	1.0	50	6600	0.5	5	6	4	6	6	0.075	0.11	0.10	0.
07016 163	* @ ^ + B	1.0	50	7000	0.5	5	6	4	6	6	0.085	0.11	0.10	0.
07016 164	* @ ^ + C	1.5	50	2000	0.8	8	10	6	8	9	0.110	0.23	0.21	0.
07016 165	* @ ^ + D	1.5	50	1500	0.8	8	10	6	8	9	0.150	0.32	0.28	0.
07016 166	* @ ^ + D	2.2	50	1200	1.1	11	13	6	8	9	0.150	0.35	0.32	0.
07016 167	* @ ^ + D	3.3	50	800	1.7	17	20	6	9	9	0.150	0.43	0.39	0.
07016 168	* @ ^ + D	4.7	50	300	2.4	24	29	6	9	9	0.150	0.71	0.64	0.
07016 169	* @ ^ + D	6.8	50	600	3.4	34	41	6	6	6	0.150	0.50	0.45	0.
07016 170	* @ ^ + D	6.8	50	300	3.4	34	41	6	6	6	0.150	0.71	0.64	0.

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



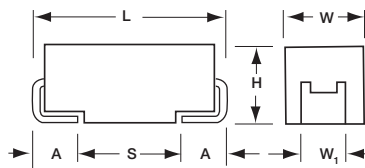
# T4J – Medical Series



## HRC4000 Implantable Non Life Support and Non Implantable Life Support

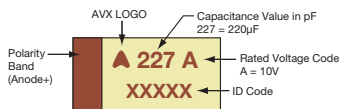


The AVX T4J series is designed for use in Implantable - Non-Life support or Non-Implantable - Life support medical applications. These components are screened using our newly designed Q-Process to effectively remove components that may experience parametric shifts through customer processing or display instability through life testing.



### MARKING

#### A, B, C, D, E, U CASE



### FEATURES

- Dedicated to medical applications
- HRC4000 - Implantable, Non-Life support  
- Non-Implantable, Life support
- -55 to +125°C operation temperature
- Basic reliability better than 0.1%/1000hours
- Custom DCL / ESR options on selected parts

**T4J Standard** – Standard option DCL and ESR limits including Q-Process screening.

**T4J Custom** – A custom option where specific DCL and ESR parameter limits can be agreed based Q-Process statistical screening. DCL down to 0.005CV on selected codes

### APPLICATIONS

- Medical, Implantable - Non-Life support and Non-Implantable - Life support

For additional information on Q-process please consult the AVX technical publication “Reaching the Highest Reliability for Tantalum Capacitors” (see the link: <http://www.avx.com/docs/techinfo/Qprocess.pdf>)

### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	1206	3216-18	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	1210	3528-21	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	2312	6032-28	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	2917	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	2917	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
U	2924	7361-43	7.30 (0.287)	6.10 (0.240)	4.10 (0.162)	3.10 (0.120)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C (Voltage Code)						
µF	Code	6.3V (J)	10V (A)	16V (C)	20 (D)	25 (E)	35 (V)	50V (T)
1.0	105							C
1.5	155						B	C
2.2	225					B	B	C
3.3	335				A*	B	B	C
4.7	475			A*	B	B	C	D
6.8	685		A*	B	B	C	C	D
10	106	A*	A*	B	C	C	C	E
15	156	A*	B	B	C	C	D	
22	226	B	B	C	C	D	D	
33	336	B	C	C	D	D	E	
47	476	C	C	D	D	D		
68	686	C	C	D	E			
100	107	C	D	E	E			
150	157	D	D	E				
220	227	D	E	U				
330	337	E	E					
470	477	E	U					
680	687	U						

Released codes

Engineering samples - please contact manufacturer

\*Codes under development

Please contact the factory for codes not listed in the table.

Note: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards with customer written approval.



# T4J – Medical Series



## HRC4000 Implantable Non Life Support and Non Implantable Life Support

### HOW TO ORDER

<b>T4J</b>	<b>E</b>	<b>336</b>	<b>K</b>	<b>035</b>	<b>C</b>	<b>□</b>	<b>L</b>	<b>Q</b>	<b>4</b>	<b>^</b>	<b>00</b>
<b>Type</b>	<b>Case Size</b> See table above	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Tolerance</b> K = ±10%	<b>Rated DC Voltage</b> 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	<b>Standard or Low ESR Range</b> C = Std ESR	<b>Packaging</b> R = 7" Reel B = Bulk	<b>Inspection Level</b> L = Lab Inspection	<b>Reliability Grade</b> Q = Q-Process Screening	<b>Qualification Level</b> 4 = HCR4000	<b>Termination</b> 7 = 100% Tin H = SnPb (Contact Manufacturer)	<b>Suffix</b> 00 = Standard XX = Custom

### TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C								
Capacitance Range:	1 µF to 680 µF								
Capacitance Tolerance:	±10%								
Leakage Current DCL:	0.01CV (Custom potential down to 0.005CV available upon request)								
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	6.3	10	16	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ 125°C:	4	7	10	13	17	23	33	
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	8	13	20	26	32	46	65	
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	5	8	13	16	20	28	40	
Temperature Range:	-55°C to +125°C								
Reliability:	0.1% / 1000hrs at 25°C, VR with 0.1Ω/V series impedance, 90% confidence level								

# T4J – Medical Series



HRC4000 Implantable Non Life Support and Non Implantable Life Support

## RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (mA)		
											25°C	85°C	125°C
<b>6.3 Volt @ 85°C</b>													
T4JA106K006C□□LQ4^00	A	10	6.3	85	4	125	0.6	6	1500	3	224	201	89
T4JA156K006C□□LQ4^00	A	15	6.3	85	4	125	0.9	6	1500	3	224	201	89
T4JB226K006C□□LQ4^00	B	22	6.3	85	4	125	1.4	6	600	3	376	339	151
T4JB336K006C□□LQ4^00	B	33	6.3	85	4	125	2.1	6	600	3	376	339	151
T4JC476K006C□□LQ4^00	C	47	6.3	85	4	125	3.0	6	300	3	606	545	242
T4JC686K006C□□LQ4^00	C	68	6.3	85	4	125	4.3	6	300	3	606	545	242
T4JC107K006C□□LQ4^00	C	100	6.3	85	4	125	6.3	6	300	3	606	545	242
T4JD157K006C□□LQ4^00	D	150	6.3	85	4	125	9.5	6	200	3	866	779	346
T4JD227K006C□□LQ4^00	D	220	6.3	85	4	125	13.9	8	200	3	866	779	346
T4JE337K006C□□LQ4^00	E	330	6.3	85	4	125	20.8	8	200	3	908	817	363
T4JE477K006C□□LQ4^00	E	470	6.3	85	4	125	29.6	8	200	3	908	817	363
T4JU687K006C□□LQ4^00	U	680	6.3	85	4	125	42.8	12	250	3	812	731	325
<b>10 Volt @ 85°C</b>													
T4JA685K010C□□LQ4^00	A	6.8	10	85	7	125	0.7	6	2000	3	194	174	77
T4JA106K010C□□LQ4^00	A	10	10	85	7	125	1.0	6	2000	3	194	174	77
T4JB156K010C□□LQ4^00	B	15	10	85	7	125	1.5	6	700	3	348	314	139
T4JB226K010C□□LQ4^00	B	22	10	85	7	125	2.2	6	700	3	348	314	139
T4JC336K010C□□LQ4^00	C	33	10	85	7	125	3.3	6	300	3	606	545	242
T4JC476K010C□□LQ4^00	C	47	10	85	7	125	4.7	6	300	3	606	545	242
T4JC686K010C□□LQ4^00	C	68	10	85	7	125	6.8	6	300	3	606	545	242
T4JD107K010C□□LQ4^00	D	100	10	85	7	125	10.0	6	150	3	1000	900	400
T4JD157K010C□□LQ4^00	D	150	10	85	7	125	15.0	8	150	3	1000	900	400
T4JE227K010C□□LQ4^00	E	220	10	85	7	125	22.0	8	150	3	1049	944	420
T4JE337K010C□□LQ4^00	E	330	10	85	7	125	33.0	8	150	3	1049	944	420
T4JU477K010C□□LQ4^00	U	470	10	85	7	125	47.0	12	200	3	908	817	363
<b>16 Volt @ 85°C</b>													
T4JA475K016C□□LQ4^00	A	4.7	16	85	10	125	0.8	6	3500	3	146	132	59
T4JB685K016C□□LQ4^00	B	6.8	16	85	10	125	1.1	6	1200	3	266	240	106
T4JB106K016C□□LQ4^00	B	10	16	85	10	125	1.6	6	1200	3	266	240	106
T4JB156K016C□□LQ4^00	B	15	16	85	10	125	2.4	6	1200	3	266	240	106
T4JC226K016C□□LQ4^00	C	22	16	85	10	125	3.5	6	350	3	561	505	224
T4JC336K016C□□LQ4^00	C	33	16	85	10	125	5.3	6	350	3	561	505	224
T4JD476K016C□□LQ4^00	D	47	16	85	10	125	7.5	6	200	3	866	779	346
T4JD686K016C□□LQ4^00	D	68	16	85	10	125	10.9	6	200	3	866	779	346
T4JE107K016C□□LQ4^00	E	100	16	85	10	125	16.0	6	150	3	1049	944	420
T4JE157K016C□□LQ4^00	E	150	16	85	10	125	24.0	6	150	3	1049	944	420
T4JU227K016C□□LQ4^00	U	220	16	85	10	125	35.2	12	200	3	908	817	363
<b>20 Volt @ 85°C</b>													
T4JA335K020C□□LQ4^00	A	3.3	20	85	13	125	0.7	6	3000	3	158	142	63
T4JB475K020C□□LQ4^00	B	4.7	20	85	13	125	1.0	6	1000	3	292	262	117
T4JB685K020C□□LQ4^00	B	6.8	20	85	13	125	1.4	6	1000	3	292	262	117
T4JC106K020C□□LQ4^00	C	10	20	85	13	125	2.0	6	500	3	469	422	188
T4JC156K020C□□LQ4^00	C	15	20	85	13	125	3.0	6	500	3	469	422	188
T4JC226K020C□□LQ4^00	C	22	20	85	13	125	4.4	6	500	3	469	422	188
T4JD336K020C□□LQ4^00	D	33	20	85	13	125	6.6	6	250	3	775	697	310
T4JD476K020C□□LQ4^00	D	47	20	85	13	125	9.4	6	250	3	775	697	310
T4JE686K020C□□LQ4^00	E	68	20	85	13	125	13.6	6	200	3	908	817	363
T4JE107K020C□□LQ4^00	E	100	20	85	13	125	20.0	6	200	3	908	817	363
<b>25 Volt @ 85°C</b>													
T4JB225K025C□□LQ4^00	B	2.2	25	85	17	125	0.6	6	2000	3	206	186	82
T4JB335K025C□□LQ4^00	B	3.3	25	85	17	125	0.8	6	2000	3	206	186	82
T4JB475K025C□□LQ4^00	B	4.7	25	85	17	125	1.2	6	2000	3	206	186	82
T4JC685K025C□□LQ4^00	C	6.8	25	85	17	125	1.7	6	600	3	428	385	171
T4JC106K025C□□LQ4^00	C	10	25	85	17	125	2.5	6	600	3	428	385	171
T4JC156K025C□□LQ4^00	C	15	25	85	17	125	3.8	6	600	3	428	385	171
T4JD226K025C□□LQ4^00	D	22	25	85	17	125	5.5	6	400	3	612	551	245
T4JD336K025C□□LQ4^00	D	33	25	85	17	125	8.3	6	400	3	612	551	245
T4JD476K025C□□LQ4^00	D	47	25	85	17	125	11.8	6	400	3	612	551	245



# T4J – Medical Series



## HRC4000 Implantable Non Life Support and Non Implantable Life Support

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (mA)		
											25°C	85°C	125°C
<b>35 Volt @ 85°C</b>													
T4JB155K035C□□LQ4^00	B	1.5	35	85	23	125	0.5	6	2500	3	184	166	74
T4JB225K035C□□LQ4^00	B	2.2	35	85	23	125	0.8	6	2500	3	184	166	74
T4JB335K035C□□LQ4^00	B	3.3	35	85	23	125	1.2	6	2500	3	184	166	74
T4JC475K035C□□LQ4^00	C	4.7	35	85	23	125	1.6	6	600	3	428	385	171
T4JC685K035C□□LQ4^00	C	6.8	35	85	23	125	2.4	6	600	3	428	385	171
T4JC106K035C□□LQ4^00	C	10	35	85	23	125	3.5	6	600	3	428	385	171
T4JD156K035C□□LQ4^00	D	15	35	85	23	125	5.3	6	400	3	612	551	245
T4JD226K035C□□LQ4^00	D	22	35	85	23	125	7.7	6	400	3	612	551	245
T4JE336K035C□□LQ4^00	E	33	35	85	23	125	11.6	6	250	3	812	731	325
<b>50 Volt @ 85°C</b>													
T4JC105K050C□□LQ4^00	C	1	50	85	33	125	0.5	4	1500	3	271	244	108
T4JC155K050C□□LQ4^00	C	1.5	50	85	33	125	0.8	6	1500	3	271	244	108
T4JC225K050C□□LQ4^00	C	2.2	50	85	33	125	1.1	6	1500	3	271	244	108
T4JC335K050C□□LQ4^00	C	3.3	50	85	33	125	1.7	6	1500	3	271	244	108
T4JD475K050C□□LQ4^00	D	4.7	50	85	33	125	2.4	4.5	600	3	500	450	200
T4JD685K050C□□LQ4^00	D	6.8	50	85	33	125	3.4	4.5	600	3	500	450	200
T4JE106K050C□□LQ4^00	E	10	50	85	33	125	5.0	4.5	400	3	642	578	257

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

The EIA & CECC standards for low ESR Solid Tantalum Capacitors allow an ESR movement to 1.25 times catalogue limit post mounting.

### QUALIFICATION TABLE

TEST	T4J HRC4000 (Temperature range -55°C to +125°C)									
	Condition			Characteristics						
Endurance	Determine after application of rated voltage for 2000 +48/-0 hours at 85±2°C and then leaving 1-2 hours at room temperature. Also determine of 125°C temperature, category voltage for 2000 +48/-0 hours and then leaving 1-2 hours at room temperature. Power supply impedance to be ≤0.1Ω/V.			Visual examination	no visible damage					
				DCL	1.25 x initial limit					
				ΔC/C	within ±10% of initial value					
				DF	initial limit					
				ESR	1.25 x initial limit					
Storage Life	125°C, 0V, 2000h			Visual examination	no visible damage					
				DCL	1.25 x initial limit					
				ΔC/C	within ±10% of initial value					
				DF	initial limit					
				ESR	1.25 x initial limit					
Temperature Stability	Step	Temperature°C	Duration (min)	+20°C	-55°C	+20°C	+85°C	+125°C	+20°C	
	1	+20±2	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*
	2	-55+0/-3	15							
	3	+20±2	15	ΔC/C	n/a	+0/-10%	±5%	+10/-0%	+12/-0%	±5%
	4	+85+3/-0	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*
	5	+125+3/-0	15							
	6	+20±2	15	ESR	1.25 x IL*	2.5 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*
Surge Voltage	Test temperature: 125°C+3/0°C Test voltage: Category voltage at 125°C Surge voltage: 1.3x category voltage at 125°C Series protection resistance 1000±100Ω Discharge resistance: 1000Ω Number of cycles: 1000x Cycle duration: 6min; 30 sec charge, 5min 30 sec discharge			Visual examination	no visible damage					
				DCL	initial limit					
				ΔC/C	within ±5% of initial value					
				DF	initial limit					
				ESR	1.25 x initial limit					

\*Initial Limit

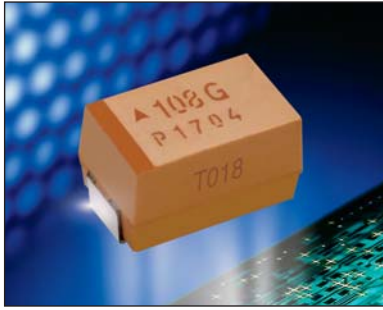
### LOT ACCEPTANCE TESTING

TEST	T4J HRC4000 (Temperature range -55°C to +125°C)		
	Condition	Characteristics	
Lot Acceptance Test	25 Pieces from each lot • Read and Record Initial Electricals • Bake Out @ 125°C for 2 Hours • Mount using AVX recommended profile • Read and Record Post Mounting Electricals • Life Test: 6 hours, 2/3 R.V., 125°C • Read and Record Post Electricals	DCL	initial limit
		ΔC/C	within ±5% of initial value
		DF	initial limit
		ESR	1.25 x initial limit
		0 Failures Allowed	



# TBM Multianode

## Tantalum Ultra Low ESR Space Level



TBM Space Level series is screened to SRC9000 and utilizes an internal multi-anode design to achieve ultra-low ESR which improves performance in high ripple power application.

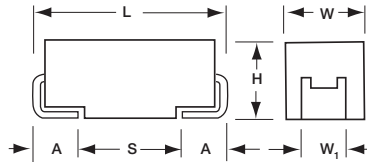
TBM Space Level is available with Weibull Grade "C" reliability and MIL-PRF-55365 Rev. G surge test option "C".

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these correspond to

"H", "K", "C" and "B" termination, respectively, per MIL-PRF-55365).

The molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.



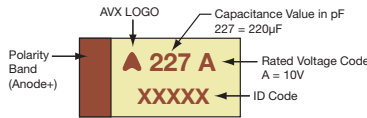
### CASE DIMENSIONS: millimeters (inches)

Code	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
D	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

### MARKING

#### D, E CASE



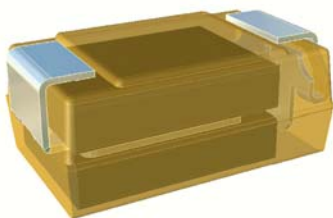
### CAPACITANCE AND RATED VOLTAGE RANGE LETTER DENOTES CASE SIZE ESR LIMIT IN BRACKETS

Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C								
µF	Code	2.5V (e)	4V (G)	6V (J)	10V (A)	12V (B)	16V (C)	20V (D)	25V (E)	35V (V)
22	226									D(70) E(60,100)
33	336								D(65)	E(50,65)
47	476								E(65)	
68	686									
100	107							E(35,45)		
150	157						E(30,40)			
220	227				D(35)	E(35)				
330	337		D(35)	D(35)	E(35)					
470	477		D(35)	E(30)						
680	687		E(23)							
1000	108	D(25)	E(23)							
1500	158	E(18)								

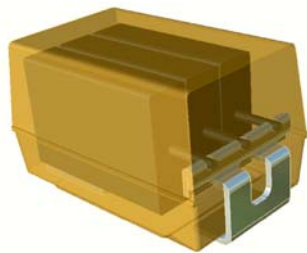
Available Ratings: ESR limits quoted in brackets (mOhms)

Notes: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards. EIA standards for Low ESR solid tantalum capacitors allow an ESR movement of 1.25 times initial limit post mounting.

### TBM D MULTIANODE CONSTRUCTION



### TBM E MULTIANODE CONSTRUCTION





# TBM Multianode





## Tantalum Ultra Low ESR Space Level

### HOW TO ORDER

#### SPACE LEVEL OPTIONS TO SRC9000:

TBM	E	477	*	006	L	□	L	@	9	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b>	<b>Capacitance Tolerance</b>	<b>Voltage Code</b>	<b>Standard or Low ESR Range</b>	<b>Packaging</b>	<b>Inspection Level</b>	<b>Reliability Grade</b>	<b>Qualification Level</b>	<b>Termination Finish</b>	<b>Surge Test Option</b>
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = ±20% K = ±10%	002 = 2.5Vdc 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 012 = 12Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc	C = Std ESR L = Low ESR	B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	L = Group A	Weibull: C = 0.01%/1000 hrs. 90% conf.	9 = SRC9000	H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	45 = 10 cycles, -55°C & +85°C before Weibull

### TECHNICAL SPECIFICATIONS

Technical Data: Unless otherwise specified, all technical data relate to an ambient temperature of +25°C

Capacitance Range:	22 µF to 1500 µF										
Capacitance Tolerance:	±10%; ±20%										
Rated Voltage DC (V <sub>R</sub> )	≤ +85°C:	2.5	4	6	10	12	16	20	25	35	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	1.7	2.7	4	7	8.4	10	13	17	23	
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	3.3	5.2	8	13	15.6	20	26	32	46	
Surge Voltage (V <sub>S</sub> )	≤ +125°C:	2.2	3.4	5	8	9.6	12	16	20	28	
Temperature Range:	-55°C to +125°C										

# TBM Multianode

## Tantalum Ultra Low ESR Space Level

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating									Typical Ripple			
		Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF max			Power Dissipation W	25°C Ripple A (100kHz)	85°C Ripple A (100kHz)	100°C Ripple A (100kHz)
AVX P/N	Case				+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+(85/125)°C (%)	-55°C (%)				
<b>2.5 Volt @ 85°C (1.7 Volt @ 125°C)</b>														
TBMD108*002L□LC9^45	D	1000	2.5	25	18.8	188	376	8	11	12	0.255	3.194	2.874	1.874
TBME158*002C□LC9^45	E	1500	2.5	18	28.1	281	562	6	9	10	0.270	3.873	3.486	2.187
<b>4 Volt @ 85°C (2.7 Volt @ 125°C)</b>														
TBMD337*004L□LC9^45	D	330	4	35	9.9	99	198	8	11	12	0.255	2.699	2.429	1.518
TBMD477*004L□LC9^45	D	470	4	35	14.1	141	282	8	11	12	0.255	2.699	2.429	1.518
TBME687*004C□LC9^45	E	680	4	23	20.4	204	408	6	9	10	0.270	3.426	3.084	1.874
TBME108*004C□LC9^45	E	1000	4	23	30	300	600	6	9	10	0.270	3.426	3.084	1.874
<b>6 Volt @ 85°C (4 Volt @ 125°C)</b>														
TBMD337*006L□LC9^45	D	330	6	35	14.9	149	298	8	11	12	0.255	2.699	2.429	1.518
TBME477*006C□LC9^45	E	470	6	30	21.2	212	424	6	9	10	0.270	3.000	2.700	1.620
<b>10 Volt @ 85°C (7 Volt @ 125°C)</b>														
TBMD227*010L□LC9^45	D	220	10	35	16.5	165	330	8	11	12	0.255	2.699	2.429	1.518
TBME337*010C□LC9^45	E	330	10	35	24.8	248	496	6	9	10	0.270	2.777	2.500	1.500
<b>12 Volt @ 85°C (8.4 Volt @ 125°C)</b>														
TBME227*012C□LC9^45	E	220	12	35	19.8	198	396	6	9	10	0.270	2.777	2.500	1.500
<b>16 Volt @ 85°C (10 Volt @ 125°C)</b>														
TBME157*016L□LC9^45	E	150	16	30	18	180	360	6	9	10	0.270	3.000	2.700	1.620
TBME157*016C□LC9^45	E	150	16	40	18	180	360	6	9	10	0.270	2.598	2.338	1.403
<b>20 Volt @ 85°C (13 Volt @ 125°C)</b>														
TBME107*020L□LC9^45	E	100	20	35	15	150	300	6	9	10	0.270	2.777	2.500	1.500
TBME107*020C□LC9^45	E	100	20	45	15	150	300	6	9	10	0.270	2.449	2.205	1.337
<b>25 Volt @ 85°C (17 Volt @ 125°C)</b>														
TBMD336*025L□LC9^45	D	33	25	65	6.2	62	124	8	11	12	0.255	1.981	1.783	1.070
TBME476*025L□LC9^45	E	47	25	65	8.8	88	176	6	9	10	0.270	2.038	1.834	1.101
<b>35 Volt @ 85°C (23 Volt @ 125°C)</b>														
TBMD226*035L□LC9^45	D	22	35	70	5.8	58	116	8	11	12	0.255	1.909	1.718	1.031
TBME226*035L□LC9^45	E	22	35	60	5.8	58	116	6	9	10	0.270	2.121	1.909	1.145
TBME226*035C□LC9^45	E	22	35	100	5.8	58	116	6	9	10	0.270	1.643	1.479	0.887
TBME336*035L□LC9^45	E	33	35	50	8.7	87	174	6	9	10	0.270	2.324	2.091	1.255
TBME336*035C□LC9^45	E	33	35	65	8.7	87	174	6	9	10	0.270	2.038	1.834	1.101

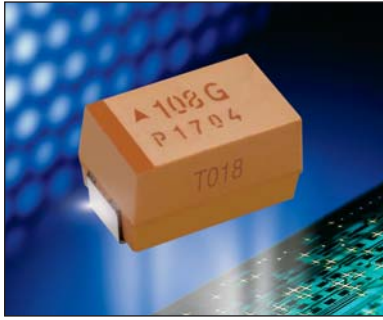
All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**

# TBM Multianode



## Tantalum Ultra Low ESR COTS-Plus



TBM COTS-Plus series uses an internal multi-anode design to achieve ultra-low ESR which improves performance in high ripple power applications.

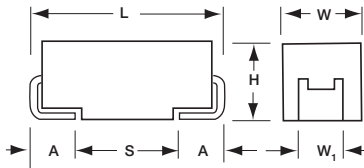
TBM is available with Weibull Grade “B” reliability and all MIL-PRF-55365 Rev. G surge test options (“A”, “B” & “C”).

There are four termination finishes available: solder plated, fused solder plated, hot solder dipped and gold plated (these

correspond to “H”, “K”, “C” and “B” termination, respectively, per MIL-PRF-55365).

The molding compound has been selected to meet the requirements of UL94V-0 (Flame Retardancy) and outgassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.



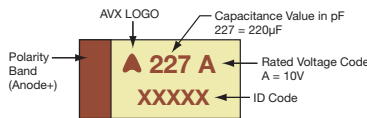
### CASE DIMENSIONS: millimeters (inches)

Code	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
D	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
V	7.30 (0.287)	6.10 (0.240)	3.55 (0.140)	3.10 (0.120)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

### MARKING

#### D, E, V CASE



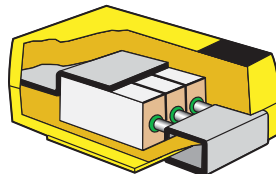
### CAPACITANCE AND RATED VOLTAGE RANGE LETTER DENOTES CASE SIZE ESR LIMIT IN BRACKETS

Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C								
µF	Code	2.5V (e)	4V (G)	6V (J)	10V (A)	12V (B)	16V (C)	20V (D)	25V (E)	35V (V)
22	226									D(70) E(60,100)
33	336								D(65)	E(50,65)
47	476								E(65)	E(55)
68	686								E(45)	
100	107							E(35,45)		
150	157						E(30,40)			
220	227				D(35)	E(35)	E(25)			
330	337		D(35)	D(35)	E(23,35)					
470	477		D(35)	E(18,30)	E(23)					
680	687		E(18,23)	E(18), V(23)						
1000	108	D(25)	E(18,23) V(18)							
1500	158	E(12,18)	E(15)							
2000	208									

Available Ratings: ESR limits quoted in brackets (mOhms)

Notes: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards. EIA standards for Low ESR solid tantalum capacitors allow an ESR movement of 1.25 times initial limit post mounting.

### TBM D MULTIANODE CONSTRUCTION



### HOW TO ORDER

#### COTS-PLUS:

TBM	E	477	*	006	L	□	#	@	0	^	++
Type	Case Size	Capacitance Code	Capacitance Tolerance	Voltage Code	Standard or Low ESR Range	Packaging	Inspection Level	Reliability Grade	Qualification Level	Termination Finish	Surge Test Option
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = ±20% K = ±10%	002 = 2.5Vdc 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 012 = 12Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc	C = Std ESR L = Low ESR	B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	S = Std. Conformance L = Group A	Weibull: B = 0.1%/1000 hrs. 90% conf. Z = Non-ER	0 = N/A	H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull



### TECHNICAL SPECIFICATIONS

Technical Data: Unless otherwise specified, all technical data relate to an ambient temperature of +25°C

Capacitance Range:	22 µF to 1500 µF										
Capacitance Tolerance:	±10%; ±20%										
Rated Voltage DC (V <sub>R</sub> )	≤ +85°C:	2.5	4	6	10	12	16	20	25	35	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	1.7	2.7	4	7	8.4	10	13	17	23	
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	3.3	5.2	8	13	15.6	20	26	32	46	
Surge Voltage (V <sub>S</sub> )	≤ +125°C:	2.2	3.4	5	8	9.6	12	16	20	28	
Temperature Range:	-55°C to +125°C										

# TBM Multianode

## Tantalum Ultra Low ESR COTS-Plus

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating									Typical Ripple			
		Cap @ 120Hz	DC Rated Voltage	ESR @ 100kHz	DCL max			DF max			Power Dissipation	25°C Ripple Current	85°C Ripple Current	100°C Ripple Current
AVX P/N	Case	µF @ 25°C	V @ +85°C	mOhms @ +25°C	+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)	W	A (100kHz)	A (100kHz)	A (100kHz)
<b>2.5 Volt @ 85°C (1.7 Volt @ 125°C)</b>														
TBMD108*002L□SB0^++	D	1000	2.5	25	18.8	188	376	8	11	12	0.255	3.194	2.874	1.874
TBME158*002C□SB0^++	E	1500	2.5	18	28.1	281	562	6	9	10	0.270	3.873	3.486	2.205
TBME158*002L□SB0^++	E	1500	2.5	12	38	380	760	6	9	10	0.270	4.743	4.269	2.874
<b>4 Volt @ 85°C (2.7 Volt @ 125°C)</b>														
TBMD337*004L□SB0^++	D	330	4	35	9.9	99	198	8	11	12	0.255	2.699	2.429	1.518
TBMD477*004L□SB0^++	D	470	4	35	14.1	141	282	8	11	12	0.255	2.699	2.429	1.518
TBME687*004C□SB0^++	E	680	4	23	20.4	204	408	6	9	10	0.270	3.426	3.084	1.874
TBME687*004L□SB0^++	E	680	4	18	27	270	540	6	9	10	0.270	3.873	3.486	2.205
TBME108*004C□SB0^++	E	1000	4	23	30	300	600	6	9	10	0.270	3.426	3.084	1.874
TBME108*004L□SB0^++	E	1000	4	18	40	400	800	6	9	10	0.270	3.873	3.486	2.205
TBMV108*004L□SB0^++	V	1000	4	18	40	400	800	6	9	10	0.285	3.979	3.581	2.205
TBME158*004L□SB0^++	E	1500	4	15	40	400	800	6	9	10	0.270	4.243	3.818	2.205
<b>6 Volt @ 85°C (4 Volt @ 125°C)</b>														
TBMD337*006L□SB0^++	D	330	6	35	14.9	149	298	8	11	12	0.255	2.699	2.429	1.518
TBME477*006C□SB0^++	E	470	6	30	21.2	212	424	6	9	10	0.270	3.000	2.700	1.518
TBME477*006L□SB0^++	E	470	6	18	28	280	560	6	9	10	0.270	3.873	3.486	2.205
TBME687*006L□SB0^++	E	680	6	18	41	410	820	6	9	10	0.270	3.873	3.486	2.205
TBMV687*006L□SB0^++	V	680	6	23	41	410	820	6	9	10	0.285	3.520	3.168	1.874
<b>10 Volt @ 85°C (7 Volt @ 125°C)</b>														
TBMD227*010L□SB0^++	D	220	10	35	16.5	165	330	8	11	12	0.255	2.699	2.429	1.518
TBME337*010C□SB0^++	E	330	10	35	24.8	248	496	6	9	10	0.270	2.777	2.500	1.518
TBME337*010L□SB0^++	E	330	10	23	33	330	660	6	9	10	0.270	3.426	3.084	1.874
TBME477*010L□SB0^++	E	470	10	23	47	470	940	6	9	10	0.270	3.426	3.084	1.874
<b>12 Volt @ 85°C (8.4 Volt @ 125°C)</b>														
TBME227*012C□SB0^++	E	220	12	35	19.8	198	396	6	9	10	0.270	2.777	2.500	1.518
<b>16 Volt @ 85°C (10 Volt @ 125°C)</b>														
TBME157*016C□SB0^++	E	150	16	40	18	180	360	6	9	10	0.270	2.598	2.338	1.518
TBME157*016L□SB0^++	E	150	16	30	18	180	360	6	9	10	0.270	3.000	2.700	1.518
TBME227*016L□SB0^++	E	220	16	25	35	350	700	6	9	10	0.270	3.286	2.958	1.874
<b>20 Volt @ 85°C (13 Volt @ 125°C)</b>														
TBME107*020C□SB0^++	E	100	20	45	15	150	300	6	9	10	0.270	2.449	2.205	1.518
TBME107*020L□SB0^++	E	100	20	35	15	150	300	6	9	10	0.270	2.777	2.500	1.518
<b>25 Volt @ 85°C (17 Volt @ 125°C)</b>														
TBMD336*025L□SB0^++	D	33	25	65	6.2	62	124	8	11	12	0.255	1.981	1.783	1.091
TBME476*025L□SB0^++	E	47	25	65	8.8	88	176	6	9	10	0.270	2.038	1.834	1.091
TBME686*025L□SB0^++	E	68	25	45	17	170	340	6	9	10	0.270	2.449	2.205	1.518
<b>35 Volt @ 85°C (23 Volt @ 125°C)</b>														
TBMD226*035L□SB0^++	D	22	35	70	5.8	58	116	8	11	12	0.255	1.909	1.718	1.091
TBME226*035C□SB0^++	E	22	35	100	5.8	58	116	6	9	10	0.270	1.643	1.479	1.091
TBME226*035L□SB0^++	E	22	35	60	5.8	58	116	6	9	10	0.270	2.121	1.909	1.091
TBME336*035C□SB0^++	E	33	35	65	8.7	87	174	6	9	10	0.270	2.038	1.834	1.091
TBME336*035L□SB0^++	E	33	35	50	8.7	87	174	6	9	10	0.270	2.324	2.091	1.091
TBME476*035L□SB0^++	E	47	35	55	16	160	320	6	9	10	0.270	2.216	1.994	1.091

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

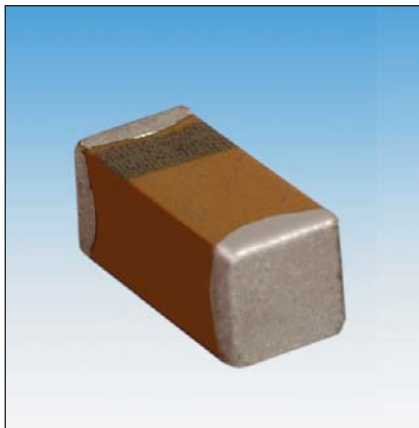
**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBC Series



## CWR15 MIL-PRF-55365/12 Established Reliability, COTS-Plus & Space Level



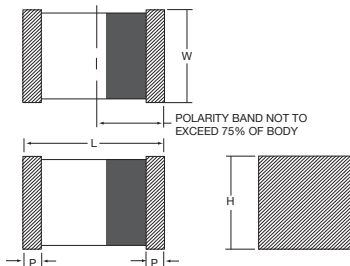
AVX announces the world's smallest military approved tantalum chip capacitors. The CWR15 offers 0603, 0805 and 1206 case sizes in capacitance/voltage combinations previously only available in much larger packages. The revolutionary AVX TACmicrochip® technology offers designers significant opportunity to downsize circuits for military and aerospace applications.

The product is manufactured in the AVX Tantalum high reliability facility in Biddeford, Maine which is also home to the CWR09, CWR11, CWR19 and CWR29 product lines.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

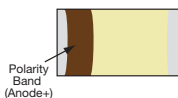
### CASE DIMENSIONS: millimeters (inches)

Case Code	Length (L)	Width (W)	Height (H)	Term. Width (W <sub>t</sub> )
A	3.20±0.20 (0.126±0.008)	1.60±0.20 (0.063±0.008)	1.60±0.20 (0.063±0.008)	0.15+0.35/-0.00 (0.006+0.014/-0.000)
L	1.60+0.25/-0.15 (0.063+0.010/-0.006)	0.84+0.20/-0.10 (0.033+0.008/-0.004)	0.84+0.20/-0.10 (0.033+0.008/-0.004)	0.15+0.35/-0.00 (0.006+0.014/-0.000)
R	2.00+0.25/-0.15 (0.079+0.010/-0.006)	1.35+0.20/-0.10 (0.053+0.008/-0.004)	1.35+0.20/-0.10 (0.053+0.008/-0.004)	0.15+0.35/-0.00 (0.006+0.014/-0.000)



### MARKING

#### A, L, R CASE



### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Voltage Rating DC (V <sub>R</sub> ) at 85°C			
µF	Code	4V (C)	6V (D)	10V (F)	20V (J)
0.47	474			L	L
0.68	684			L	
1.0	105			L	
1.5	155			L	
2.2	225			L	
3.3	335		L	R	
4.7	475		L	R	
6.8	685	L	R	R	
10	106	R	R	R	
15	156	R	R	A	
22	226	R	A		
33	336	R	A		
47	476		A		
68	686	A			

Further extensions of the CWR15 product are planned for later in 2009. A new case size will be added, and the voltage range will be extended to 20 volts. Ratings of 100 µF at 4 volts to 10 µF at 20 volts will be included in this extension of the product line.



# TBC Series



## CWR15 MIL-PRF-55365/12 Established Reliability, COTS-Plus & Space Level

### HOW TO ORDER

#### COTS-PLUS & MIL QPL (CWR15):

<b>TBC</b>	<b>L</b>	<b>685</b>	<b>*</b>	<b>004</b>	<b>C</b>	<b>□</b>	<b>#</b>	<b>@</b>	<b>0</b>	<b>^</b>	<b>++</b>
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b>	<b>Capacitance Tolerance</b>	<b>Voltage Code</b>	<b>Standard or Low ESR Range</b>	<b>Packaging</b>	<b>Inspection Level</b>	<b>Reliability Grade</b>	<b>Qualification Level</b>	<b>Termination Finish</b>	<b>Surge Test Option</b>
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = ±20% K = ±10% J = ±5%	004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 020 = 20Vdc	C = Std ESR	B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	S = Std. Conformance L = Group A  M = MIL (JAN) CWR15	Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER	0 = N/A T = T Level 9 = SRC9000	0 = Fused Solder Plated 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

For RoHS compliant products, please select correct termination style.

#### CWR15 P/N CROSS REFERENCE:

<b>CWR15</b>	<b>F</b>	<b>C</b>	<b>685</b>	<b>*</b>	<b>-</b>	<b>L</b>	<b>+</b>
<b>Style</b>	<b>Voltage Code</b>	<b>Termination Finish</b>	<b>Capacitance Code</b>	<b>Capacitance Tolerance</b>	<b>Product Level Designator</b>	<b>Case Size</b>	<b>Surge Test Option</b>
	C = 4Vdc D = 6Vdc F = 10Vdc J = 20Vdc	B = Gold Plated K = Solder Fused   For RoHS compliant products, please select correct termination style.	pF code: 1st two digits represent significant figures 3rd digit represents number of zeros to follow	J = ±5% K = ±10% M = ±20%  See page 7 for additional packaging options.	Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. T = T Level A = Non-ER		A = +25°C after Weibull B = -55°C & +85°C after Weibull C = -55°C & +85°C before Weibull Z = None Required

#### SPACE LEVEL OPTIONS TO SRC9000\*:

<b>TBC</b>	<b>L</b>	<b>685</b>	<b>*</b>	<b>004</b>	<b>C</b>	<b>□</b>	<b>L</b>	<b>@</b>	<b>9</b>	<b>^</b>	<b>++</b>
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b>	<b>Capacitance Tolerance</b>	<b>Voltage Code</b>	<b>Standard or Low ESR Range</b>	<b>Packaging</b>	<b>Inspection Level</b>	<b>Reliability Grade</b>	<b>Qualification Level</b>	<b>Termination Finish</b>	<b>Surge Test Option</b>
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = ±20% K = ±10% J = ±5%	004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 020 = 20Vdc	C = Std ESR L = Low ESR	B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	L = Group A	Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf.	9 = SRC9000	0 = Fused Solder Plated 9 = Gold Plated	45 = 10 cycles, -55°C & +85°C before Weibull

For RoHS compliant products, please select correct termination style.

\*Contact factory for AVX SRC9000 Space Level SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C				
Capacitance Range:	0.47 µF to 68 µF				
Capacitance Tolerance:	±5%; ±10%; ±20%				
Rated Voltage (V <sub>R</sub> )	≤ 85°C:	4	6	10	20
Category Voltage (V <sub>C</sub> )	≤ 125°C:	2.7	4	6.7	13.3
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	5.3	8	13.3	26.7
Surge Voltage (V <sub>S</sub> )	≤ 125°C:	3.5	5.3	8.7	17.8
Temperature Range:	-55°C to +125°C				



# TBC Series

## CWR15 MIL-PRF-55365/12 Established Reliability, COTS-Plus & Space Level

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating per MIL-PRF-55365/12									Power Dissipation W	25°C Ripple A (100kHz)	Type 8 Ri (10
				Cap @ 120Hz μF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max					
CWR15 P/N	AVX MIL & COTS-Plus P/N	AVX SRC9000 P/N	Case				+25°C	+85°C	+125°C	+25°C	+ (85/125)°C	-55°C			
CWR15CK685^L+	TBC L 685 * 004 C □ # @ 0 ^ +	TBC L 685 * 004 C □ L @ 9 ^ +	L	6.8	4	10	0.5	5	6	8	16	12	0.025	0.05	0
CWR15CK106^R+	TBC R 106 * 004 C □ # @ 0 ^ ++	TBC R 106 * 004 C □ L @ 9 ^ ++	R	10	4	6	0.5	5	6	8	16	12	0.045	0.09	0
CWR15CK156^R+	TBC R 156 * 004 C □ # @ 0 ^ ++	TBC R 156 * 004 C □ L @ 9 ^ ++	R	15	4	6	0.6	6	7	8	16	12	0.045	0.09	0
CWR15CK226^R+	TBC R 226 * 004 C □ # @ 0 ^ +	TBC R 226 * 004 C □ L @ 9 ^ +	R	22	4	6	0.9	9	11	8	16	12	0.045	0.09	0
CWR15CK336^R+	TBC R 336 * 004 C □ # @ 0 ^ +	TBC R 336 * 004 C □ L @ 9 ^ +	R	33	4	6	1.3	13	16	10	20	15	0.045	0.09	0
CWR15CK686^A+	TBC A 686 * 004 C □ # @ 0 ^ +	TBC A 686 * 004 C □ L @ 9 ^ +	A	68	4	1	2.7	27	33	15	30	23	0.040	0.20	0
CWR15DK335^L+	TBC L 335 * 006 C □ # @ 0 ^ +	TBC L 335 * 006 C □ L @ 9 ^ +	L	3.3	6	10	0.5	5	6	6	12	9	0.025	0.05	0
CWR15DK475^L+	TBC L 475 * 006 C □ # @ 0 ^ +	TBC L 475 * 006 C □ L @ 9 ^ +	L	4.7	6	10	0.5	5	6	8	16	12	0.025	0.05	0
CWR15DK685^R+	TBC R 685 * 006 C □ # @ 0 ^ ++	TBC R 685 * 006 C □ L @ 9 ^ ++	R	6.8	6	6	0.5	5	6	8	16	12	0.045	0.09	0
CWR15DK106^R+	TBC R 106 * 006 C □ # @ 0 ^ ++	TBC R 106 * 006 C □ L @ 9 ^ ++	R	10	6	6	0.6	6	7	8	16	12	0.045	0.09	0
CWR15DK156^R+	TBC R 156 * 006 C □ # @ 0 ^ ++	TBC R 156 * 006 C □ L @ 9 ^ ++	R	15	6	6	0.9	9	11	8	16	12	0.045	0.09	0
CWR15DK226^A+	TBC A 226 * 006 C □ # @ 0 ^ +	TBC A 226 * 006 C □ L @ 9 ^ +	A	22	6	6	1.4	14	17	10	20	15	0.040	0.08	0
CWR15DK336^A+	TBC A 336 * 006 C □ # @ 0 ^ +	TBC A 336 * 006 C □ L @ 9 ^ +	A	33	6	6	2	20	24	10	20	15	0.040	0.08	0
CWR15DK476^A+	TBC A 476 * 006 C □ # @ 0 ^ +	TBC A 476 * 006 C □ L @ 9 ^ +	A	47	6	4	2.8	28	34	15	30	23	0.040	0.10	0
CWR15FK474^L+	TBC L 474 * 010 C □ # @ 0 ^ +	TBC L 474 * 010 C □ L @ 9 ^ +	L	0.47	10	12	0.5	5	6	6	12	9	0.025	0.05	0
CWR15FK684^L+	TBC L 684 * 010 C □ # @ 0 ^ +	TBC L 684 * 010 C □ L @ 9 ^ +	L	0.68	10	10	0.5	5	6	6	12	9	0.025	0.05	0
CWR15FK105^L+	TBC L 105 * 010 C □ # @ 0 ^ +	TBC L 105 * 010 C □ L @ 9 ^ +	L	1	10	10	0.5	5	6	6	12	9	0.025	0.05	0
CWR15FK155^L+	TBC L 155 * 010 C □ # @ 0 ^ +	TBC L 155 * 010 C □ L @ 9 ^ +	L	1.5	10	10	0.5	5	6	6	12	9	0.025	0.05	0
CWR15FK225^L+	TBC L 225 * 010 C □ # @ 0 ^ +	TBC L 225 * 010 C □ L @ 9 ^ +	L	2.2	10	10	0.5	5	6	6	12	9	0.025	0.05	0
CWR15FK335^R+	TBC R 335 * 010 C □ # @ 0 ^ +	TBC R 335 * 010 C □ L @ 9 ^ +	R	3.3	10	6	0.5	5	6	8	16	12	0.045	0.09	0
CWR15FK475^R+	TBC R 475 * 010 C □ # @ 0 ^ +	TBC R 475 * 010 C □ L @ 9 ^ +	R	4.7	10	6	0.5	5	6	8	16	12	0.045	0.09	0
CWR15FK685^R+	TBC R 685 * 010 C □ # @ 0 ^ +	TBC R 685 * 010 C □ L @ 9 ^ +	R	6.8	10	6	0.7	7	8.5	8	16	12	0.045	0.09	0
CWR15FK106^R+	TBC R 106 * 010 C □ # @ 0 ^ +	TBC R 106 * 010 C □ L @ 9 ^ +	R	10	10	6	1	10	12	8	16	12	0.045	0.09	0
CWR15FK156^R+	TBC A 156 * 010 C □ # @ 0 ^ +	TBC A 156 * 010 C □ L @ 9 ^ +	A	15	10	6	1.5	15	18	10	20	15	0.040	0.08	0
CWR15JK474^R+	TBC L 474 * 020 C □ # @ 0 ^ +	TBC L 474 * 020 C □ L @ 9 ^ +	L	0.47	20	24	0.5	5	6	6	12	9	0.025	0.03	0

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

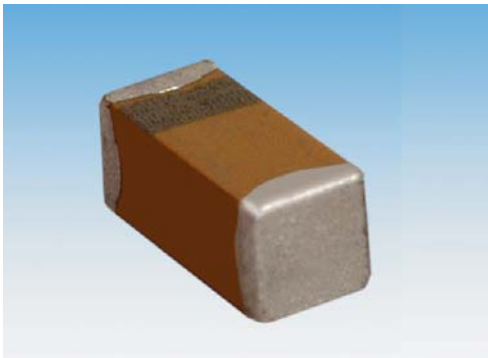
**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**





# TBC Series

## TBC COTS-Plus

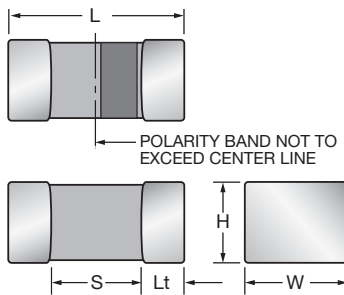


TBC COTS-Plus series extends the range of CWR15. TBC is available with Weibull grade “B” reliability and all MIL-PRF-55365 Rev. G surge test options (“A”, “B” & “C”).

For Space Level applications, AVX SRC9000 ratings are available as shown in the rating table.

There are three termination finishes available: fused solder plated, gold plated, and 100% tin.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

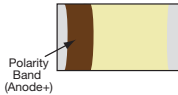


### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	Length (L)	Width (W)	Height (H)	Termination Spacing(S)	Minimum Termination Length (Lt)	Average Mass
A	1206	3216-18	3.20±0.20 (0.126±0.008)	1.60±0.20 (0.063±0.008)	1.60±0.20 (0.063±0.008)	1.80 min. (0.071 min.)	0.15 (0.006)	44.6mg
L	0603	1608-10	1.60 <sup>+0.25</sup> <sub>-0.15</sub> (0.063 <sup>+0.010</sup> <sub>-0.006</sub> )	0.84 <sup>+0.20</sup> <sub>-0.10</sub> (0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	0.84 <sup>+0.20</sup> <sub>-0.10</sub> (0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	0.55 min. (0.022 min.)	0.15 (0.006)	8.6mg
R	0805	2012-15	2.00 <sup>+0.25</sup> <sub>-0.15</sub> (0.079 <sup>+0.010</sup> <sub>-0.006</sub> )	1.35 <sup>+0.20</sup> <sub>-0.10</sub> (0.053 <sup>+0.008</sup> <sub>-0.004</sub> )	1.35 <sup>+0.20</sup> <sub>-0.10</sub> (0.053 <sup>+0.008</sup> <sub>-0.004</sub> )	0.70 min. (0.027 min.)	0.15 (0.006)	29.9mg

### MARKING

#### A, L, R CASE



### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Voltage Rating DC (V <sub>R</sub> ) at 85°C					
μF	Code	4V	6.3V	10V	16V	20V	25V
0.33	334						L
0.47	474			L	L	L	
0.68	684			L	L		
1.0	105			L			
1.5	155			L			
2.2	225			L			
3.3	335			R		R	
4.7	475		L	R	R		
6.8	685		R	R			
10	106	R	R	R	A		
15	156	R		A			
22	226	R	A				
33	336	R	A				
47	476		A				
68	686	A					

# TBC Series



## TBC COTS-Plus

### HOW TO ORDER

#### COTS-PLUS:

TBC	L	685	*	004	C	□	#	@	0	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10% J = ±5%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc	<b>Standard or Low ESR Range</b> C = Std ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	<b>Inspection Level</b> S = Std. Conformance L = Group A	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER  None required	<b>Qualification Level</b> 0 = N/A 9 = SRC9000	<b>Termination Finish</b> 0 = Fused Solder Plated 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	<b>Surge Test Option</b> 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull



#### SPACE LEVEL OPTIONS TO SRC9000\*:

TBC	L	685	*	004	C	□	L	@	9	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20% K = ±10% J = ±5%	<b>Voltage Code</b> 004 = 4Vdc 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc	<b>Standard or Low ESR Range</b> C = Std ESR L = Low ESR	<b>Packaging</b> B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	<b>Inspection Level</b> L = Group A	<b>Reliability Grade</b> Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf.	<b>Qualification Level</b> 9 = SRC9000	<b>Termination Finish</b> 0 = Fused Solder Plated 9 = Gold Plated	<b>Surge Test Option</b> 45 = 10 cycles, -55°C & +85°C before Weibull



\*Contact factory for AVX SRC9000 Space Level SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data: All technical data relate to an ambient temperature of +25°C

Capacitance Range: 0.33 µF to 68 µF

Capacitance Tolerance: ±5%; ±10%; ±20%

Leakage Current DCL: 0.01CV or 0.5µA whichever is the greater

Rated Voltage (V <sub>R</sub> )	≤ +85°C:	4	6.3	10	16	20	25
Category Voltage (V <sub>C</sub> )	≤ +125°C:	2.7	4	7	10	13	17
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	5.2	8	13	20	26	32
Surge Voltage (V <sub>S</sub> )	≤ +125°C:	3.2	5	8	12	16	20

Temperature Range: -55°C to +125°C



# TBC Series

## TBC COTS-Plus

RATING & PART NUMBER REFERENCE				Parametric Specifications by Rating										Power Dissipation W	25°C Ripple A (100kHz)	Typical 8 Ri
				Cap @ 120Hz μF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz Ohms @ +25°C	DCL max			DF Max						
AVX P/N	AVX SRC9000 P/N	Case EIA AVX					+25°C (μA)	+85°C (μA)	+125°C (μA)	+25°C (%)	+85/125°C (%)	-55°C (%)				
<b>4 Volt @ 85°C (2.7 Volt @ 125°C)</b>																
TBC R 106 * 004 C # @ 0 ^ ++	TBC R 106 * 004 C L @ 9 ^ ++	0805	R	10	4.0	6	0.5	5.0	6.3	8	16	12	0.045	0.09	0	
TBC R 156 * 004 C # @ 0 ^ ++	TBC R 156 * 004 C L @ 9 ^ ++	0805	R	15	4.0	6	0.6	6.0	7.5	8	16	12	0.045	0.09	0	
TBC R 226 * 004 C # @ 0 ^ ++	TBC R 226 * 004 C L @ 9 ^ ++	0805	R	22	4.0	6	0.9	8.8	11.0	15	30	23	0.045	0.09	0	
TBC R 336 * 004 C # @ 0 ^ ++	TBC R 336 * 004 C L @ 9 ^ ++	0805	R	33	4.0	6	1.3	13.2	16.5	10	20	15	0.045	0.09	0	
TBC A 686 * 004 C # @ 0 ^ ++	TBC A 686 * 004 C L @ 9 ^ ++	1206	A	68	4.0	1	2.7	27.2	34.0	15	30	23	0.040	0.20	0	
<b>6.3 Volt @ 85°C (4 Volt @ 125°C)</b>																
TBC L 475 * 006 C # @ 0 ^ ++	TBC L 475 * 006 C L @ 9 ^ ++	0603	L	4.7	6.3	10	0.5	5.0	6.3	8	16	12	0.025	0.05	0	
TBC R 685 * 006 C # @ 0 ^ ++	TBC R 685 * 006 C L @ 9 ^ ++	0805	R	6.8	6.3	6	0.5	5.0	6.3	8	16	12	0.045	0.09	0	
TBC R 106 * 006 C # @ 0 ^ ++	TBC R 106 * 006 C L @ 9 ^ ++	0805	R	10	6.3	6	0.6	6.3	7.9	8	16	12	0.045	0.09	0	
TBC A 226 K 006 C # @ 0 ^ ++	TBC A 226 K 006 C L @ 9 ^ ++	1206	A	22	6.3	6	1.4	13.9	17.3	10	20	15	0.040	0.08	0	
TBC A 336 K 006 C # @ 0 ^ ++	TBC A 336 K 006 C L @ 9 ^ ++	1206	A	33	6.3	6	2.1	20.8	26.0	10	20	15	0.040	0.08	0	
TBC A 476 * 006 C # @ 0 ^ ++	TBC A 476 * 006 C L @ 9 ^ ++	1206	A	47	6.3	1	3.0	29.6	37.0	15	30	23	0.040	0.20	0	
<b>10 Volt @ 85°C (7 Volt @ 125°C)</b>																
TBC L 474 * 010 C # @ 0 ^ ++	TBC L 474 * 010 C L @ 9 ^ ++	0603	L	0.47	10	12	0.5	5.0	6.3	6	12	9	0.025	0.05	0	
TBC L 684 * 010 C # @ 0 ^ ++	TBC L 684 * 010 C L @ 9 ^ ++	0603	L	0.68	10	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0	
TBC L 105 * 010 C # @ 0 ^ ++	TBC L 105 * 010 C L @ 9 ^ ++	0603	L	1.0	10	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0	
TBC L 155 * 010 C # @ 0 ^ ++	TBC L 155 * 010 C L @ 9 ^ ++	0603	L	1.5	10	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0	
TBC L 225 * 010 C # @ 0 ^ ++	TBC L 225 * 010 C L @ 9 ^ ++	0603	L	2.2	10	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0	
TBC R 335 * 010 C # @ 0 ^ ++	TBC R 335 * 010 C L @ 9 ^ ++	0805	R	3.3	10	6	0.5	5.0	6.3	8	16	12	0.045	0.09	0	
TBC R 475 * 010 C # @ 0 ^ ++	TBC R 475 * 010 C L @ 9 ^ ++	0805	R	4.7	10	6	0.5	4.7	5.9	8	16	12	0.045	0.09	0	
TBC R 685 * 010 C # @ 0 ^ ++	TBC R 685 * 010 C L @ 9 ^ ++	0805	R	6.8	10	6	0.7	6.8	8.5	8	16	12	0.045	0.09	0	
TBC R 106 * 010 C # @ 0 ^ ++	TBC R 106 * 010 C L @ 9 ^ ++	0805	R	10	10	6	1.0	10.0	12.5	8	16	12	0.045	0.09	0	
TBC A 156 * 010 C # @ 0 ^ ++	TBC A 156 * 010 C L @ 9 ^ ++	1206	A	15	10	6	1.5	15.0	18.8	10	20	15	0.040	0.08	0	
<b>16 Volt @ 85°C (10 Volt @ 125°C)</b>																
TBC L 474 * 016 C # @ 0 ^ ++	TBC L 474 * 016 C L @ 9 ^ ++	0603	L	0.47	16	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0	
TBC L 684 * 016 C # @ 0 ^ ++	TBC L 684 * 016 C L @ 9 ^ ++	0603	L	0.68	16	10	0.5	5.0	6.3	6	12	9	0.025	0.05	0	
TBC R 475 * 016 C # @ 0 ^ ++	TBC R 475 * 016 C L @ 9 ^ ++	0805	R	4.7	16	6	0.8	7.5	9.0	10	20	15	0.045	0.09	0	
TBC A 106 * 016 C # @ 0 ^ ++	TBC A 106 * 016 C L @ 9 ^ ++	1206	A	10	16	3	1.6	16.0	19.2	8	16	12	0.040	0.12	0	
<b>20 Volt @ 85°C (13 Volt @ 125°C)</b>																
TBC L 474 * 020 C # @ 0 ^ ++	TBC L 474 * 020 C L @ 9 ^ ++	0603	L	0.47	20	24	0.5	5.0	6.3	6	12	9	0.025	0.03	0	
TBC R 335 * 020 C # @ 0 ^ ++	TBC R 335 * 020 C L @ 9 ^ ++	0805	R	3.3	20	6	0.7	6.6	8.3	8	16	12	0.045	0.09	0	
<b>25 Volt @ 85°C (17 Volt @ 125°C)</b>																
TBC L 334 M 025 C # @ 0 ^ ++	TBC L 334 M 025 C L @ 9 ^ ++	0603	L	0.33	25	30	0.5	5.0	6.3	6	12	9	0.025	0.03	0	

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**



# TBC Series



## HRC5000 Medical Implantable Grade



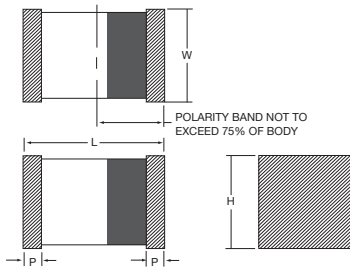
The TBC HRC5000 Medical Grade series is designed for use in medical implantable applications. These are some of the smallest surface mount tantalum capacitors available on the market which feature extremely low DC leakage limits well below typical values.



These components are manufactured and tested in the AVX Biddeford Maine factory which is ISO 13485 certified. Weibull grading and surge current testing options per MIL-PRF-55365 are available along with several plating options including tin/lead solder, 100% tin, or gold terminations.

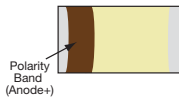
To request a specific rating or for more information on HRC5000 testing details please contact the factory.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.



### MARKING

#### A, B, L, R, S CASE



### CASE DIMENSIONS: millimeters (inches)

Case Code	EIA Code	Length (L)	Width (W)	Height (H)	Term. Width (P) min.
A	1206	3.20±0.20 (0.126±0.008)	1.60±0.20 (0.063±0.008)	1.60±0.20 (0.063±0.008)	0.15 (0.006)
B	1411	3.60±0.20 (0.141±0.008)	2.90±0.15 (0.114±0.006)	1.50 max (0.06 max)	0.15 (0.006)
L	0603	1.60 <sup>+0.25</sup> <sub>-0.15</sub> <sup>+0.010</sup> <sub>-0.006</sub> (0.063)	0.84 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub> (0.033)	0.84 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub> (0.033)	0.15 (0.006)
R	0805	2.00 <sup>+0.25</sup> <sub>-0.15</sub> <sup>+0.010</sup> <sub>-0.006</sub> (0.079)	1.35 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub> (0.053)	1.35 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub> (0.053)	0.15 (0.006)
S	1207	3.20±0.20 (0.126±0.008)	1.80±0.20 (0.071±0.008)	1.50 max (0.06 max)	0.15 (0.006)

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage					
µF	Code	4V	6V	10V	16V	20V	40V
0.47	474			L			
0.68	684						
1	105			L		R	A
1.5	155						
2.2	225			L			
3.3	335		L	R			
4.7	475			R	R		
6.8	685			R			
10	106			R	R/A (17v)		
15	156	R					
22	226						
33	336						
47	476		S	B			



# TBC Series

## HRC5000 Medical Implantable Grade



### HOW TO ORDER

TBC	R	106	*	010	C	□	L	@	5	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b>	<b>Capacitance Tolerance</b>	<b>Voltage Code</b>	<b>ESR</b>	<b>Packaging</b>	<b>Inspection Level</b>	<b>Reliability Grade</b>	<b>Qualification Level</b>	<b>Termination Finish</b>	<b>Surge Test Option</b>
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	J = ±5% K = ±10% M = ±20%	004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 017 = 17Vdc 020 = 20Vdc 040 = 40Vdc	C = Std ESR	B = Bulk R = 7* T&R W = Waffle	L = Group A	Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf.	5 = HRC5000	0 = Solder Fused 9 = Gold Plated 7 = 100% Tin	00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 Cycles, -55°C & +85°C before Weibull



\*Contact factory for AVX HRC5000 Medical Grade SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data: Unless otherwise specified, all technical data relate to an ambient temperature of 25°C

Capacitance Range:	0.47 µF to 47 µF							
Capacitance Tolerance:	±5%; ±10%; ±20%							
Rated Voltage (V <sub>R</sub> )	≤ +85°C:	4	6	10	16	20	40	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	2.7	4	6.7	10.7	13.3	26.7	
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	5.3	8	13.3	20.8	26.7	52	
Surge Voltage (V <sub>S</sub> )	≤ +125°C:	3.5	5.3	8.7	13.9	17.8	34.7	
Temperature Range:	-55°C to +125°C							



# TBC Series

## HRC5000 Medical Implantable Grade

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating									Typical Ripple			
		Cap @ 120Hz	DC Rated Voltage	ESR @ 100kHz	DCL max			DF max			Power Dissipation	25°C Ripple Current	85°C Ripple Current	100°C Ripple Current
					+25°C	+85°C	+125°C	+25°C	+85/125°C	-55°C				
AVX HRC5000 P/N	Case	µF @ 25°C	V @ +85°C	Ohms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	A (100kHz)	A (100kHz)	A (100kHz)
TBCR156*004C□L@5^++	R	15	4	6	0.150	1.500	1.800	8	16	12	0.045	0.087	0.078	0.078
TBCL335*006C□L@5^++	L	3.3	6	10	0.100	1.000	1.200	6	12	9	0.025	0.05	0.045	0.045
TBCS476*006C□L@5^++	S	47	6	4	0.470	4.700	5.640	6	8	9	0.04	0.1	0.09	0.09
TBCL474*010C□L@5^++	L	0.47	10	12	0.100	1.000	1.200	6	12	9	0.025	0.046	0.041	0.041
TBCL105*010C□L@5^++	L	1	10	10	0.100	1.000	1.200	6	12	9	0.025	0.05	0.045	0.045
TBCL225*010C□L@5^++	L	2.2	10	10	0.100	1.000	1.200	6	12	9	0.025	0.05	0.045	0.045
TBCR335*010C□L@5^++	R	3.3	10	6	0.100	1.000	1.200	8	16	12	0.045	0.087	0.078	0.078
TBCR475*010C□L@5^++	R	4.7	10	6	0.118	1.175	1.410	8	16	12	0.045	0.087	0.078	0.078
TBCR685*010C□L@5^++	R	6.8	10	6	0.170	1.700	2.040	8	16	12	0.045	0.087	0.078	0.078
TBCR106*010C□L@5^++	R	10	10	6	0.250	2.500	3.000	8	16	12	0.045	0.087	0.078	0.078
TBCB476*010C□L@5^++	B	47	10	1	1.175	11.750	14.100	15	30	23	0.04	0.2	0.18	0.18
TBCR475*016C□L@5^++	R	4.7	16	6	0.188	1.880	2.256	8	10	12	0.045	0.087	0.078	0.078
TBCR106*016C□L@5^++	R	10	16	5	0.400	4.000	4.800	8	16	12	0.045	0.095	0.085	0.085
TBCA106*017C□L@5^++	A	10	17	3	0.425	4.250	5.100	8	16	12	0.04	0.115	0.104	0.104
TBCR105*020C□L@5^++	R	1	20	6	0.100	1.000	1.200	8	16	12	0.045	0.087	0.078	0.078
TBCA105*040C□L@5^++	A	1	40	6	0.100	1.000	1.200	8	16	12	0.04	0.082	0.073	0.073

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated

**NOTE:** AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.

## HRC6000 Medical Implantable Grade



The TBC HRC6000 Medical Grade series is the next generation of our internally qualified medical grade tantalum capacitors. These components are screened using our newly designed Q-Process to effectively remove components that may experience parametric shifts through customer processing or display instability through life testing.

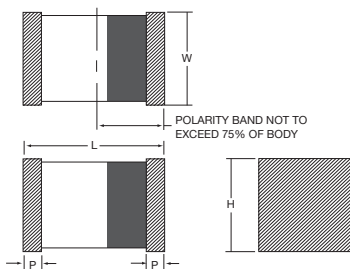


Due to the deficiencies of Weibull grading and its tendency to Burn-In potentially unstable units, this Q-Process utilizes a Product Level Designation system based on a simulated production routine performed on a sample from the population. Once that is completed a calculation is done based on the performance of the sample which can take into account the application conditions of the end customer. This system also allows for derating recommendations to be relaxed as illustrated by the section below.

These components are manufactured and tested in the AVX Biddeford Maine factory which is ISO 13485 certified. For more information on this process or to request a specific rating please contact the factory.

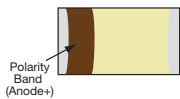
For additional information on Q-process please consult the AVX technical publication "Reaching the Highest Reliability for Tantalum Capacitors" (see the link: <http://www.avx.com/docs/techinfo/Qprocess.pdf>)

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.



### MARKING

#### A, B, L, R, S CASE



### CASE DIMENSIONS: millimeters (inches)

Case Code	EIA Code	Length (L)	Width (W)	Height (H)	Term. Width (P) min.
A	1206	3.20 ±0.20 (0.126 ±0.008)	1.60 ±0.20 (0.063 ±0.008)	1.60 ±0.20 (0.063 ±0.008)	0.15 (0.006)
B	1411	3.60 ±0.20 (0.141 ±0.008)	2.90 ±0.15 (0.114 ±0.006)	1.50 max (0.06 max)	0.15 (0.006)
L	0603	1.60 <sup>+0.25</sup> <sub>-0.15</sub> <sup>+0.010</sup> <sub>-0.006</sub> (0.063 <sup>+0.010</sup> <sub>-0.006</sub> )	0.84 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub> (0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	0.84 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub> (0.033 <sup>+0.008</sup> <sub>-0.004</sub> )	0.15 (0.006)
R	0805	2.00 <sup>+0.25</sup> <sub>-0.15</sub> <sup>+0.010</sup> <sub>-0.006</sub> (0.079 <sup>+0.010</sup> <sub>-0.006</sub> )	1.35 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub> (0.053 <sup>+0.008</sup> <sub>-0.004</sub> )	1.35 <sup>+0.20</sup> <sub>-0.10</sub> <sup>+0.008</sup> <sub>-0.004</sub> (0.053 <sup>+0.008</sup> <sub>-0.004</sub> )	0.15 (0.006)
S	1207	3.20 ±0.20 (0.126 ±0.008)	1.80 ±0.20 (0.071 ±0.008)	1.50 max (0.06 max)	0.15 (0.006)

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage		
μF	Code	4V	6V	10V
2.2	225	L	L	L
3.3	335	L	L	
4.7	475	L	L	
6.8	685	R	R	R
10	106	R	R	R
15	156	R	R	
22	226	R	R	
33	336	S	S	B
47	476	S	S, A	B
68	686	S	B	

# TBC Series



## HRC6000 Medical Implantable Grade

### HOW TO ORDER

TBC	R	106	*	010	C	□	L	Q	6	^	++
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance J = ±5% K = ±10% M = ±20%	Voltage Code 004 = 4Vdc 006 = 6Vdc 010 = 10Vdc	ESR C = Std ESR	Packaging B = Bulk R = 7" T&R W = Waffle	Inspection Level L = Group A	Reliability Grade Product Level Designator: Q = 0.1%/1000 Hours Minimum, 60% conf.	Qualification Level 6 = HRC6000	Termination Finish 0 = Solder Fused 9 = Gold Plated 7 = 100% Matte Tin	Custom Option 00 = Std



\*Contact factory for AVX HRC6000 Medical Grade SCD details.

### TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of +25°C				
Capacitance Range:	2.2 μF to 68 μF				
Capacitance Tolerance:	±5%; ±10%; ±20%				
Rated Voltage (V <sub>R</sub> )	≤ +85°C:	4	6	10	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	2.7	4	6.7	
Temperature Range:	-55°C to +125°C				





# TBC Series

## HRC6000 Medical Implantable Grade

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating									Typical Ripple			
		Cap @ 120Hz	DC Rated Voltage	ESR @ 100kHz	DCL max			DF max			Power Dissipation	25°C Ripple Current	85°C Ripple Current	100°C Ripple Current
					+25°C	+85°C	+125°C	+25°C	+85/125°C	-55°C				
AVX HRC6000 P/N	Case	µF @ 25°C	V @ +85°C	Ohms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	A (100kHz)	A (100kHz)	A (100kHz)
TBCL225*004C□LQ6^00	L	2.2	4	10	0.022	0.22	0.264	6	16	12	0.025	0.050	0.045	0.045
TBCL335*004C□LQ6^00	L	3.3	4	10	0.033	0.33	0.396	6	16	12	0.025	0.050	0.045	0.045
TBCL475*004C□LQ6^00	L	4.7	4	10	0.047	0.47	0.564	8	16	12	0.025	0.050	0.045	0.045
TBCR685*004C□LQ6^00	R	6.8	4	6	0.068	0.68	0.816	8	16	12	0.045	0.087	0.078	0.078
TBCR106*004C□LQ6^00	R	10	4	6	0.100	1.00	1.20	8	16	12	0.045	0.087	0.078	0.078
TBCR156*004C□LQ6^00	R	15	4	6	0.150	1.50	1.80	8	16	12	0.045	0.087	0.078	0.078
TBCR226*004C□LQ6^00	R	22	4	6	0.220	2.20	2.64	8	16	12	0.045	0.087	0.078	0.078
TBCS336*004C□LQ6^++	S	33	4	6	0.330	3.30	3.96	8	16	12	0.040	0.082	0.073	0.073
TBCS476*004C□LQ6^++	S	47	4	4	0.470	4.70	5.64	8	16	12	0.040	0.100	0.090	0.090
TBCS686*004C□LQ6^++	S	68	4	4	0.680	6.80	8.16	15	30	23	0.040	0.100	0.090	0.090
TBCL225*006C□LQ6^00	L	2.2	6	10	0.033	0.33	0.396	6	16	12	0.025	0.050	0.045	0.045
TBCL335*006C□LQ6^00	L	3.3	6	10	0.050	0.50	0.60	6	12	9	0.025	0.050	0.045	0.045
TBCL475*006C□LQ6^00	L	4.7	6	10	0.071	0.71	0.852	8	16	12	0.025	0.050	0.045	0.045
TBCR685*006C□LQ6^00	R	6.8	6	6	0.102	1.02	1.224	8	16	12	0.045	0.087	0.078	0.078
TBCR106*006C□LQ6^00	R	10	6	6	0.150	1.50	1.80	8	16	12	0.045	0.087	0.078	0.078
TBCR156*006C□LQ6^00	R	15	6	6	0.225	2.25	2.70	8	16	12	0.045	0.087	0.078	0.078
TBCR226*006C□LQ6^00	R	22	6	5	0.330	3.30	3.96	8	20	15	0.045	0.095	0.085	0.085
TBCS336*006C□LQ6^++	S	33	6	6	0.495	4.95	5.94	8	16	12	0.040	0.082	0.073	0.073
TBCS476*006C□LQ6^++	S	47	6	4	0.705	7.05	8.46	8	16	12	0.040	0.100	0.090	0.090
TBCA476*006C□LQ6^++	A	47	6	4	0.705	7.05	8.46	15	30	23	0.040	0.100	0.090	0.090
TBCB686*006C□LQ6^00	B	68	6	1	1.020	10.20	12.24	15	30	22.5	0.040	0.200	0.180	0.180
TBCL225*010C□LQ6^00	L	2.2	10	10	0.055	0.55	0.66	6	12	9	0.025	0.050	0.045	0.045
TBCR685*010C□LQ6^00	R	6.8	10	6	0.170	1.70	2.04	8	16	12	0.045	0.087	0.078	0.078
TBCR106*010C□LQ6^00	R	10	10	6	0.250	2.50	3.00	8	16	12	0.045	0.087	0.078	0.078
TBCB336*010C□LQ6^00	B	33	10	1	0.825	8.25	9.90	15	30	22.5	0.040	0.200	0.180	0.180
TBCB476*010C□LQ6^00	B	47	10	1	1.175	11.75	14.1	15	30	22.5	0.040	0.200	0.180	0.180

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage.

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**

### HRC6000 DERATING GUIDELINES

Due to our new Q-Process test procedures the need for a typical 50% derating of the capacitors rated voltage in application can be relaxed. Below is a table outlining some of the common applications where these components are utilized along with appropriate derating recommendations. When determining the appropriate capacitor voltage rating to utilize, the application voltage is determined by the maximum D.C. voltage with the addition of any A.C. ripple voltage that may be present.

Recommended Derating	Application
20%	Filtering
0%	Pacing
0%	Hold-Up
0%	Charging



# TCB Series



## COTS-Plus Polymer Capacitor

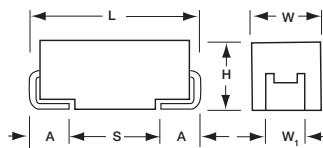


The TCB series is a COTS-Plus version of the professional grade TCR polymer series. Each batch of these components receives additional reliability level verification through life testing to 0.1%/1000 hours with a 90% confidence level.

Polymer capacitors utilize a conductive polymer electrode system which reduces the potential for an ignition failure mode and lowers the effective ESR. These units are also designed to withstand

biased humidity testing at 85°C/85% R.H. for 120 hours and are rated for operation up to 105°C.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog. For additional information, or to request a specific rating, please contact the factory.



For additional information on Q-process please consult the AVX technical publication "Reaching the Highest Reliability for Tantalum Capacitors" (see the link: <http://www.avx.com/docs/techinfo/Qprocess.pdf>)

### CASE DIMENSIONS: millimeters (inches)

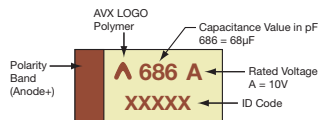
Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
B	1210	3528-21	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	2312	6032-28	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	2917	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	2917	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

Under development

### MARKING

#### B, C, D, E CASE



### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage						
µF	Code	10V	16V	20V	25V	35V	50V	63V
0.47	474							B(400)* B(300)*
0.68	684						B(400)* B(300)*	
1.0	105							
1.5	155					B(250)*		
2.2	255					B(250)*		C(200)*
3.3	335					B(250)*	C(200)*	C(200)*
4.7	475					C(200)*	D(150)*	
6.8	685					C(200)*		
10	106				B(200)*	C(200)*		
15	156		B(300)*					
22	226	B(300)*	B(200)*		D(100)*			
33	336	B(200)*			D(100)*			
47	476		D(70)	D(70)*				
68	686	D(70)						
100	107	D(70)*						

Available Ratings (ESR ratings in mOhms in brackets)

\*Codes under development – subject to change

Note: Voltage ratings are minimum values. AVX reserves the right to supply higher voltage ratings in the same case size to the same reliability standards



# TCB Series

## COTS-Plus Polymer Capacitor



### HOW TO ORDER

#### AVX PART NUMBER:

TCB	D	686	M	010	C	□	L	Q	0	^	++
Type	Case Size	Capacitance Code	Capacitance Tolerance	Voltage Code	ESR	Packaging	Inspection Level	Reliability Grade	Qualification Level	Termination Finish	DCL Option
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = ±20%	010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc 063 = 63Vdc	C = Std ESR	R = 7" T&R S = 13" T&R	L = Lab Conformance	Q = 0.1%/1000 hrs. 90% conf.	0 = N/A	0 = Sn/Pb 7 = 100% Tin	OJ = 0.1CV OG = 0.05CV  *Selected Codes



### TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C								
Capacitance Range:	0.47 µF to 100 µF								
Capacitance Tolerance:	±20%								
Leakage Current DCL:	(J) 0.1CV, (G) 0.05CV on selected codes								
Rate Voltage (V <sub>R</sub> )	≤ +105°C:	10	16	20	25	35	50	63	
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	13	21	26	33	46	65	82	
Surge Voltage (V <sub>S</sub> )	≤ +105°C:	10	16	20	25	35	50	63	
Temperature Range:	-55°C to +105°C								
Batch Reliability	0.1% per 1000 hours at 25°C, V <sub>R</sub> with 0.1Ω/V series impedance, 90% confidence level								

# TCB Series

## COTS-Plus Polymer Capacitor

RATING & PART NUMBER REFERENCE		Parametric Specifications by Rating							Typical Power			
		Capacitance @ 120Hz μF @ 25°C	DC Rated Voltage V @ +105°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max +25°C (%)	Power Dissipation W	25°C Ripple Current mA (100kHz)	85°C Ripple Current mA (100kHz)	105°C Ripple Current mA (100kHz)
					+25°C (μA)	+85°C (μA)	+105°C (μA)					
AVX HRC5000 P/N	Case											
TCBD686M010CELQ0^0J	D	68	10	70	68	680	816	6	0.225	1800	1300	800
TCBD476M016CELQ0^0J	D	47	16	70	75	750	900	6	0.225	1800	1300	800

All technical data relates to an ambient temperature of +25C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage. ESR is allowed to increase by up to 1.25 times the catalog limit post mounting.

**NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.**

# TCB Series



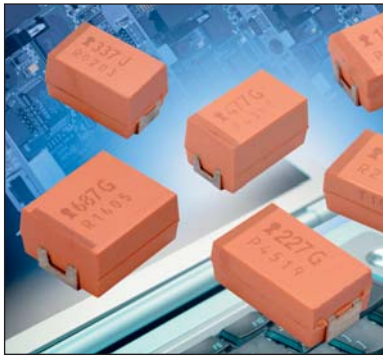
## COTS-Plus Polymer Capacitor

### QUALIFICATION TABLE

TEST	TCB series (Temperature range -55°C to +105°C)										
	Condition			Characteristics							
<b>Endurance</b>	Determine after application of rated voltage for 2000 +48/-0 hours at 85±2°C and then leaving 1-2 hours at room temperature. Also determine after application of 105°C temperature, rated voltage for 2000 +48/-0 hours and then leaving 1-2 hours at room temperature. Power supply impedance to be ≤0.1Ω/V.			Visual examination	no visible damage						
				DCL	1.25 x initial limit						
				ΔC/C	within +20/-30% of initial value						
				DF	1.5 x initial limit						
				ESR	2 x initial limit						
<b>Storage Life</b>	105°C, 0V, 2000h			Visual examination	no visible damage						
				DCL	1.25 x initial limit						
				ΔC/C	within ±20% of initial value						
				DF	1.5 x initial limit						
				ESR	2 x initial limit						
<b>Humidity</b>	Determine after storage without applied voltage at 65±2°C and 95±2% relative humidity for 500 hours and then recovery 1-2 hours at room temperature.			Visual examination	no visible damage						
				DCL	3 x initial limit						
				ΔC/C	within +30/-20% of initial value						
				DF	1.5 x initial limit						
				ESR	2 x initial limit						
<b>Biased Humidity</b>	Determine after leaving for 120 hours at 85±2°C, 85% relative humidity and rated voltage and then recovery 1-2 hours at room temperature.			Visual examination	no visible damage						
				DCL	3 x initial limit						
				ΔC/C	within +30/-20% of initial value						
				DF	1.5 x initial limit						
				ESR	2 x initial limit						
<b>Temperature Stability</b>	Step	Temperature°C	Duration(min)		+20°C	-55°C	+20°C	+85°C	+105°C	+20°C	
	1	+20±2	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*	
	2	-55+0/-3	15		ΔC/C	n/a	+0/-20%	±5%	+20/-0%	+30/-0%	±5%
	3	+20±2	15			DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*
	4	+85+3/-0	15								
	5	+105+3/-0	15								
	6	+20±2	15								
<b>Surge Voltage</b>	<u>Test temperature:</u> 105°C+3/0°C <u>Test voltage:</u> Rated voltage at 105°C <u>Surge voltage:</u> 1.3 x rated voltage at 105°C <u>Series protection resistance</u> 1000±100Ω <u>Discharge resistance:</u> 1000Ω <u>Number of cycles:</u> 1000x <u>Cycle duration:</u> 6 min; 30 sec charge, 5 min 30 sec discharge			Visual examination	no visible damage						
				DCL	initial limit						
				ΔC/C	within +20/-30% of initial value						
				DF	1.25 x initial limit						

\*Initial Limit

## Niobium Oxide Capacitor Weibull Grade



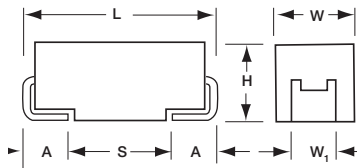
NBS, Niobium Oxide COTS+ Capacitors offer a non-burn solution for Military and Space applications. Niobium Oxide COTS+ Capacitors may be specified with failure rate grading to Weibull "B" or "C"

and surge current tested in accordance with MIL-PRF-55365 Rev. G options A or B.

### CASE DIMENSIONS: millimeters (inches)

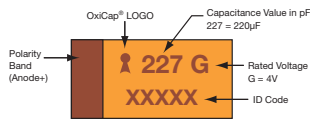
Code	EIA Code	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	3216	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.80 (0.071)
B	3528	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	6032	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	7343	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	7343	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
V	7361	7.30 (0.287)	6.10 (0.240)	3.55 (0.140)	3.10 (0.120)	1.30 (0.051)	1.80 (0.071)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.



### MARKING

#### A, B, C, D, E, V CASE



### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C / 0.66 DC to 105°C / 0.5 DC to 125°C			
µF	Code	1.8V (x)	2.5V (e)	4.0V (G)	6.3V (J)
10	106				A(1000,2000)
15	156			A(1500)	B(600)
22	226		A(900)	B(600)	B(600)
33	336			B(600)	B(600)/C(500)
47	476		B(500)	B(500)/C(300)	C(300)
68	686		C(200)	C(200)	C(75,200)
100	107	B(350)	C(150)	C(70,150)	C(150)/D(80,100)
150	157		C(65,150)	C(90,150)	D(50,70,100)
220	227	C(125)	C(80,125)	D(60,100)	D(60,100) E(80,100)
330	337		D(35,50,100)	D(55,100)/E(100)	E(80,100)
470	477		D(55,100)/E(100)	D(100) E(75,100)	V(75)
680	687		E(60)	V(75)	
1000	108		V(50)		

Available Ratings: ESR limits quoted in brackets (mOhms)

## Niobium Oxide Capacitor Weibull Grade

### HOW TO ORDER

NBS	E	227	*	006	C	□	#	@	0	^	++
<b>Type</b>	<b>Case Size</b>	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Capacitance Tolerance</b> M = ±20%	<b>Voltage Code</b> 001 = 1.8Vdc 002 = 2.5Vdc 004 = 4Vdc 006 = 6.3Vdc	<b>Standard or Low ESR Range</b> L = Low ESR	<b>Packaging</b> B = Bulk R = 7* T&R S = 13* T&R W = Waffle  See page 7 for additional packaging options.	<b>Inspection Level</b> S = Std. Conformance L = Group A D = DSCC DWG	<b>Reliability Grade Weibull:</b> B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf.	<b>Qualification Level</b> 0 = N/A	<b>Termination Finish</b> H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	<b>Surge Test Option</b> 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull



### TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C is not stated					
Capacitance Range:	10 µF to 1000 µF					
Capacitance Tolerance:	±20%					
Leakage Current DCL:	0.02CV					
Rated Voltage (V <sub>R</sub> )	≤ +85°C:	1.8	2.5	4	6.3	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	0.9	1.3	2	3	
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	2.3	3.3	5.2	8	
Surge Voltage (V <sub>S</sub> )	≤ +125°C:	1.2	1.7	2.6	4	
Temperature Range:	-55°C to +125°C					

### RATINGS & PART NUMBER REFERENCE

AVX Part Number	Case Size	Cap (µF)	Rated Voltage (V)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @100kHz	100kHz Ripple Current Rating (A)			100kHz Ripple Voltage Ratings (V)		
							25°C	85°C	125°C	25°C	85°C	125°C
<b>1.8 Volt @ 85°C (1.2 Volt @ 105°C, 0.9 Volt @ 125°C)</b>												
NBS B107M001 L □#00 ^+	B	100	1.8	3.6	6	350	0.540	0.486	0.216	0.189	0.170	0.076
NBS C227M001 L □#00 ^+	C	220	1.8	8.0	8	125	1.028	0.925	0.411	0.128	0.116	0.051
<b>2.5 Volt @ 85°C (1.7 Volt @ 105°C, 1.3 Volt @ 125°C)</b>												
NBS A226M002 L □#00 ^+	A	22	2.5	1.1	6	900	0.316	0.285	0.126	0.285	0.256	0.114
NBS B476M002 L □#00 ^+	B	47	2.5	2.4	6	500	0.452	0.406	0.181	0.226	0.203	0.090
NBS C686M002 L □#00 ^+	C	68	2.5	3.4	6	200	0.812	0.731	0.325	0.162	0.146	0.065
NBS C107M002 L □#00 ^+	C	100	2.5	5.0	6	150	0.938	0.844	0.375	0.141	0.127	0.056
NBS C157M002 L □#00 ^+	C	150	2.5	7.5	6	65	1.425	1.283	0.570	0.093	0.083	0.037
NBS C157M002 C □#00 ^+	C	150	2.5	7.5	6	150	0.938	0.844	0.375	0.141	0.127	0.056
NBS C227M002 L □#00 ^+	C	220	2.5	11.0	8	80	1.285	1.156	0.514	0.103	0.092	0.041
NBS C227M002 C □#00 ^+	C	220	2.5	11.0	8	125	1.028	0.925	0.411	0.128	0.116	0.051
NBS D337M002 L □#00 ^+	D	330	2.5	16.5	10	35	2.268	2.041	0.907	0.079	0.071	0.032
NBS D337M002 L □#00 ^+	D	330	2.5	16.5	10	50	1.897	1.708	0.759	0.095	0.085	0.038
NBS D337M002 C □#00 ^+	D	330	2.5	16.5	10	100	1.342	1.207	0.537	0.134	0.121	0.054
NBS D477M002 L □#00 ^+	D	470	2.5	23.5	12	55	1.809	1.628	0.724	0.099	0.090	0.040
NBS D477M002 C □#00 ^+	D	470	2.5	23.5	12	100	1.342	1.207	0.537	0.134	0.121	0.054
NBS E477M002 L □#00 ^+	E	470	2.5	23.5	10	100	1.407	1.266	0.563	0.141	0.127	0.056
NBS E687M002 L □#00 ^+	E	680	2.5	34.0	14	60	1.817	1.635	0.727	0.109	0.098	0.044
NBS V108M002 L □#00 ^+	V	1000	2.5	50.0	16	50	2.449	2.205	0.980	0.122	0.110	0.049
<b>4 Volt @ 85°C (2.7 Volt @ 105°C, 2 Volt @ 125°C)</b>												
NBS A156M004 L □#00 ^+	A	15	4	1.2	6	1500	0.245	0.220	0.098	0.367	0.331	0.147
NBS B226M004 L □#00 ^+	B	22	4	1.8	6	600	0.412	0.371	0.165	0.247	0.223	0.099
NBS B336M004 L □#00 ^+	B	33	4	2.6	6	600	0.412	0.371	0.165	0.247	0.223	0.099
NBS B476M004 L □#00 ^+	B	47	4	3.8	6	500	0.452	0.406	0.181	0.226	0.203	0.090
NBS C476M004 L □#00 ^+	C	47	4	3.8	6	300	0.663	0.597	0.265	0.199	0.179	0.080
NBS C686M004 L □#00 ^+	C	68	4	5.4	6	200	0.812	0.731	0.235	0.162	0.146	0.065
NBS C107M004 L □#00 ^+	C	100	4	8.0	6	70	1.373	1.236	0.549	0.096	0.087	0.038
NBS C107M004 C □#00 ^+	C	100	4	8.0	6	150	0.938	0.844	0.375	0.141	0.127	0.056
NBS C157M004 L □#00 ^+	C	150	4	12.0	6	90	1.211	1.090	0.484	0.109	0.098	0.044
NBS C157M004 C □#00 ^+	C	150	4	12.0	6	150	0.938	0.844	0.375	0.141	0.127	0.056
NBS D227M004 L □#00 ^+	D	220	4	17.6	8	60	1.732	1.559	0.693	0.104	0.094	0.042
NBS D227M004 C □#00 ^+	D	220	4	17.6	8	100	1.342	1.207	0.537	0.134	0.121	0.054
NBS D337M004 L □#00 ^+	D	330	4	26.4	8	55	1.809	1.628	0.724	0.099	0.090	0.040
NBS D337M004 C □#00 ^+	D	330	4	26.4	8	100	1.342	1.207	0.537	0.134	0.121	0.054
NBS E337M004 C □#00 ^+	E	330	4	26.4	8	100	1.407	1.266	0.563	0.141	0.127	0.056
NBS D477M004 L □#00 ^+	D	470	4	37.6	12	100	1.342	1.207	0.537	0.134	0.121	0.054
NBS E477M004 L □#00 ^+	E	470	4	37.6	12	75	1.625	1.462	0.650	0.122	0.110	0.049
NBS E477M004 C □#00 ^+	E	470	4	37.6	12	100	1.407	1.266	0.563	0.141	0.127	0.056
NBS V687M004 L □#00 ^+	V	680	4	54.4	14	75	2.000	1.800	0.800	0.150	0.135	0.060
<b>6.3 Volt @ 85°C (4 Volt @ 105°C, 3 Volt @ 125°C)</b>												
NBS A106M006 L □#00 ^+	A	10	6.3	1.2	6	1000	0.300	0.270	0.120	0.300	0.270	0.120
NBS A106M006 C □#00 ^+	A	10	6.3	1.2	6	2000	0.212	0.191	0.085	0.424	0.382	0.170
NBS B156M006 L □#00 ^+	B	15	6.3	1.8	6	600	0.412	0.371	0.165	0.247	0.223	0.099
NBS B226M006 L □#00 ^+	B	22	6.3	2.6	6	600	0.412	0.371	0.165	0.247	0.223	0.099
NBS B336M006 L □#00 ^+	B	33	6.3	4.0	6	600	0.412	0.371	0.165	0.247	0.223	0.099
NBS C336M006 L □#00 ^+	C	33	6.3	4.0	6	500	0.514	0.462	0.206	0.257	0.231	0.103
NBS C476M006 L □#00 ^+	C	47	6.3	5.7	6	300	0.663	0.597	0.265	0.199	0.179	0.080
NBS C686M006 L □#00 ^+	C	68	6.3	8.2	6	75	1.327	1.194	0.531	0.099	0.090	0.040
NBS C686M006 C □#00 ^+	C	68	6.3	8.2	6	200	0.812	0.731	0.325	0.162	0.146	0.065
NBS C107M006 L □#00 ^+	C	100	6.3	12.0	8	150	0.938	0.844	0.375	0.141	0.127	0.056
NBS D107M006 L □#00 ^+	D	100	6.3	12.0	6	80	1.500	1.350	0.600	0.120	0.108	0.048
NBS D107M006 C □#00 ^+	D	100	6.3	12.0	6	100	1.342	1.207	0.537	0.134	0.121	0.054
NBS D157M006 L □#00 ^+	D	150	6.3	18.0	6	70	1.604	1.443	0.641	0.112	0.101	0.045
NBS D157M006 L □#00 ^+	D	150	6.3	18.0	6	50	1.897	1.708	0.759	0.095	0.085	0.038
NBS D157M006 C □#00 ^+	D	150	6.3	18.0	6	100	1.342	1.207	0.537	0.134	0.121	0.054
NBS D227M006 L □#00 ^+	D	220	6.3	26.4	8	60	1.732	1.559	0.693	0.104	0.094	0.042
NBS D227M006 C □#00 ^+	D	220	6.3	26.4	8	100	1.342	1.207	0.537	0.134	0.121	0.054
NBS E227M006 L □#00 ^+	E	220	6.3	26.4	12	80	1.573	1.416	0.629	0.126	0.113	0.050
NBS E227M006 C □#00 ^+	E	220	6.3	26.4	12	100	1.407	1.266	0.563	0.141	0.127	0.056
NBS E337M006 L □#00 ^+	E	330	6.3	39.6	12	80	1.573	1.416	0.629	0.126	0.113	0.050
NBS E337M006 C □#00 ^+	E	330	6.3	39.6	12	100	1.407	1.266	0.563	0.141	0.127	0.056
NBS V477M006 L □#00 ^+	V	470	6.3	56.4	14	75	2.000	1.800	0.800	0.150	0.135	0.060

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

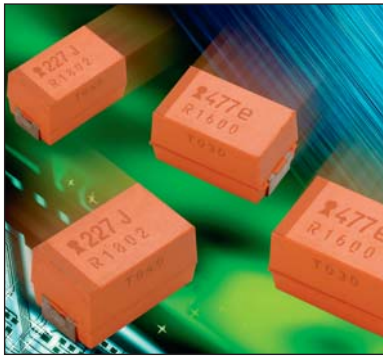
NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.



# NBM Multianodes

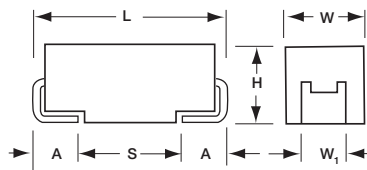


## OxiCap® Ultra Low ESR Capacitor COTS-Plus Weibull Grade



NBM OxiCap® capacitors are the COTS-Plus version of the popular NOM Low ESR multianode capacitor. Capacitors are available to Weibull failure rates B and C along with surge current testing per

MIL-PRF-55365 Rev. G. Niobium oxide technology offers non-burn characteristics along with excellent reliability and reduced derating.



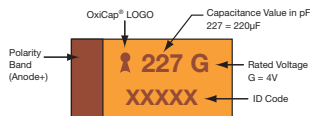
### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
E	7343-43	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

### MARKING

#### E CASE



### CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C / 0.66 DC to 105°C / 0.5 DC to 125°C			
μF	Code	1.8V (x)	2.5V (e)	4.0V (G)	6.0V (J)
220	227				E(40)
330	337			E(35)	E(23)
470	477		E(30)	E(23)	
680	687	E(23)	E(23)		

Available Ratings: ESR limits quoted in brackets (mOhms)

### HOW TO ORDER

<b>NBM</b>	<b>E</b>	<b>227</b>	<b>*</b>	<b>006</b>	<b>C</b>	<b>□</b>	<b>#</b>	<b>@</b>	<b>0</b>	<b>^</b>	<b>++</b>
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance M = ±20%	Voltage Code 001 = 1.8Vdc 002 = 2.5Vdc 004 = 4Vdc 006 = 6Vdc	Standard or Low ESR Range L = Low ESR	Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle  See page 7 for additional packaging options.	Inspection Level S = Std. Conformance L = Group A D = DSCC DWG	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf.	Qualification Level 0 = N/A	Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	Surge Test Option 00 = None 23 = 10 Cycles, +25°C, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull



### TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C is not stated					
Capacitance Range:	220 µF to 680 µF					
Capacitance Tolerance:	±20%					
Leakage Current DCL:	0.02CV					
Rated Voltage DC (V <sub>R</sub> )	≅ +85°C:	1.8	2.5	4	6	
Category Voltage (V <sub>C</sub> )	≅ +125°C:	0.9	1.3	2	3	
Surge Voltage (V <sub>S</sub> )	≅ +85°C:	2.3	3.3	5.2	8	
Surge Voltage (V <sub>S</sub> )	≅ +125°C:	1.2	1.7	2.6	4	
Temperature Range:	-55°C to +125°C					

### RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage(V)	DCL (µA)	DF %	ESR Max. (mΩ)	100kHz Ripple Current Ratings (A)			100kHz Ripple Voltage Ratings (V)		
							25°C	85°C	125°C	25°C	85°C	125°C
<b>1.8 Volt @ 85°C (1.2 Volt @ 105°C, 0.9 Volt @ 125°C)</b>												
NBME687M001C□SB07++	E	680	1.8	24.5	6	23	3.753	3.378	1.501	0.086	0.078	0.035
<b>2.5 Volt @ 85°C (1.7 Volt @ 105°C, 1.3 Volt @ 125°C)</b>												
NBME477M002C□SB07++	E	470	2.5	23.5	10	30	3.286	2.958	1.315	0.099	0.089	0.039
NBME687M002C□SB07++	E	680	2.5	34	6	23	3.753	3.378	1.501	0.086	0.078	0.035
<b>4 Volt @ 85°C (2.7 Volt @ 105°C, 2 Volt @ 125°C)</b>												
NBME337M004C□SB07++	E	330	4	26.4	8	35	3.043	2.738	1.217	0.106	0.096	0.043
NBME477M004C□SB07++	E	470	4	37.6	6	23	3.753	3.378	1.501	0.086	0.078	0.035
<b>6 Volt @ 85°C (4 Volt @ 105°C, 3 Volt @ 125°C)</b>												
NBME227M006C□SB07++	E	220	6	26.4	12	40	2.846	2.561	1.138	0.114	0.102	0.046
NBME337M006C□SB07++	E	330	6	39.6	6	23	3.753	3.378	1.501	0.086	0.078	0.035

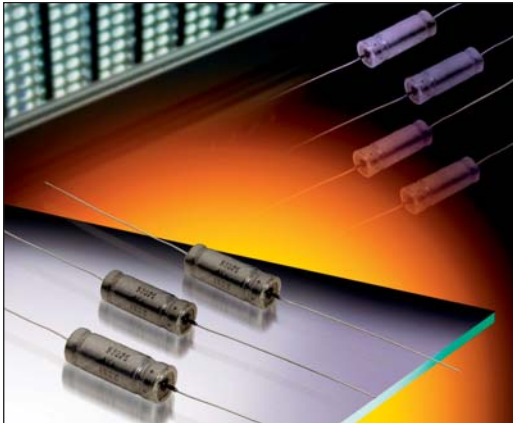
All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.

# TWA Series – DSCC 93026



## TWA Wet Electrolytic Tantalum Capacitor

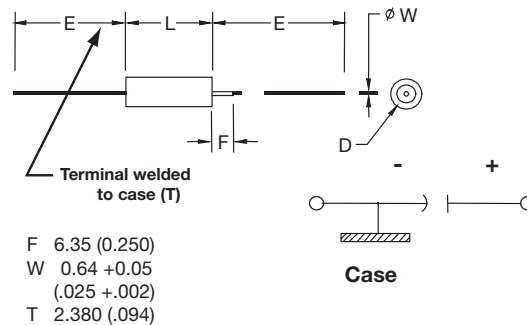


The TWA series is an axial leaded wet electrolytic tantalum capacitor and represents a new level of high CV (capacitance/voltage) previously unavailable in this technology. TWA incorporates a novel, very high capacitance cathode system that allows for higher CV designs, well beyond values specified in the MIL-PRF-39006 drawing.

TWA products are listed in DSCC 93026, which includes new high capacitance/voltage ratings. This design includes a welded tantalum can and header assembly that provides a hermetic seal to withstand harsh shock and vibration requirements of 39006. Wet tantalums do not require the same derating as solid tantalums. AVX recommends derating components by only 20% in order to enhance reliability.

Customized capacitance and voltage packages are possible and welcomed. Contact the factory about design possibilities beyond those contained in this datasheet.

### OUTLINE DIMENSIONS



### CASE DIMENSIONS: millimeters (inches)

DSCC Case Size	AVX Case Size	L	D		E
			Without Insulating Sleeve	With Insulating Sleeve	
		+0.79 (0.031) -0.41 (0.016)	±0.41 (0.016)	Max	±6.35 (0.250)
T1	A	11.51 (0.453)	4.78 (0.188)	5.56 (0.219)	38.10 (1.500)
T2	B	16.28 (0.641)	7.14 (0.281)	7.92 (0.312)	57.15 (2.250)
T3	D	19.46 (0.766)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)
T4	E	26.97 (1.062)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)

### VOLTAGE RATINGS (Operating Temperature -55°C to 125°C)

Voltage (DC)	Operating Temperature							
	85°C	25	30	50	60	75	100	125
Rated Voltage: (Ur)	85°C	25	30	50	60	75	100	125
Derated Voltage: (Uc)	125°C	15	20	30	40	50	65	85
Surge Voltage: (Us)	85°C	28.8	34.5	57.5	69	86.3	115	144



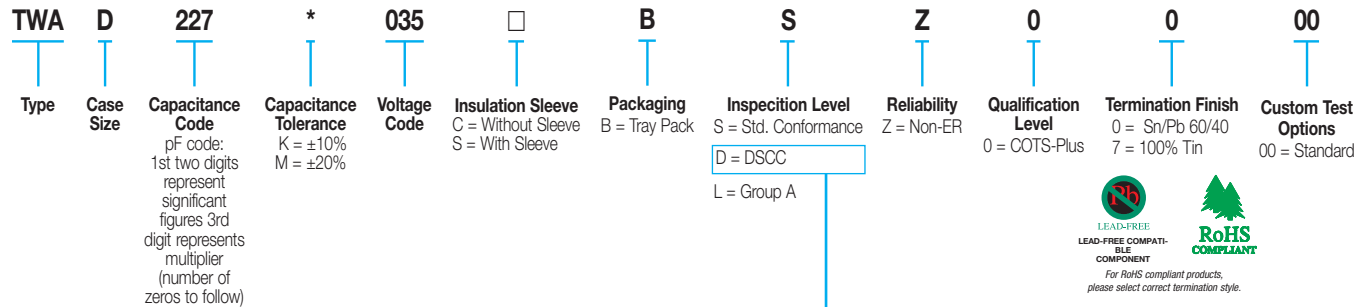
# TWA Series – DSCC 93026



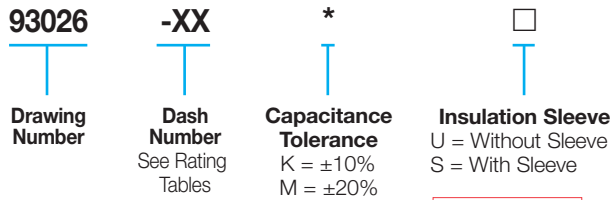
## TWA Wet Electrolytic Tantalum Capacitor

### HOW TO ORDER

#### AVX PART NUMBER:



#### DSCC PART IDENTIFICATION NUMBER (PIN):



### RIPPLE CURRENT MULTIPLIERS vs. Frequency, temperature and applied voltage<sup>1/2/</sup>

Frequency of Applied Ripple Current	120Hz				800Hz				1kHz				
	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
Ambient Still Air Temperature (°C)													
% of	100%	0.60	0.39	–	–	0.71	0.43	–	–	0.72	0.45	–	–
85°C	90%	0.60	0.46	–	–	0.71	0.55	–	–	0.72	0.55	–	–
Rated	80%	0.60	0.52	0.35	–	0.71	0.62	0.42	–	0.72	0.62	0.42	–
Peak	70%	0.60	0.58	0.44	–	0.71	0.69	0.52	–	0.72	0.70	0.52	–
Voltage	66-2/3%	0.60	0.60	0.46	0.27	0.71	0.71	0.55	0.32	0.72	0.72	0.55	0.32

Frequency of Applied Ripple Current	10kHz				40kHz				100kHz				
	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
Ambient Still Air Temperature (°C)													
% of	100%	0.88	0.55	–	–	1.00	0.63	–	–	1.10	0.69	–	–
85°C	90%	0.88	0.67	–	–	1.00	0.77	–	–	1.10	0.85	–	–
Rated	80%	0.88	0.76	0.52	–	1.00	0.87	0.59	–	1.10	0.96	0.65	–
Peak	70%	0.88	0.85	0.64	–	1.00	0.97	0.73	–	1.10	1.07	0.80	–
Voltage	66-2/3%	0.88	0.88	0.68	0.40	1.00	1.00	0.77	0.45	1.10	1.10	0.85	0.50

1/ At 125°C the rated voltage of the capacitors decreases to 66 2/3 of the 85°C rated voltage.

2/ The peak of the applied ac ripple voltage plus the applied dc voltage must not exceed the dc voltage rating of the capacitors.



# TWA Series – DSCC 93026



## TWA Wet Electrolytic Tantalum Capacitor

### RATINGS & PART NUMBER REFERENCE

AVX Part Number	DSCC Part Number	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	ESR max (ohms) at 120Hz	DC Leakage max (µA)		Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size	
					+25°C	+85°C & +125°C		-55°C	+85°C	+125°C		AVX	DSCC
<b>25 VDC at 85°C 15 VDC at 125°C</b>													
TWAA127*025□BSZ0000	93026- 29□	120	25	1.3	1	5	25	-42	8	12	1250	A	T1
TWAB567*025□BSZ0000	93026- 30□	560	25	0.83	2	10	12	-65	10	15	2100	B	T2
TWAD128*025□BSZ0000	93026- 31□	1200	25	0.65	5	20	7	-70	12	18	2600	D	T3
TWAE188*025□BSZ0000	93026- 32□	1800	25	0.5	6	25	7	-75	12	20	3100	E	T4
TWAE228*025□BSZ0000	93026- 64□	2200	25	0.5	10	80	10	-90	30	50	3200	E	T4
<b>30 VDC at 85°C 20 VDC at 125°C</b>													
TWAA107*030□BSZ0000	93026- 33□	100	30	1.3	1	5	25	-38	8	12	1200	A	T1
TWAB477*030□BSZ0000	93026- 34□	470	30	0.85	2	10	15	-65	10	18	1800	B	T2
TWAD108*030□BSZ0000	93026- 35□	1000	30	0.7	7	25	7	-70	10	18	2500	D	T3
TWAE158*030□BSZ0000	93026- 36□	1500	30	0.6	12	35	6	-72	10	20	3000	E	T4
<b>50 VDC at 85°C 30 VDC at 125°C</b>													
TWAA686*050□BSZ0000	93026- 37□	68	50	1.5	1	5	35	-25	8	15	1050	A	T1
TWAB227*050□BSZ0000	93026- 38□	220	50	0.9	2	10	17.5	-50	8	15	1800	B	T2
TWAD477*050□BSZ0000	93026- 39□	470	50	0.75	3	25	10	-50	8	15	2100	D	T3
TWAE687*050□BSZ0000	93026- 40□	680	50	0.7	5	40	8	-58	10	20	2750	E	T4
<b>60 VDC at 85°C 40 VDC at 125°C</b>													
TWAA476*060□BSZ0000	93026- 41□	47	60	2	1	5	44	-25	8	12	1050	A	T1
TWAB157*060□BSZ0000	93026- 42□	150	60	1.1	2	10	20	-40	8	15	1650	B	T2
TWAD397*060□BSZ0000	93026- 43□	390	60	0.9	3	25	15	-60	8	15	2100	D	T3
TWAE567*060□BSZ0000	93026- 44□	560	60	0.8	5	40	10	-58	8	15	2750	E	T4
TWAE108*060□BSZ0000	93026- 65□	1000	60	1	12	90	20	-90	30	50	3200	E	T4
<b>75 VDC at 85°C 50 VDC at 125°C</b>													
TWAA336*075□BSZ0000	93026- 45□	33	75	2.5	1	5	66	-25	5	9	1050	A	T1
TWAB117*075□BSZ0000	93026- 46□	110	75	1.3	2	10	24	-35	6	10	1650	B	T2
TWAD337*075□BSZ0000	93026- 47□	330	75	1	3	30	12	-45	6	10	2100	D	T3
TWAE477*075□BSZ0000	93026- 48□	470	75	0.9	5	50	12	-55	6	10	2750	E	T4
<b>100 VDC at 85°C 65 VDC at 125°C</b>													
TWAA156*100□BSZ0000	93026- 49□	15	100	3.5	1	5	125	-18	3	10	1050	A	T1
TWAB686*100□BSZ0000	93026- 50□	68	100	2.1	2	10	37	-30	4	12	1650	B	T2
TWAD157*100□BSZ0000	93026- 51□	150	100	1.6	3	25	22	-35	6	12	2100	D	T3
TWAE227*100□BSZ0000	93026- 52□	220	100	1.2	5	50	15	-40	6	12	2750	E	T4
<b>125 VDC at 85°C 85 VDC at 125°C</b>													
TWAA106*125□BSZ0000	93026- 53□	10	125	5.5	1	5	175	-15	3	10	1050	A	T1
TWAB476*125□BSZ0000	93026- 54□	47	125	2.3	2	10	47	-25	5	12	1650	B	T2
TWAD107*125□BSZ0000	93026- 55□	100	125	1.8	3	25	35	-35	5	12	2100	D	T3
TWAE157*125□BSZ0000	93026- 56□	150	125	1.6	5	50	20	-35	6	12	2750	E	T4

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.

## COTS-Plus Wet Electrolytic Tantalum Capacitor

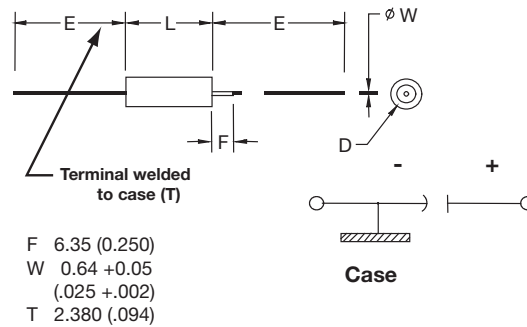


The TWA-E series is an axial leaded wet electrolytic tantalum capacitor manufactured in EU. High capacitance cathode system allows high level of CV (Capacitance/Voltage) in DSCC compatible case sizes.

This design includes a welded tantalum can and header assembly that provides a hermetic seal to withstand harsh shock and vibration requirements of MIL-PRF-39006.

Customized capacitance and voltage packages are possible and welcomed. Contact the factory about design possibilities beyond those contained in this datasheet.

### OUTLINE DIMENSIONS



### CASE DIMENSIONS: millimeters (inches)

DSCC Case Size	AVX Case Size	L +0.79 (0.031) -0.41 (0.016)	D		E ±6.35 (0.250)
			Without Insulating Sleeve ±0.41 (0.016)	With Insulating Sleeve Max	
T1	A	11.51 (0.453)	4.78 (0.188)	5.56 (0.219)	38.10 (1.500)
T2	B	16.28 (0.641)	7.14 (0.281)	7.92 (0.312)	57.15 (2.250)
T3	D	19.46 (0.766)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)
T4	E	26.97 (1.062)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)

### VOLTAGE RATINGS (Operating Temperature -55°C to 125°C)

Voltage (DC)								
Rated Voltage: (V <sub>R</sub> )	85°C	25	30	50	60	75	100	125
Derated Voltage: (V <sub>C</sub> )	125°C	15	20	30	40	50	65	85
Surge Voltage: (V <sub>S</sub> )	85°C	28.8	34.5	57.5	69	86.3	115	144

# TWA-E Series





## COTS-Plus Wet Electrolytic Tantalum Capacitor

### HOW TO ORDER

#### AVX PART NUMBER:

<b>TWA</b>	<b>D</b>	<b>337</b>	<b>*</b>	<b>050</b>	<b>□</b>	<b>B</b>	<b>E</b>	<b>Z</b>	<b>0</b>	<b>^</b>	<b>00</b>
Type	Case Size	Capacitance Code	Capacitance Tolerance	Voltage Code	Insulation Sleeve	Packaging	Inspection Level	Reliability	Qualification Level	Termination Finish	Custom Test Options
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	K = ±10% M = ±20%		C = Without Sleeve S = With Sleeve	B = Tray Pack	E = AVX COTS-Plus	Z = Non-ER	0 = N/A	0 = Sn/Pb 60/40 7 = Matte tin	00 = Standard

LEAD-FREE  
LEAD-FREE COMPATIBLE COMPONENT  
RoHS COMPLIANT  
For RoHS compliant products, please select correct termination style.

### RIPPLE CURRENT MULTIPLIERS vs. Frequency, temperature and applied voltage<sup>1/2/</sup>

Frequency of Applied Ripple Current		120Hz				800Hz				1kHz			
		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125
% of 85°C Rated Peak Voltage	100%	0.60	0.39	–	–	0.71	0.43	–	–	0.72	0.45	–	–
	90%	0.60	0.46	–	–	0.71	0.55	–	–	0.72	0.55	–	–
80%	80%	0.60	0.52	0.35	–	0.71	0.62	0.42	–	0.72	0.62	0.42	–
	70%	0.60	0.58	0.44	–	0.71	0.69	0.52	–	0.72	0.70	0.52	–
66-2/3%	66-2/3%	0.60	0.60	0.46	0.27	0.71	0.71	0.55	0.32	0.72	0.72	0.55	0.32

Frequency of Applied Ripple Current		10kHz				40kHz				100kHz			
		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125
% of 85°C Rated Peak Voltage	100%	0.88	0.55	–	–	1.00	0.63	–	–	1.10	0.69	–	–
	90%	0.88	0.67	–	–	1.00	0.77	–	–	1.10	0.85	–	–
80%	80%	0.88	0.76	0.52	–	1.00	0.87	0.59	–	1.10	0.96	0.65	–
	70%	0.88	0.85	0.64	–	1.00	0.97	0.73	–	1.10	1.07	0.80	–
66-2/3%	66-2/3%	0.88	0.88	0.68	0.40	1.00	1.00	0.77	0.45	1.10	1.10	0.85	0.50

1/ At 125°C the rated voltage of the capacitors decreases to 66 2/3 of the 85°C rated voltage.

2/ The peak of the applied ac ripple voltage plus the applied dc voltage must not exceed the dc voltage rating of the capacitors.

## COTS-Plus Wet Electrolytic Tantalum Capacitor

### CAPACITANCE AND RATED VOLTAGE, $V_R$ (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC ( $V_R$ ) to 85°C						
$\mu\text{F}$	Code	25V	30V	50V	60V	75V	100V	125V
10	106			A*				
15	156							
22	226	A*			A*	A*		
33	336							
47	476			A*				B
68	686	A					B	
100	107				B	B		D
120	127			A*,B				D
150	157			B		D*	D	E
220	227		B		D*	D*,E	D,E	E
330	337	B	D*	D*,E	E*	D,E	E	
397	390				D			
400	407						E	
470	477		D*	D,E		E		
560	567	D*	D*		E			
680	687	D*,E	D,E	E	E	E		
750	757	D,E	D,E	E	E	E	E*	
1000	108	D,E	E	D,E	E*	E*		
1500	158	E	E*					
1800	188	E*						
2200	228				E*			
3000	308			E				
4700	478	E						
5600	568	E*						

Released codes

Engineering samples - please contact manufacturer

\*Codes under development



# TWA-E Series



## COTS-Plus Wet Electrolytic Tantalum Capacitor

### RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	ESR Max (ohms) at 120Hz	DC Leakage max (µA)		TANG δ Max +25°C (%)	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size		
				+25°C	+85 & +125°C			-55°C	+85°C	+125°C		AVX	DSCC	
<b>25 VDC at 85°C    15 VDC at 125°C</b>														
TWAA226*025□BEZ0^00	22	25	4.0	1	2	6.6	140	-20	10.5	12	825	A	T1	
TWAA686*025□BEZ0^00	68	25	2.5	0.6	3	12	45	-40	12	15	850	A	T1	
TWAB337*025□BEZ0^00	330	25	1.3	2	20	30	25	-60	10	15	1550	B	T2	
TWAD567*025□BEZ0^00	560	25	0.9	7	28	38	24	-72	20	25	1750	D	T3	
TWAD687*025□BEZ0^00	680	25	0.62	8	32	31.5	19	-72	25	30	2100	D	T3	
TWAE687*025□BEZ0^00	680	25	0.75	3	12	45	12	-50	8	15	2100	E	T4	
TWAD757*025□BEZ0^00	750	25	1	3	25	45	15	-50	8	15	2000	D	T3	
TWAE757*025□BEZ0^00	750	25	0.75	3.5	16	50	9	-55	10	18	2200	E	T4	
TWAD108*025□BEZ0^00	1000	25	1	4	30	45	15	-50	8	15	2300	D	T3	
TWAE108*025□BEZ0^00	1000	25	0.7	4	20	60	9	-55	10	18	2400	E	T4	
TWAE158*025□BEZ0^00	1500	25	0.5	6	24	65	7	-65	15	20	2850	E	T4	
TWAE188*025□BEZ0^00	1800	25	0.5	6	25	81.4	7	-75	12	20	3100	E	T4	
TWAE478*025□BEZ0^00	4700	25	0.5	30	180	90	5	-90	60	80	4250	E	T4	
TWAE568*025□BEZ0^00	5600	25	0.3	35	200	120	3	-90	40	60	5700	E	T4	
<b>30 VDC at 85°C    20 VDC at 125°C</b>														
TWAB227*030□BEZ0^00	220	30	2	1.9	10	15	30	-40	8	15	1200	B	T2	
TWAD337*030□BEZ0^00	330	30	2.6	3	12	50	52	-65	25	25	1400	D	T3	
TWAD477*030□BEZ0^00	470	30	2	8	32	64	25	-65	20	25	1600	D	T3	
TWAD567*030□BEZ0^00	560	30	1.5	9	35	55	20	-65	25	30	1750	D	T3	
TWAD687*030□BEZ0^00	680	30	1	3.3	25	45	15	-50	8	15	1900	D	T3	
TWAE687*030□BEZ0^00	680	30	0.8	4.5	18	45	10	-60	8	15	2100	E	T4	
TWAD757*030□BEZ0^00	750	30	1	3.6	30	45	15	-50	8	15	2000	D	T3	
TWAE757*030□BEZ0^00	750	30	0.8	5	20	45	10	-65	10	18	2200	E	T4	
TWAE108*030□BEZ0^00	1000	30	0.7	5	20	55	7	-70	10	18	2500	E	T4	
TWAE158*030□BEZ0^00	1500	30	0.6	12	35	65	6	-72	10	20	3000	E	T4	
<b>50 VDC at 85°C    30 VDC at 125°C</b>														
TWAA106*050□BEZ0^00	10	50	5.3	1	2	4	250	-24	8	9	715	A	T1	
TWAA476*050□BEZ0^00	47	50	2	1	5	9	35	-25	8	15	850	A	T1	
TWAA127*050□BEZ0^00	120	50	1.8	1.5	8	14	30	-40	30	40	1100	A	T1	
TWAB127*050□BEZ0^00	120	50	2	2	10	14	30	-45	8	15	1200	B	T2	
TWAB157*050□BEZ0^00	150	50	2	2	10	16	25	-50	8	15	1400	B	T2	
TWAD337*050□BEZ0^00	330	50	0.85	3	25	25	15	-50	8	15	1650	D	T3	
TWAE337*050□BEZ0^00	330	50	0.8	2.5	25	24	15	-50	8	15	1900	E	T4	
TWAD477*050□BEZ0^00	470	50	1	3	25	35	11	-50	8	15	2100	D	T3	
TWAE477*050□BEZ0^00	470	50	0.75	3	30	32	10	-50	8	15	2200	E	T4	
TWAE687*050□BEZ0^00	680	50	0.7	5	40	42	8	-58	10	20	2750	E	T4	
TWAE757*050□BEZ0^00	750	50	0.6	12	60	35	8	-50	15	20	2800	E	T4	
TWAD108*050□BEZ0^00	1000	50	1.5	20	125	80	12	-90	100	140	2500	D	T3	
TWAE108*050□BEZ0^00	1000	50	0.7	11	110	45	20	-70	30	40	3200	E	T4	
TWAE308*050□BEZ0^00	3000	50	0.3	30	150	80	3.5	-80	60	85	3100	E	T4	
<b>60 VDC at 85°C    40 VDC at 125°C</b>														
TWAA226*060□BEZ0^00	22	60	5	3	12	10.2	144	-24	10	12	500	A	T1	
TWAB107*060□BEZ0^00	100	60	2.5	1.7	10	12	30	-40	8	15	1100	B	T2	
TWAD227*060□BEZ0^00	220	60	0.9	8	32	15	29	-40	16	20	1400	D	T3	
TWAE337*060□BEZ0^00	330	60	1.5	5	25	40	31	-72	25	25	1850	E	T4	
TWAD397*060□BEZ0^00	390	60	0.9	3	25	30	15	-60	8	15	2100	D	T3	
TWAE567*060□BEZ0^00	560	60	0.8	5	40	45	10	-58	8	15	2750	E	T4	
TWAE687*060□BEZ0^00	680	60	0.6	13	65	35	8	-50	15	20	2800	E	T4	
TWAE757*060□BEZ0^00	750	60	0.6	15	75	35	8	-50	15	20	2800	E	T4	
TWAE108*060□BEZ0^00	1000	60	0.5	30	90	50	3.5	-40	20	80	3000	E	T4	
TWAE228*060□BEZ0^00	2200	60	0.5	30	150	80	3.5	-80	60	85	3000	E	T4	
<b>75 VDC at 85°C    50 VDC at 125°C</b>														
TWAA226*075□BEZ0^00	22	75	5.1	30	12	8.5	157	-19	10	12	600	A	T1	
TWAB107*075□BEZ0^00	100	75	2.5	2	10	12	24	-35	6	10	1400	B	T2	
TWAD157*075□BEZ0^00	150	75	1.2	3	30	25	60	-40	20	20	1340	D	T3	
TWAD227*075□BEZ0^00	220	75	1.2	3	30	24	20	-45	6	10	1500	D	T3	
TWAE227*075□BEZ0^00	220	75	1.1	2.5	30	22	20	-50	6	10	1800	E	T4	
TWAD337*075□BEZ0^00	330	75	1.2	3	30	30	15	-60	10	20	2100	D	T3	
TWAE337*075□BEZ0^00	330	75	1	3	40	30	12	-50	6	10	2200	E	T4	
TWAE477*075□BEZ0^00	470	75	0.9	5	50	38	12	-55	6	10	2750	E	T4	
TWAE687*075□BEZ0^00	680	75	0.9	11	110	45	10	-70	30	40	2750	E	T4	
TWAE757*075□BEZ0^00	750	75	0.7	12	120	60	10	-70	30	40	3800	E	T4	
TWAE108*075□BEZ0^00	1000	75	0.5	20	200	70	8	-90	12	20	3500	E	T4	



## COTS-Plus Wet Electrolytic Tantalum Capacitor

### RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	ESR Max (ohms) at 120Hz	DC Leakage max (µA)		TANG δ Max +25°C (%)	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size		
				+25°C	+85 & +125°C			-55°C	+85°C	+125°C		AVX	DSCC	
<b>100 VDC at 85°C    65 VDC at 125°C</b>														
TWAB686*100□BEZ0^00	68	100	2.5	2	10	13	37	-30	4	12	1650	B	T2	
TWAD157*100□BEZ0^00	150	100	1.6	3	25	22	22	-35	6	12	2100	D	T3	
TWAD227*100□BEZ0^00	220	100	1.4	5	25	30	18	-50	10	15	2500	D	T3	
TWAE227*100□BEZ0^00	220	100	1.2	5	50	24	15	-40	6	12	2750	E	T4	
TWAE337*100□BEZ0^00	330	100	0.8	6	60	30	10	-45	7	20	3600	E	T4	
TWAE407*100□BEZ0^00	400	100	0.8	10	150	30	10	-50	10	35	4100	E	T4	
TWAE757*100□BEZ0^00	750	100	0.7	20	200	45	10	-40	20	50	6700	E	T4	
<b>125 VDC at 85°C    85 VDC at 125°C</b>														
TWAB476*125□BEZ0^00	47	125	2.3	2	10	13	47	-25	5	12	1650	B	T2	
TWAD107*125□BEZ0^00	100	125	1.8	3	25	18	35	-35	5	12	2100	D	T3	
TWAD127*125□BEZ0^00	120	125	1.8	3	25	18	35	-35	5	12	2100	D	T3	
TWAE157*125□BEZ0^00	150	125	1.6	5	50	35	20	-35	6	16	2750	E	T4	
TWAE227*125□BEZ0^00	220	125	1.4	10	50	25	12	-40	8	15	3600	E	T4	

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.

# TWA-Y 200°C Series



## Wet Electrolytic Tantalum Capacitor



The TWA-Y series represents a high temperature version of conventional wet electrolytic tantalum capacitors that are designed for use at 200°C. High capacitance cathode system allows high level of CV (Capacitance/Voltage) in standard case sizes.

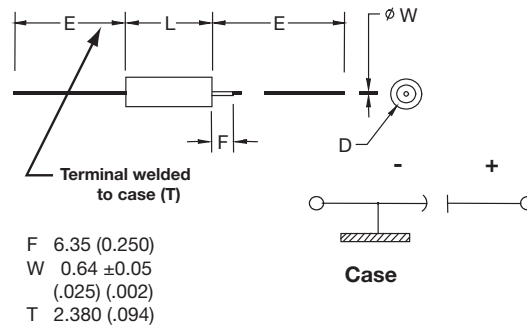
Selected values of the TWA-Y are capable of up to 2000 hours of operation at extreme temperatures with the applicable derated voltage.

Mechanical testing being conducted in accordance to MIL-STD- 202, High Frequency vibration - method 204, test condition "D" Mechanical Shock Test - method 213, test condition "I".

This design includes a welded tantalum can and header assembly that provides a hermetic seal to withstand also harsh shock and vibration requirements.

Contact the factory for additional options for customized component design.

### OUTLINE DIMENSIONS



### CASE DIMENSIONS: millimeters (inches)

DSCC Case Size	AVX Case Size	L +0.79 (0.031) -0.41 (0.016)	D		E ±6.35 (0.250)
			Without Insulating Sleeve ±0.41 (0.016)	With Insulating Sleeve Max	
T1	A	11.51 (0.453)	4.78 (0.188)	5.56 (0.219)	38.10 (1.500)
T2	B	16.28 (0.641)	7.14 (0.281)	7.92 (0.312)	57.15 (2.250)
T3	D	19.46 (0.766)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)
T4	E	26.97 (1.062)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)

### VOLTAGE RATINGS (Operating Temperature -55°C to 200°C)

Voltage (DC)									
Rated Voltage: (V <sub>R</sub> )	85°C	15	25	30	50	60	75	100	125
Derated Voltage: (V <sub>D</sub> )	125°C	10	15	20	30	40	50	65	85
High Temperature Voltage: (V <sub>T</sub> )	200°C	9	12	18	30	36	45	60	75



# TWA-Y 200°C Series





## Wet Electrolytic Tantalum Capacitor

### HOW TO ORDER

#### AVX PART NUMBER:

<b>TWA</b>	<b>E</b>	<b>757</b>	<b>*</b>	<b>075</b>	<b>□</b>	<b>B</b>	<b>Y</b>	<b>Z</b>	<b>0</b>	<b>^</b>	<b>00</b>
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance K = ±10% M = ±20%	Voltage Code	Insulation Sleeve C = Without Sleeve S = With Sleeve	Packaging B = Tray Pack	Inspection Level Y = High Temp	Reliability Z = Non-ER	Qualification Level 0 = N/A	Termination Finish 0 = Sn/Pb 60/40 7 = Matte tin	Custom Test Options 00 = Standard

LEAD-FREE  
LEAD-FREE COMPATIBLE COMPONENT  
RoHS COMPLIANT  
For RoHS compliant products, please select correct termination style.

### RIPPLE CURRENT MULTIPLIERS vs. Frequency, temperature and applied voltage<sup>1/2/</sup>

Frequency of Applied Ripple Current		120Hz				800Hz				1kHz				
		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
Ambient Still Air Temperature (°C)	% of	100%	0.60	0.39	–	–	0.71	0.43	–	–	0.72	0.45	–	–
	85°C	90%	0.60	0.46	–	–	0.71	0.55	–	–	0.72	0.55	–	–
Rated Peak	80%	0.60	0.52	0.35	–	–	0.71	0.62	0.42	–	0.72	0.62	0.42	–
	70%	0.60	0.58	0.44	–	–	0.71	0.69	0.52	–	0.72	0.70	0.52	–
Voltage	66-2/3%	0.60	0.60	0.46	0.27	0.71	0.71	0.55	0.32	0.72	0.72	0.55	0.32	

Frequency of Applied Ripple Current		10kHz				40kHz				100kHz				
		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
Ambient Still Air Temperature (°C)	% of	100%	0.88	0.55	–	–	1.00	0.63	–	–	1.10	0.69	–	–
	85°C	90%	0.88	0.67	–	–	1.00	0.77	–	–	1.10	0.85	–	–
Rated Peak	80%	0.88	0.76	0.52	–	–	1.00	0.87	0.59	–	1.10	0.96	0.65	–
	70%	0.88	0.85	0.64	–	–	1.00	0.97	0.73	–	1.10	1.07	0.80	–
Voltage	66-2/3%	0.88	0.88	0.68	0.40	1.00	1.00	0.77	0.45	1.10	1.10	0.85	0.50	

1/ At 125°C the rated voltage of the capacitors decreases to 66 2/3 of the 85°C rated voltage.

2/ The peak of the applied ac ripple voltage plus the applied dc voltage must not exceed the dc voltage rating of the capacitors.



# TWA-Y 200°C Series



## Wet Electrolytic Tantalum Capacitor

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C						
µF	Code	15V	25V	50V	60V	75V	100V	125V
10	106			A*				
15	156							
22	226		A*		A*	A*		
33	336	A*						
47	476							
68	686						B*	
100	107				B*			
120	127							
150	157						D	E
220	227					E	E	E
330	337			E			E	
400	407						E	
470	477							
560	567							
680	687					E		
750	757					E		
1000	108			E	E*	E*		

Released codes

Engineering samples - please contact manufacturer

\*Codes under development

### RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	ESR Max (ohms) at 120Hz	DC Leakage max (µA)		TANG δ Max +25°C (%)	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size		Lifetime at 200°C (hrs.)	
				+25°C	+85 & +125°C			-55°C	+85°C	+125°C		AVX	DSCC		
15 VDC at 85°C 10 VDC at 125°C 9 VDC at 200°C															
TWAA336*015□BYZ0*00	33	15	3	1	2	12.5	90	-28	14	16	820	A	T1	500	
25 VDC at 85°C 15 VDC at 125°C 12 VDC at 200°C															
TWAA226*025□BYZ0*00	22	25	4	1	2	6.6	140	-20	10.5	12	825	A	T1	500	
50 VDC at 85°C 30 VDC at 125°C 30 VDC at 200°C															
TWAA106*050□BYZ0*00	10	50	5.3	1	2	4	250	-24	8	9	715	A	T1	500	
TWAE337*050□BYZ0*00	330	50	0.8	2.5	25	24	15	-50	8	15	1900	E	T4	1000	
TWAE108*050□BYZ0*00	1000	50	0.7	11	110	45	20	-70	30	40	3200	E	T4	500	
60 VDC at 85°C 40 VDC at 125°C 36 VDC at 200°C															
TWAA226*060□BYZ0*00	22	60	5	3	12	10.2	144	-24	10	12	500	A	T1	500	
TWAB106*060□BYZ0*00	100	60	2.5	1.7	10	12	30	-40	8	15	1100	B	T2	1000	
TWAE108*060□BYZ0*00	1000	60	0.5	30	90	50	3.5	-40	20	80	3000	E	T4	500	
75 VDC at 85°C 50 VDC at 125°C 45 VDC at 200°C															
TWAA226*075□BYZ0*00	22	75	2.5	1	5	8	66	-25	5	9	1050	A	T1	1000	
TWAE227*075□BYZ0*00	220	75	1.2	5	50	24	20	-40	8	15	1800	E	T4	2000	
TWAE687*075□BYZ0*00	680	75	0.9	11	110	45	10	-70	30	40	2750	E	T4	500	
TWAE757*075□BYZ0*00	750	75	0.7	12	120	60	10	-70	30	40	3800	E	T4	500	
TWAE108*075□BYZ0*00	1000	75	50	20	200	70	8	-90	12	20	3500	E	T4	500	
100 VDC at 85°C 65 VDC at 125°C 60 VDC at 200°C															
TWAB686*100□BYZ0*00	68	100	2.5	2	10	13	37	-30	4	12	1650	B	T2	1000	
TWAD157*100□BYZ0*00	150	100	1.6	3	25	22	22	-35	6	12	2100	D	T3	2000	
TWAE227*100□BYZ0*00	220	100	1.2	5	50	24	15	-40	6	12	2750	E	T4	2000	
TWAE337*100□BYZ0*00	330	100	0.8	6	60	30	10	-45	7	20	3600	E	T4	2000	
TWAE407*100□BYZ0*00	400	100	0.8	10	150	30	10	-50	10	35	4100	E	T4	1000	
125 VDC at 85°C 85 VDC at 125°C 75 VDC at 200°C															
TWAE157*125□BYZ0*00	150	125	1.6	5	50	35	20	-35	6	16	2750	E	T4	2000	
TWAE227*125□BYZ0*00	220	125	1.4	10	50	25	12	-40	8	15	3600	E	T4	2000	

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

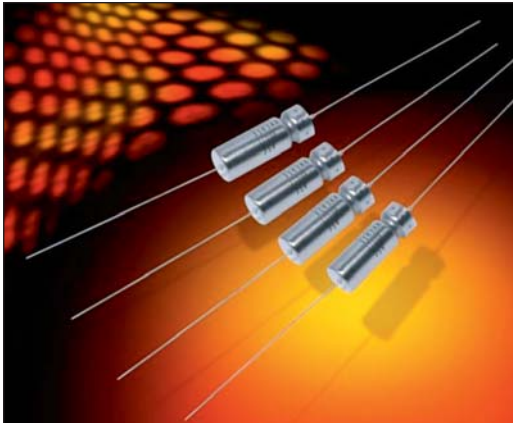
NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.



# MIL-PRF-39006 Series



## Military Conventional Wet Tantalum



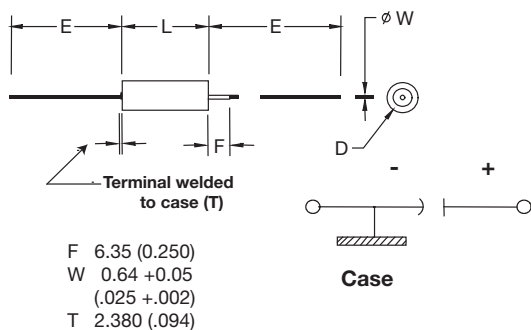
This data sheet contains the MIL-PRF-39006 ratings for which AVX is a qualified approved supplier. This will be continually updated as the qualification expands. For COTS-Plus equivalent ratings please refer to the TWC data sheet located on the website.

This design is an axial leaded tubular case. It includes a welded tantalum can and header assembly that provides a hermetic seal to withstand harsh environments. The 1000 hour failure rates of 1%, 0.1% and 0.01% correspond to "M", "P", and "R" respectively. For details on testing conditions please refer to MIL-PRF-39006.

Currently qualified M39006 ratings include T2-T4 case sizes:

	M Level Reliability Dashes	P Level Reliability Dashes	R Level Reliability Dashes
M39006/22	6V-100V	6V-100V	6V-100V
M39006/25	6V-100V	6V-100V	6V-100V
M39006/30	6V-100V	6V-100V	6V-100V
M39006/31	6V-100V	6V-100V	6V-100V

### OUTLINE DIMENSIONS



### CASE DIMENSIONS: millimeters (inches)

DSCC Case Size	AVX Case Size	L	D		E
			Basic Case ±0.41 (0.016)	Insulated Case Max	
T1	A	+0.79 (0.031) -0.41 (0.016)	4.78 (0.188)	5.56 (0.219)	±6.35 (0.250)
T2	B	16.28 (0.641)	7.14 (0.281)	7.92 (0.312)	57.15 (2.250)
T3	D	19.46 (0.766)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)
T4	E	26.97 (1.062)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)

### VOLTAGE RATINGS (Operating Temperature -55°C to 125°C)

Voltage (DC)												
Rated Voltage: ( $V_r$ )	85°C	6	8	10	15	25	30	50	60	75	100	125
Derated Voltage: ( $V_o$ )	125°C	4	5	6	10	15	20	30	40	50	65	85
Surge Voltage: ( $V_s$ )	85°C	6.9	9.2	11.5	17.3	28.8	34.5	57.5	69	86.3	115	144

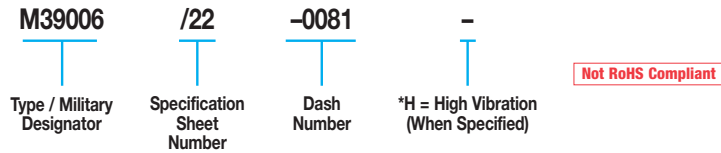


# MIL-PRF-39006 Series



## Military Conventional Wet Tantalum

### HOW TO ORDER MILITARY M39006 PART NUMBER:



\*High vibration qualified parts are currently under development. Please contact the factory for additional details and availability.

### RIPPLE CURRENT MULTIPLIERS vs. Frequency, temperature and applied voltage<sup>1/2/3/</sup>

Frequency of Applied Ripple Current		120Hz				800Hz				1kHz			
		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125
Ambient Still Air Temperature (°C)													
% of	100%	0.60	0.39	-	-	0.71	0.43	-	-	0.72	0.45	-	-
85°C	90%	0.60	0.46	-	-	0.71	0.55	-	-	0.72	0.55	-	-
Rated	80%	0.60	0.52	0.35	-	0.71	0.62	0.42	-	0.72	0.62	0.42	-
Peak	70%	0.60	0.58	0.44	-	0.71	0.69	0.52	-	0.72	0.70	0.52	-
Voltage	66-2/3%	0.60	0.60	0.46	0.27	0.71	0.71	0.55	0.32	0.72	0.72	0.55	0.32

Frequency of Applied Ripple Current		10kHz				40kHz				100kHz			
		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125
Ambient Still Air Temperature (°C)													
% of	100%	0.88	0.55	-	-	1.00	0.63	-	-	1.10	0.69	-	-
85°C	90%	0.88	0.67	-	-	1.00	0.77	-	-	1.10	0.85	-	-
Rated	80%	0.88	0.76	0.52	-	1.00	0.87	0.59	-	1.10	0.96	0.65	-
Peak	70%	0.88	0.85	0.64	-	1.00	0.97	0.73	-	1.10	1.07	0.80	-
Voltage	66-2/3%	0.88	0.88	0.68	0.40	1.00	1.00	0.77	0.45	1.10	1.10	0.85	0.50

1/ At 125°C the rated voltage of the capacitors decreases to 66 2/3 of the 85°C rated voltage.

2/ The peak of the applied ac ripple voltage plus the applied dc voltage must not exceed the dc voltage rating of the capacitors.

3/ The ripple current listed in the parametric tables represents a rating calculated by using a maximum internal temperature rise ( $\Delta T$ ) at 50°C at 40 kHz at 85°C ambient temperature, with a maximum peak rated voltage of 66.67 percent of the 85°C peak voltage rating.

# MIL-PRF-39006 Series



## Military Conventional Wet Tantalum

### M39006 /22 RATINGS AND DASH NUMBER REFERENCE

M39006/22 Dashes			Tolerance ± (%)	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF max (%)	ESR max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size																																																																																			
M Level	P Level	R Level				+25°C	+85°C & +125°C				-55°C	+85°C	+125°C																																																																																					
-0007	-0227	-0447	20	140	6	1	3	21	1.99	40	-40	14	16	1200	T2																																																																																			
-0008	-0228	-0448	10																																																																																															
-0009	-0229	-0449	5																																																																																															
-0010	-0230	-0450	20	270	6	1	6.5	45	2.21	25	-44	17.5	20	1375	T2																																																																																			
-0011	-0231	-0451	10																																																																																															
-0012	-0232	-0452	5																																																																																															
-0013	-0233	-0453	20	330	6	2	7.9	36	1.45	20	-44	14	16	1800	T3																																																																																			
-0014	-0234	-0454	10																																																																																															
-0015	-0235	-0455	5																																																																																															
-0016	-0236	-0456	20	560	6	2	13	55	1.3	25	-64	17.5	20	1900	T3																																																																																			
-0017	-0237	-0457	10																																																																																															
-0018	-0238	-0458	5																																																																																															
-0019	-0239	-0459	20	1200	6	3	14	90	1	20	-80	25	25	2265	T4																																																																																			
-0020	-0240	-0460	10																																																																																															
-0021	-0241	-0461	5																																																																																															
-0022	-0242	-0462	20	120	8	1	2	20	2.21	50	-44	17.5	20	1220	T2																																																																																			
-0023	-0243	-0463	10																																																																																															
-0024	-0244	-0464	5																																																																																															
-0025	-0245	-0465	20	220	8	1	7	37	2.23	30	-44	17.5	20	1370	T2																																																																																			
-0026	-0246	-0466	10																																																																																															
-0027	-0247	-0467	5																																																																																															
-0028	-0248	-0468	20	290	8	2	6	34	1.56	25	-64	17.5	20	1770	T3																																																																																			
-0029	-0249	-0469	10																																																																																															
-0030	-0250	-0470	5																																																																																															
-0031	-0251	-0471	20	430	8	2	14	46	1.42	25	-64	17.5	20	1825	T3																																																																																			
-0032	-0252	-0472	10																																																																																															
-0033	-0253	-0473	5																																																																																															
-0034	-0254	-0474	20	850	8	4	16	60	0.94	22	-80	25	25	2330	T4																																																																																			
-0035	-0255	-0475	10																																																																																															
-0036	-0256	-0476	5																																																																																															
-0037	-0257	-0477	20	100	10	1	4	15	1.99	60	-36	14	16	1200	T2																																																																																			
-0038	-0258	-0478	10																																																																																															
-0039	-0259	-0479	5																																																																																															
-0040	-0260	-0480	20	180	10	1	7	30	2.21	40	-36	14	16	1.365	T2																																																																																			
-0041	-0261	-0481	10																																																																																															
-0042	-0262	-0482	5																																																																																															
-0043	-0263	-0483	20	250	10	2	10	30	1.59	30	-40	14	16	1720	T3																																																																																			
-0044	-0264	-0484	10																																																																																															
-0045	-0265	-0485	5																																																																																															
-0046	-0266	-0486	20	390	10	2	16	44	1.5	25	-64	17.5	20	1800	T3																																																																																			
-0047	-0267	-0487	10																																																																																															
-0048	-0268	-0488	5																																																																																															
-0049	-0269	-0489	20	750	10	4	16	50	0.88	23	-80	25	25	2360	T4																																																																																			
-0050	-0270	-0490	10																																																																																															
-0051	-0271	-0491	5																																																																																															
-0052	-0272	-0492	20	70	15	1	4	13	2.46	75	-28	14	16	1150	T2																																																																																			
-0053	-0273	-0493	10																																																																																															
-0054	-0274	-0494	5																																																																																															
-0055	-0275	-0495	20	120	15	1	7	18	1.99	50	-28	17.5	20	1450	T2																																																																																			
-0056	-0276	-0496	10																																																																																															
-0057	-0277	-0497	5																																																																																															
-0058	-0278	-0498	20	170	15	2	10	25	1.95	35	-32	14	16	1480	T3																																																																																			
-0059	-0279	-0499	10																																																																																															
-0060	-0280	-0500	5																																																																																															
-0061	-0281	-0501	20	270	15	2	16	32	1.57	30	-56	17.5	20	1740	T3																																																																																			
-0062	-0282	-0502	10																																																																																															
-0063	-0283	-0503	5																																																																																															
-0064	-0284	-0504	20	540	15	6	24	40	0.98	23	-80	25	25	2330	T4																																																																																			
-0065	-0285	-0505	10																																																																																															
-0066	-0286	-0506	5																																																																																															
-0067	-0287	-0507	20	50	25	1	2	11	2.92	70	-28	13	15	1130	T2																																																																																			
-0068	-0288	-0508	10																																																																																															
-0069	-0289	-0509	5																																																																																															
-0070	-0290	-0510	20	100	25	1	10	15	1.99	50	-28	13	15	1435	T2																																																																																			
-0071	-0291	-0511	10																																																																																															
-0072	-0292	-0512	5																																																																																															
-0073	-0293	-0513	20	120	25	2	6	21	2.32	38	-32	13	15	1450	T3																																																																																			
-0074	-0294	-0514	10																																																																																															
-0075	-0295	-0515	5																																																																																															
-0076	-0296	-0516	20	180	25	2	18	26	1.92	32	-48	13	15	1525	T3																																																																																			
-0077	-0297	-0517	10																																																																																															
-0078	-0298	-0518	5																																																																																															
-0079	-0299	-0519	20	-0080	-0300	-0520	10	20	-0081	-0301	-0521	10	20	-0082	-0302	-0522	10	20	-0083	-0303	-0523	10	20	-0084	-0304	-0524	10	20	-0085	-0305	-0525	10	20	-0086	-0306	-0526	10	20	-0087	-0307	-0527	10	20	-0088	-0308	-0528	10	20	-0089	-0309	-0529	10	20	-0090	-0310	-0530	10	20	-0091	-0311	-0531	10	20	-0092	-0312	-0532	10	20	-0093	-0313	-0533	10	20	-0094	-0314	-0534	10	20	-0095	-0315	-0535	10	20	-0096	-0316	-0536	10	20	-0097	-0317	-0537	10	20	-0098	-0318	-0538	10	20

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.





# MIL-PRF-39006 Series



## Military Conventional Wet Tantalum

M39006/22 Dashes			Tolerance ± (%)	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF max (%)	ESR max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size
M Level	P Level	R Level				+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		
-0099	-0319	-0539	20	350	25	7	28	35	1.33	24	-70	25	25	1970	T4
-0100	-0320	-0540	10												
-0107	-0327	-0547	20	40	30	1	5	10	3.32	65	-24	10.5	12	1120	T2
-0108	-0328	-0548	10												
-0109	-0329	-0549	5												
-0110	-0330	-0550	20	68	30	1	8	13	2.54	60	-24	13	15	1285	T2
-0111	-0331	-0551	10												
-0112	-0332	-0552	5												
-0113	-0333	-0553	20	100	30	2	12	17	2.26	40	-28	10.5	12	1450	T3
-0114	-0334	-0554	10												
-0115	-0335	-0555	5												
-0116	-0336	-0556	20	150	30	2	18	23	2.03	35	-48	13	15	1525	T3
-0117	-0337	-0557	10												
-0118	-0338	-0558	5												
-0119	-0339	-0559	20	300	30	8	32	31	1.37	25	-60	25	25	1950	T4
-0120	-0340	-0560	10												
-0127	-0347	-0567	20												
-0128	-0348	-0568	10												
-0129	-0349	-0569	5												
-0130	-0350	-0570	20	47	50	1	9	11	3.11	70	-28	13	15	1155	T2
-0131	-0351	-0571	10												
-0132	-0352	-0572	5												
-0133	-0353	-0573	20	60	50	2	12	12	2.65	45	-16	10.5	12	1335	T3
-0134	-0354	-0574	10												
-0135	-0355	-0575	5												
-0136	-0356	-0576	20	82	50	2	16	15	2.43	45	-32	13	15	1400	T3
-0137	-0357	-0577	10												
-0138	-0358	-0578	5												
-0139	-0359	-0579	20	160	50	8	32	17	1.41	27	-50	25	25	1900	T4
-0140	-0360	-0580	10												
-0147	-0367	-0587	20												
-0148	-0368	-0588	10												
-0149	-0369	-0589	5												
-0150	-0370	-0590	20	39	60	1	9	10	3.4	90	-28	10.5	12	1110	T2
-0151	-0371	-0591	10												
-0152	-0372	-0592	5												
-0153	-0373	-0593	20	50	60	2	12	10	2.65	50	-16	10.5	12	1330	T3
-0154	-0374	-0594	10												
-0155	-0375	-0595	5												
-0156	-0376	-0596	20	68	60	2	16	13	2.54	50	-32	10.5	12	1365	T3
-0157	-0377	-0597	10												
-0158	-0378	-0598	5												
-0159	-0379	-0599	20	140	60	8	32	16	1.52	28	-40	20	20	1850	T4
-0160	-0380	-0600	10												
-0167	-0387	-0607	20												
-0168	-0388	-0608	10												
-0169	-0389	-0609	5												
-0170	-0390	-0610	20	33	75	1	10	10	4.02	90	-24	10.5	15	1000	T2
-0171	-0391	-0611	10												
-0172	-0392	-0612	5												
-0173	-0393	-0613	20	40	75	2	12	9	2.99	60	-16	10.5	12	1250	T3
-0174	-0394	-0614	10												
-0175	-0395	-0615	5												
-0176	-0396	-0616	20	56	75	2	17	11	2.61	60	-28	10.5	15	1335	T3
-0177	-0397	-0617	10												
-0178	-0398	-0618	5												
-0179	-0399	-0619	20	110	75	9	36	12	1.45	29	-35	20	20	1850	T4
-0180	-0400	-0620	10												
-0187	-0407	-0627	20												
-0188	-0408	-0628	10												
-0189	-0409	-0629	5												
-0190	-0410	-0630	20	22	100	1	9	7.5	4.52	100	-16	8	8	965	T2
-0191	-0411	-0631	10												
-0192	-0412	-0632	5												
-0193	-0413	-0633	20	30	100	2	12	7	3.1	80	-16	8	8	1240	T3
-0194	-0414	-0634	10												
-0195	-0415	-0635	5												
-0196	-0416	-0636	20	43	100	2	17	8.5	2.62	70	-20	8	8	1335	T3
-0197	-0417	-0637	10												
-0198	-0418	-0638	5												
-0199	-0419	-0639	20	86	100	9	36	10	1.54	30	-25	15	15	1800	T4
-0200	-0420	-0640	10												

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.



# MIL-PRF-39006 Series



## Military Conventional Wet Tantalum

### M39006/25 RATINGS AND DASH NUMBER REFERENCE

M39006/25 Dashes			Tolerance ± (%)	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF max (%)	ESR max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size
M Level	P Level	R Level				+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		
-0003	-0091	-0179	20	820	6	3	14	155	2.51	18	-88	16	20	1500	T2
-0004	-0092	-0180	10												
-0005	-0093	-0181	20	1500	6	5	20	172	1.52	18	-90	20	25	1900	T3
-0006	-0094	-0182	10												
-0007	-0095	-0183	20	2200	6	6	24	170	1.03	13	-90	25	30	2300	T4
-0008	-0096	-0184	10												
-0011	-0099	-0187	20	680	8	3	14	130	2.54	22	-83	16	20	1500	T2
-0012	-0100	-0188	10												
-0013	-0101	-0189	20	1500	8	5	20	170	1.5	18	-90	20	25	1900	T3
-0014	-0102	-0190	10												
-0015	-0103	-0191	20	1800	8	7	25	138	1.02	14	-90	25	30	2300	T4
-0016	-0104	-0192	10												
-0019	-0107	-0195	20	560	10	3	16	106	2.51	27	-77	16	20	1450	T2
-0020	-0108	-0196	10												
-0021	-0109	-0197	20	1200	10	5	20	137	1.51	18	-88	20	25	1850	T3
-0022	-0110	-0198	10												
-0023	-0111	-0199	20	1500	10	7	25	114	1.01	15	-88	25	30	2300	T4
-0024	-0112	-0200	10												
-0027	-0115	-0203	20	390	15	3	16	74	2.52	31	-66	16	20	1450	T2
-0028	-0116	-0204	10												
-0029	-0117	-0205	20	820	15	6	24	111	1.8	22	-77	20	25	1800	T3
-0030	-0118	-0206	10												
-0031	-0119	-0207	20	1000	15	8	32	92	1.22	17	-77	25	30	2300	T4
-0032	-0120	-0208	10												
-0035	-0123	-0211	20	270	25	3	16	55	2.7	33	-62	13	16	1400	T2
-0036	-0124	-0212	10												
-0037	-0125	-0213	20	560	25	7	28	76	1.8	24	-72	20	25	1750	T3
-0038	-0126	-0214	10												
-0039	-0127	-0215	20	680	25	8	32	63	1.23	19	-72	25	30	2100	T4
-0040	-0128	-0216	10												
-0043	-0131	-0219	20	220	30	3	16	42	2.53	36	-60	13	16	1200	T2
-0044	-0132	-0220	10												
-0045	-0133	-0221	20	470	30	8	32	64	1.81	25	-65	20	25	1500	T3
-0046	-0134	-0222	10												
-0047	-0135	-0223	20	560	30	9	36	55	1.3	20	-65	25	30	2000	T4
-0048	-0136	-0224	10												
-0051	-0139	-0227	20	120	50	4	24	22.5	2.49	49	-42	12	15	1200	T2
-0052	-0140	-0228	10												
-0053	-0141	-0229	20	270	50	8	32	37	1.82	29	-46	20	25	1450	T3
-0054	-0142	-0230	10												
-0055	-0143	-0231	20	330	50	9	36	38	1.53	22	-46	25	30	1900	T4
-0056	-0144	-0232	10												
-0059	-0147	-0235	20	100	60	4	20	19	2.52	54	-36	12	15	1100	T2
-0060	-0148	-0236	10												
-0061	-0149	-0237	20	220	60	8	32	30	1.81	29	-40	16	20	1400	T3
-0062	-0150	-0238	10												
-0063	-0151	-0239	20	270	60	9	36	27	1.33	23	-45	20	25	1850	T4
-0064	-0152	-0240	10												
-0067	-0155	-0243	20	82	75	4	24	15.2	2.46	63	-30	12	15	1000	T2
-0068	-0156	-0244	10												
-0069	-0157	-0245	20	180	75	9	36	24.4	2.23	30	-35	16	20	1300	T3
-0070	-0158	-0246	10												
-0071	-0159	-0247	20	220	75	10	40	37	1.8	24	-40	20	25	1800	T4
-0072	-0160	-0248	10												
-0075	-0163	-0251	20	39	100	5	24	10.4	3.54	80	-20	12	15	1300	T2
-0076	-0164	-0252	10												
-0077	-0165	-0253	20	68	100	10	40	11.3	2.21	40	-30	14	16	1600	T3
-0078	-0166	-0254	10												
-0079	-0167	-0255	20	120	100	12	48	25	2.76	30	-35	15	17	2000	T4
-0080	-0168	-0256	10												

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.



# MIL-PRF-39006 Series



## Military Conventional Wet Tantalum

### M39006 /30 RATINGS AND DASH NUMBER REFERENCE

M39006/30 Dashes			Tolerance ± (%)	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF max (%)	ESR max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size
M Level	P Level	R Level				+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		
-0007	-0227	-0447	20	140	6	1	3	10.5	0.99	40	-40	14	16	1200	T2
-0008	-0228	-0448	10												
-0009	-0229	-0449	5												
-0010	-0230	-0450	20	270	6	1	6.5	22.5	1.11	25	-44	17.5	20	1375	T2
-0011	-0231	-0451	10												
-0012	-0232	-0452	5												
-0013	-0233	-0453	20	330	6	2	7.9	18	0.73	20	-44	14	16	1800	T3
-0014	-0234	-0454	10												
-0015	-0235	-0455	5												
-0016	-0236	-0456	20	560	6	2	13	27.5	0.65	25	-64	17.5	20	1900	T3
-0017	-0237	-0457	10												
-0018	-0238	-0458	5												
-0019	-0239	-0459	20	1200	6	3	14	45	0.5	20	-80	25	25	2265	T4
-0020	-0240	-0460	10												
-0027	-0247	-0467	20												
-0028	-0248	-0468	10	120	8	1	2	10	1.11	50	-44	17.5	20	1220	T2
-0029	-0249	-0469	5												
-0030	-0250	-0470	20												
-0031	-0251	-0471	10	220	8	1	7	18.5	1.12	30	-44	17.5	20	1370	T2
-0032	-0252	-0472	5												
-0033	-0253	-0473	20												
-0034	-0254	-0474	10	290	8	2	6	17	0.78	25	-64	17.5	20	1770	T3
-0035	-0255	-0475	5												
-0036	-0256	-0476	20												
-0037	-0257	-0477	10	430	8	2	14	23	0.71	25	-64	17.5	20	1825	T3
-0038	-0258	-0478	5												
-0039	-0259	-0479	20												
-0040	-0260	-0480	10	850	8	4	16	30	0.47	22	-80	25	25	2330	T4
-0047	-0267	-0487	20												
-0048	-0268	-0488	10												
-0049	-0269	-0489	5	100	10	1	4	7.5	0.99	60	-36	14	16	1200	T2
-0050	-0270	-0490	20												
-0051	-0271	-0491	10												
-0052	-0272	-0492	5	180	10	1	7	15	1.11	40	-36	14	16	1.365	T2
-0053	-0273	-0493	20												
-0054	-0274	-0494	10												
-0055	-0275	-0495	5	250	10	2	10	15	0.8	30	-40	14	16	1720	T3
-0056	-0276	-0496	20												
-0057	-0277	-0497	10												
-0058	-0278	-0498	5	390	10	2	16	22	0.75	25	-64	17.5	20	1800	T3
-0059	-0279	-0499	20												
-0060	-0280	-0500	10												
-0067	-0287	-0507	20	750	10	4	16	25	0.44	23	-80	25	25	2360	T4
-0068	-0288	-0508	10												
-0069	-0289	-0509	5												
-0070	-0290	-0510	20	70	15	1	4	6.5	1.23	75	-28	14	16	1150	T2
-0071	-0291	-0511	10												
-0072	-0292	-0512	5												
-0073	-0293	-0513	20	120	15	1	7	9	0.99	50	-28	17.5	20	1450	T2
-0074	-0294	-0514	10												
-0075	-0295	-0515	5												
-0076	-0296	-0516	20	170	15	2	10	12.5	0.98	35	-32	14	16	1480	T3
-0077	-0297	-0517	10												
-0078	-0298	-0518	5												
-0079	-0299	-0519	20	270	15	2	16	16	0.79	30	-56	17.5	20	1740	T3
-0080	-0300	-0520	10												
-0087	-0307	-0527	20												
-0088	-0308	-0528	10	540	15	6	24	20	0.49	23	-80	25	25	2330	T4
-0089	-0309	-0529	5												
-0090	-0310	-0530	20												
-0091	-0311	-0531	10	50	25	1	2	5.5	1.46	70	-28	13	15	1130	T2
-0092	-0312	-0532	5												
-0093	-0313	-0533	20												
-0094	-0314	-0534	10	100	25	1	10	7.5	0.99	50	-28	13	15	1435	T2
-0095	-0315	-0535	5												
-0096	-0316	-0536	20												
-0097	-0317	-0537	10	120	25	2	6	10.5	1.16	38	-32	13	15	1450	T3
-0098	-0318	-0538	5												

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.



# MIL-PRF-39006 Series



## Military Conventional Wet Tantalum

M39006/30 Dashes			Tolerance ± (%)	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF max (%)	ESR max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size
M Level	P Level	R Level				+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		
-0099	-0319	-0539	20	350	25	7	28	17.5	0.67	24	-70	25	25	1970	T4
-0100	-0320	-0540	10												
-0107	-0327	-0547	20												
-0108	-0328	-0548	10	40	30	1	5	5	1.66	65	-24	10.5	12	1120	T2
-0109	-0329	-0549	5												
-0110	-0330	-0550	20	68	30	1	8	6.5	1.27	60	-24	13	15	1285	T2
-0111	-0331	-0551	10												
-0112	-0332	-0552	5												
-0113	-0333	-0553	20	100	30	2	12	8.5	1.13	40	-28	10.5	12	1450	T3
-0114	-0334	-0554	10												
-0115	-0335	-0555	5												
-0116	-0336	-0556	20	150	30	2	18	11.5	1.02	35	-48	13	15	1525	T3
-0117	-0337	-0557	10												
-0118	-0338	-0558	5												
-0119	-0339	-0559	20	300	30	8	32	15.5	0.69	25	-60	25	25	1950	T4
-0120	-0340	-0560	10												
-0127	-0347	-0567	20												
-0128	-0348	-0568	10	25	50	1	5	4	2.13	95	-20	10.5	12	1005	T2
-0129	-0349	-0569	5												
-0130	-0350	-0570	20												
-0131	-0351	-0571	10	47	50	1	9	5.5	1.56	70	-28	13	15	1155	T2
-0132	-0352	-0572	5												
-0133	-0353	-0573	20												
-0134	-0354	-0574	10	60	50	2	12	6	1.33	45	-16	10.5	12	1335	T3
-0135	-0355	-0575	5												
-0136	-0356	-0576	20												
-0137	-0357	-0577	10	82	50	2	16	7.5	1.22	45	-32	13	15	1400	T3
-0138	-0358	-0578	5												
-0139	-0359	-0579	20												
-0140	-0360	-0580	10	160	50	8	32	8.5	0.71	27	-50	25	25	1900	T4
-0147	-0367	-0587	20												
-0148	-0368	-0588	10												
-0149	-0369	-0589	5	20	60	1	5	3.5	2.32	105	-16	10.5	12	930	T2
-0150	-0370	-0590	20												
-0151	-0371	-0591	10												
-0152	-0372	-0592	5	39	60	1	9	5	1.7	90	-28	10.5	12	1110	T2
-0153	-0373	-0593	20												
-0154	-0374	-0594	10												
-0155	-0375	-0595	5	50	60	2	12	5	1.33	50	-16	10.5	12	1330	T3
-0156	-0376	-0596	20												
-0157	-0377	-0597	10												
-0158	-0378	-0598	5	68	60	2	16	6.5	1.27	50	-32	10.5	12	1365	T3
-0159	-0379	-0599	20												
-0160	-0380	-0600	10												
-0167	-0387	-0607	20	140	60	8	32	8	0.76	28	-40	20	20	1850	T4
-0168	-0388	-0608	10												
-0169	-0389	-0609	5												
-0170	-0390	-0610	20	15	75	1	5	3	2.66	150	-16	8	9	890	T2
-0171	-0391	-0611	10												
-0172	-0392	-0612	5												
-0173	-0393	-0613	20	33	75	1	10	5	2.01	90	-24	10.5	15	1000	T2
-0174	-0394	-0614	10												
-0175	-0395	-0615	5												
-0176	-0396	-0616	20	40	75	2	12	4.5	1.5	60	-16	10.5	12	1250	T3
-0177	-0397	-0617	10												
-0178	-0398	-0618	5												
-0179	-0399	-0619	20	56	75	2	17	5.5	1.31	60	-28	10.5	15	1335	T3
-0180	-0400	-0620	10												
-0187	-0407	-0627	20												
-0188	-0408	-0628	10	11	100	1	4	2.5	3.02	200	-16	8	8	835	T2
-0189	-0409	-0629	5												
-0190	-0410	-0630	20												
-0191	-0411	-0631	10	22	100	1	9	3.75	2.26	100	-16	8	8	965	T2
-0192	-0412	-0632	5												
-0193	-0413	-0633	20												
-0194	-0414	-0634	10	30	100	2	12	3.5	1.55	80	-16	8	8	1240	T3
-0195	-0415	-0635	5												
-0196	-0416	-0636	20												
-0197	-0417	-0637	10	43	100	2	17	4.25	1.31	70	-20	8	8	1335	T3
-0198	-0418	-0638	5												
-0199	-0419	-0639	20												
-0200	-0420	-0640	10	86	100	9	36	5	0.77	30	-25	15	15	1800	T4

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.



# MIL-PRF-39006 Series



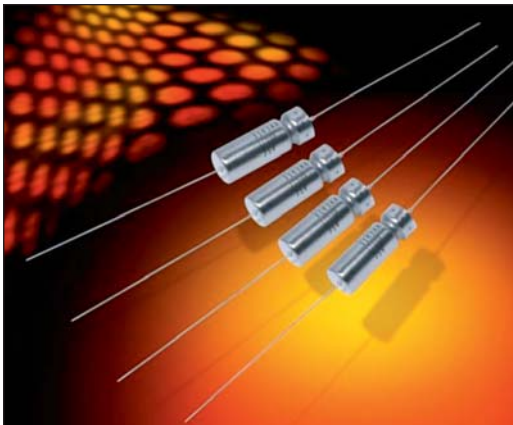
## Military Conventional Wet Tantalum

### M39006 /31 RATINGS AND DASH NUMBER REFERENCE

M39006/31 Dashes			Tolerance ± (%)	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF max (%)	ESR max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size
M Level	P Level	R Level				+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		
-0003	-0091	-0179	20	820	6	3	14	77.5	1.26	18	-88	16	20	1500	T2
-0004	-0092	-0180	10												
-0005	-0093	-0181	20	1500	6	5	20	86	0.76	18	-90	20	25	1900	T3
-0006	-0094	-0182	10												
-0007	-0095	-0183	20	2200	6	6	24	85	0.52	13	-90	25	30	2300	T4
-0008	-0096	-0184	10												
-0011	-0099	-0187	20	680	8	3	14	65	1.27	22	-83	16	20	1500	T2
-0012	-0100	-0188	10												
-0013	-0101	-0189	20	1500	8	5	20	85	0.75	18	-90	20	25	1900	T3
-0014	-0102	-0190	10												
-0015	-0103	-0191	20	1800	8	7	25	69	0.51	14	-90	25	30	2300	T4
-0016	-0104	-0192	10												
-0019	-0107	-0195	20	560	10	3	16	53	1.26	27	-77	16	20	1450	T2
-0020	-0108	-0196	10												
-0021	-0109	-0197	20	1200	10	5	20	68.5	0.76	18	-88	20	25	1850	T3
-0022	-0110	-0198	10												
-0023	-0111	-0199	20	1500	10	7	25	57	0.51	15	-88	25	30	2300	T4
-0024	-0112	-0200	10												
-0027	-0115	-0203	20	390	15	3	16	37	1.26	31	-66	16	20	1450	T2
-0028	-0116	-0204	10												
-0029	-0117	-0205	20	820	15	6	24	55.5	0.9	22	-77	20	25	1800	T3
-0030	-0118	-0206	10												
-0031	-0119	-0207	20	1000	15	8	32	46	0.61	17	-77	25	30	2300	T4
-0032	-0120	-0208	10												
-0035	-0123	-0211	20	270	25	3	16	27.5	1.35	33	-62	13	16	1400	T2
-0036	-0124	-0212	10												
-0037	-0125	-0213	20	560	25	7	28	38	0.9	24	-72	20	25	1750	T3
-0038	-0126	-0214	10												
-0039	-0127	-0215	20	680	25	8	32	31.5	0.62	19	-72	25	30	2100	T4
-0040	-0128	-0216	10												
-0043	-0131	-0219	20	220	30	3	16	21	1.27	36	-60	13	16	1200	T2
-0044	-0132	-0220	10												
-0045	-0133	-0221	20	470	30	8	32	32	0.91	25	-65	20	25	1500	T3
-0046	-0134	-0222	10												
-0047	-0135	-0223	20	560	30	9	36	27.5	0.65	20	-65	25	30	2000	T4
-0048	-0136	-0224	10												
-0051	-0139	-0227	20	120	50	4	24	11.3	1.25	49	-42	12	15	1200	T2
-0052	-0140	-0228	10												
-0053	-0141	-0229	20	270	50	8	32	18.5	0.91	29	-46	20	25	1450	T3
-0054	-0142	-0230	10												
-0055	-0143	-0231	20	330	50	9	36	19	0.77	22	-46	25	30	1900	T4
-0056	-0144	-0232	10												
-0059	-0147	-0235	20	100	60	4	20	9.5	1.26	54	-36	12	15	1100	T2
-0060	-0148	-0236	10												
-0061	-0149	-0237	20	220	60	8	32	15	0.91	29	-40	16	20	1400	T3
-0062	-0150	-0238	10												
-0063	-0151	-0239	20	270	60	9	36	13.5	0.67	23	-45	20	25	1850	T4
-0064	-0152	-0240	10												
-0067	-0155	-0243	20	82	75	4	24	7.6	1.23	63	-30	12	15	1000	T2
-0068	-0156	-0244	10												
-0069	-0157	-0245	20	180	75	9	36	12.2	0.9	30	-35	16	20	1300	T3
-0070	-0158	-0246	10												
-0071	-0159	-0247	20	220	75	10	40	18.5	1.12	24	-40	20	25	1800	T4
-0072	-0160	-0248	10												
-0075	-0163	-0251	20	39	100	5	24	5.2	1.77	80	-20	12	15	1300	T2
-0076	-0164	-0252	10												
-0077	-0165	-0253	20	68	100	10	40	5.65	1.11	40	-30	14	16	1600	T3
-0078	-0166	-0254	10												
-0079	-0167	-0255	20	120	100	12	48	12.5	1.38	30	-35	15	17	2000	T4
-0080	-0168	-0256	10												

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

## COTS-Plus Conventional Wet Tantalum

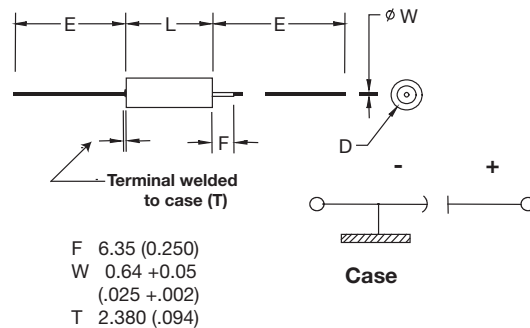


The TWC series represents a COTS-Plus version of conventional wet electrolytic tantalum capacitors. This data sheet incorporates all ratings available in MIL-PRF-39006 /22 /25 /30 and /31. Contact the factory about cap and voltage design possibilities beyond those contained in this datasheet.

This design includes a welded tantalum can and header assembly that provides a hermetic seal to withstand harsh environments and includes selected Group A testing from MIL-PRF-39006.

For military qualified versions please refer to the MIL-PRF-39006 datasheet located on the AVX website.

### OUTLINE DIMENSIONS



### CASE DIMENSIONS: millimeters (inches)

DSCC Case Size	AVX Case Size	L	D		E
			Basic Case	Insulated Case Max	
		+0.79 (0.031) -0.41 (0.016)	±0.41 (0.016)		±6.35 (0.250)
T1	A	11.51 (0.453)	4.78 (0.188)	5.56 (0.219)	38.10 (1.500)
T2	B	16.28 (0.641)	7.14 (0.281)	7.92 (0.312)	57.15 (2.250)
T3	D	19.46 (0.766)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)
T4	E	26.97 (1.062)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)

### VOLTAGE RATINGS (Operating Temperature -55°C to 125°C)

Voltage (DC)													
Rated Voltage: (V <sub>r</sub> )	85°C	6	8	10	15	25	30	50	60	75	100	125	
Derated Voltage: (V <sub>c</sub> )	125°C	4	5	6	10	15	20	30	40	50	65	85	
Surge Voltage: (V <sub>s</sub> )	85°C	6.9	9.2	11.5	17.3	28.8	34.5	57.5	69	86.3	115	144	

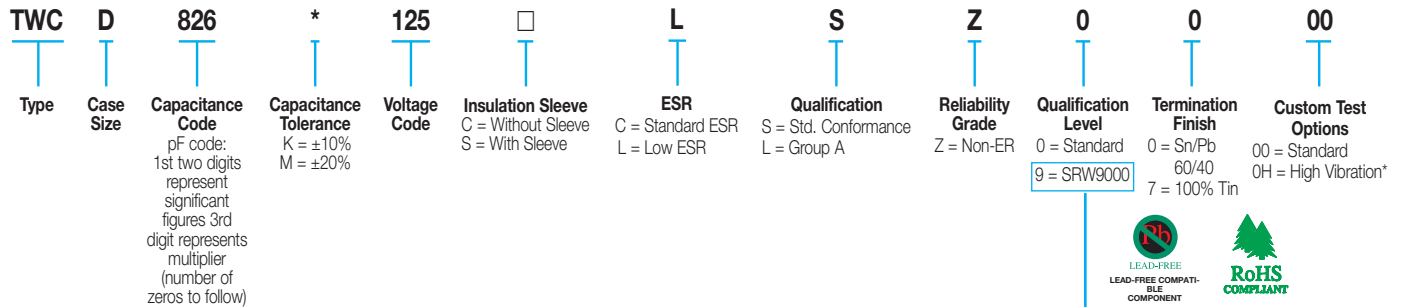
# TWC Series



## COTS-Plus Conventional Wet Tantalum

### HOW TO ORDER

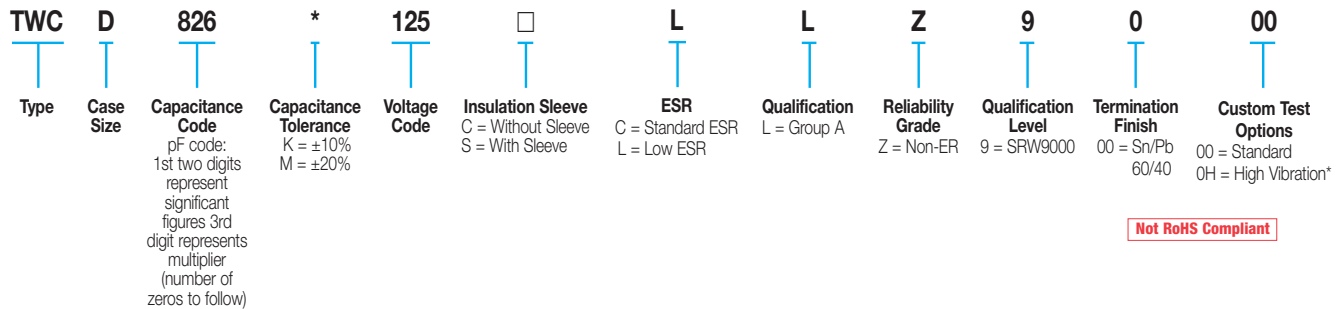
#### AVX PART NUMBER:



\*High vibration qualified parts are currently under development. Please contact the factory for additional details and availability.



#### SPACE LEVEL OPTIONS TO SRW9000\*:



Not RoHS Compliant

\*Check with factory for availability and testing details.

### RIPPLE CURRENT MULTIPLIERS vs. Frequency, temperature and applied voltage<sup>1/2/</sup>

Frequency of Applied Ripple Current	Ambient Still Air Temperature (°C)	120Hz				800Hz				1kHz			
		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125
% of Rated Peak Voltage	100%	0.60	0.39	–	–	0.71	0.43	–	–	0.72	0.45	–	–
	90%	0.60	0.46	–	–	0.71	0.55	–	–	0.72	0.55	–	–
	80%	0.60	0.52	0.35	–	0.71	0.62	0.42	–	0.72	0.62	0.42	–
	70%	0.60	0.58	0.44	–	0.71	0.69	0.52	–	0.72	0.70	0.52	–
	66-2/3%	0.60	0.60	0.46	0.27	0.71	0.71	0.55	0.32	0.72	0.72	0.55	0.32

Frequency of Applied Ripple Current	Ambient Still Air Temperature (°C)	10kHz				40kHz				100kHz			
		≤55	85	105	125	≤55	85	105	125	≤55	85	105	125
% of Rated Peak Voltage	100%	0.88	0.55	–	–	1.00	0.63	–	–	1.10	0.69	–	–
	90%	0.88	0.67	–	–	1.00	0.77	–	–	1.10	0.85	–	–
	80%	0.88	0.76	0.52	–	1.00	0.87	0.59	–	1.10	0.96	0.65	–
	70%	0.88	0.85	0.64	–	1.00	0.97	0.73	–	1.10	1.07	0.80	–
	66-2/3%	0.88	0.88	0.68	0.40	1.00	1.00	0.77	0.45	1.10	1.10	0.85	0.50

1/ At 125°C the rated voltage of the capacitors decreases to 66 2/3 of the 85°C rated voltage.

2/ The peak of the applied ac ripple voltage plus the applied dc voltage must not exceed the dc voltage rating of the capacitors.



# TWC Series



## COTS-Plus Conventional Wet Tantalum

### STANDARD RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF (Max)	ESR Max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size	
			+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		Standard	AVX
TWCA306*006□CSZ0000	30	6	1	2	9	3.98	100	-40	10.5	12	820	T1	A
TWCA306*006□LSZ0000					4.5	1.99							
TWCA686*006□CSZ0000	68	6	1	2	15	3.16	60	-40	14	16	960	T1	A
TWCA686*006□LSZ0000					7.5	1.58							
TWCB147*006□CSZ0000	140	6	1	3	21	1.99	40	-40	14	16	1,200	T2	B
TWCB147*006□LSZ0000					10.5	0.99							
TWCB277*006□CSZ0000	270	6	1	6.5	45	2.21	25	-44	17.5	20	1,375	T2	B
TWCB277*006□LSZ0000					22.5	1.11							
TWCD337*006□CSZ0000	330	6	2	7.9	36	1.45	20	-44	14	16	1,800	T3	D
TWCD337*006□LSZ0000					18	0.73							
TWCD567*006□CSZ0000	560	6	2	13	55	1.3	25	-64	17.5	20	1,900	T3	D
TWCD567*006□LSZ0000					27.5	0.65							
TWCE128*006□CSZ0000	1,200	6	3	14	90	1	20	-80	25	25	2,265	T4	E
TWCE128*006□LSZ0000					45	0.5							
TWCA256*008□CSZ0000	25	8	1	2	7.5	3.98	100	-40	10.5	12	820	T1	A
TWCA256*008□LSZ0000					3.75	1.99							
TWCA566*008□CSZ0000	56	8	1	2	14	3.32	59	-40	14	16	900	T1	A
TWCA566*008□LSZ0000					7	1.66							
TWCB127*008□CSZ0000	120	8	1	2	20	2.21	50	-44	17.5	20	1,220	T2	B
TWCB127*008□LSZ0000					10	1.11							
TWCB227*008□CSZ0000	220	8	1	7	37	2.23	30	-44	17.5	20	1,370	T2	B
TWCB227*008□LSZ0000					18.5	1.12							
TWCD297*008□CSZ0000	290	8	2	6	34	1.56	25	-64	17.5	20	1,770	T3	D
TWCD297*008□LSZ0000					17	0.78							
TWCD437*008□CSZ0000	430	8	2	14	46	1.42	25	-64	17.5	20	1,825	T3	D
TWCD437*008□LSZ0000					23	0.71							
TWCE857*008□CSZ0000	850	8	4	16	60	0.94	22	-80	25	25	2,330	T4	E
TWCE857*008□LSZ0000					30	0.47							
TWCA206*010□CSZ0000	20	10	1	2	6	3.98	175	-32	10.5	12	820	T1	A
TWCA206*010□LSZ0000					3	1.99							
TWCA476*010□CSZ0000	47	10	1	2	13	3.67	100	-36	14	16	855	T1	A
TWCA476*010□LSZ0000					6.5	1.84							
TWCB107*010□CSZ0000	100	10	1	4	15	1.99	60	-36	14	16	1,200	T2	B
TWCB107*010□LSZ0000					7.5	0.99							
TWCB187*010□CSZ0000	180	10	1	7	30	2.21	40	-36	14	16	1,365	T2	B
TWCB187*010□LSZ0000					15	1.11							
TWCD257*010□CSZ0000	250	10	2	10	30	1.59	30	-40	14	16	1,720	T3	D
TWCD257*010□LSZ0000					15	0.8							
TWCD397*010□CSZ0000	390	10	2	16	44	1.5	25	-64	17.5	20	1,800	T3	D
TWCD397*010□LSZ0000					22	0.75							
TWCE757*010□CSZ0000	750	10	4	16	50	0.88	23	-80	25	25	2,360	T4	E
TWCE757*010□LSZ0000					25	0.44							
TWCA156*015□CSZ0000	15	15	1	2	5	4.42	155	-24	10.5	12	780	T1	A
TWCA156*015□LSZ0000					2.5	2.21							
TWCA336*015□CSZ0000	33	15	1	2	10	4.02	90	-28	14	16	820	T1	A
TWCA336*015□LSZ0000					5	2.01							
TWCB706*015□CSZ0000	70	15	1	4	13	2.46	75	-28	14	16	1,150	T2	B
TWCB706*015□LSZ0000					6.5	1.23							
TWCB127*015□CSZ0000	120	15	1	7	18	1.99	50	-28	17.5	20	1,450	T2	B
TWCB127*015□LSZ0000					9	0.99							
TWCD177*015□CSZ0000	170	15	2	10	25	1.95	35	-32	14	16	1,480	T3	D
TWCD177*015□LSZ0000					12.5	0.98							
TWCD277*015□CSZ0000	270	15	2	16	32	1.57	30	-56	17.5	20	1,740	T3	D
TWCD277*015□LSZ0000					16	0.79							
TWCE547*015□CSZ0000	540	15	6	24	40	0.98	23	-80	25	25	2,330	T4	E
TWCE547*015□LSZ0000					20	0.49							
TWCA106*025□CSZ0000	10	25	1	2	4	5.31	220	-16	8	9	715	T1	A
TWCA106*025□LSZ0000					2	2.66							
TWCA226*025□CSZ0000	22	25	1	2	6.6	3.98	140	-20	10.5	12	825	T1	A
TWCA226*025□LSZ0000					3.3	1.99							
TWCB506*025□CSZ0000	50	25	1	2	11	2.92	70	-28	13	15	1,130	T2	B
TWCB506*025□LSZ0000					5.5	1.46							

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.





# TWC Series



## COTS-Plus Conventional Wet Tantalum

### STANDARD RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF (Max)	ESR Max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size	
			+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		Standard	AVX
TWCB107*025□CSZ0000	100	25	1	10	15	1.99	50	-28	13	15	1,435	T2	B
TWCB107*025□LSZ0000					7.5	0.99							
TWCD127*025□CSZ0000	120	25	2	6	21	2.32	38	-32	13	15	1,450	T3	D
TWCD127*025□LSZ0000					10.5	1.16							
TWCD187*025□CSZ0000	180	25	2	18	26	1.92	32	-48	13	15	1,525	T3	D
TWCD187*025□LSZ0000					13	0.96							
TWCE357*025□CSZ0000	350	25	7	28	35	1.33	24	-70	25	25	1,970	T4	E
TWCE357*025□LSZ0000					17.5	0.67							
TWCA805*030□CSZ0000	8	30	1	2	4	6.64	275	-16	8	12	640	T1	A
TWCA805*030□LSZ0000					2	3.32							
TWCA156*030□CSZ0000	15	30	1	2	5	4.42	175	-20	10.5	12	780	T1	A
TWCA156*030□LSZ0000					2.5	2.21							
TWCB406*030□CSZ0000	40	30	1	5	10	3.32	65	-24	10.5	12	1,120	T2	B
TWCB406*030□LSZ0000					5	1.66							
TWCB686*030□CSZ0000	68	30	1	8	13	2.54	60	-24	13	15	1,285	T2	B
TWCB686*030□LSZ0000					6.5	1.27							
TWCD107*030□CSZ0000	100	30	2	12	17	2.26	40	-28	10.5	12	1,450	T3	D
TWCD107*030□LSZ0000					8.5	1.13							
TWCD157*030□CSZ0000	150	30	2	18	23	2.03	35	-48	13	15	1,525	T3	D
TWCD157*030□LSZ0000					11.5	1.02							
TWCE307*030□CSZ0000	300	30	8	32	31	1.37	25	-60	25	25	1,950	T4	E
TWCE307*030□LSZ0000					15.5	0.69							
TWCA505*050□CSZ0000	5	50	1	2	3	7.96	400	-16	5	6	580	T1	A
TWCA505*050□LSZ0000					1.5	3.98							
TWCA106*050□CSZ0000	10	50	1	2	4	5.31	250	-24	8	9	715	T1	A
TWCA106*050□LSZ0000					2	2.66							
TWCB256*050□CSZ0000	25	50	1	5	8	4.25	95	-20	10.5	12	1,005	T2	B
TWCB256*050□LSZ0000					4	2.13							
TWCB476*050□CSZ0000	47	50	1	9	11	3.11	70	-28	13	15	1,155	T2	B
TWCB476*050□LSZ0000					5.5	1.56							
TWCD606*050□CSZ0000	60	50	2	12	12	2.65	45	-16	10.5	12	1,335	T3	D
TWCD606*050□LSZ0000					6	1.33							
TWCD826*050□CSZ0000	82	50	2	16	15	2.43	45	-32	13	15	1,400	T3	D
TWCD826*050□LSZ0000					7.5	1.22							
TWCE167*050□CSZ0000	160	50	8	32	17	1.41	27	-50	25	25	1,900	T4	E
TWCE167*050□LSZ0000					8.5	0.71							
TWCA405*060□CSZ0000	4	60	1	2	2.8	9.29	550	-16	5	6	525	T1	A
TWCA405*060□LSZ0000					1.4	4.65							
TWCA825*060□CSZ0000	8.2	60	1	2	4	6.47	275	-24	8	9	625	T1	A
TWCA825*060□LSZ0000					2	3.24							
TWCB206*060□CSZ0000	20	60	1	5	7	4.64	105	-16	10.5	12	930	T2	B
TWCB206*060□LSZ0000					3.5	2.32							
TWCB396*060□CSZ0000	39	60	1	9	10	3.4	90	-28	10.5	12	1,110	T2	B
TWCB396*060□LSZ0000					5	1.7							
TWCD506*060□CSZ0000	50	60	2	12	10	2.65	50	-16	10.5	12	1,330	T3	D
TWCD506*060□LSZ0000					5	1.33							
TWCD686*060□CSZ0000	68	60	2	16	13	2.54	50	-32	10.5	12	1,365	T3	D
TWCD686*060□LSZ0000					7	1.27							
TWCE147*060□CSZ0000	140	60	8	32	16	1.52	28	-40	20	20	1,850	T4	E
TWCE147*060□LSZ0000					8	0.76							
TWCA355*075□CSZ0000	3.5	75	1	2	2.5	9.48	650	-16	5	6	525	T1	A
TWCA355*075□LSZ0000					1.25	4.74							
TWCA685*075□CSZ0000	6.8	75	1	2	3.5	6.83	300	-20	8	9	610	T1	A
TWCA685*075□LSZ0000					1.75	3.42							
TWCB156*075□CSZ0000	15	75	1	5	6	5.31	150	-16	8	9	890	T2	B
TWCB156*075□LSZ0000					3	2.66							
TWCB336*075□CSZ0000	33	75	1	10	10	4.02	90	-24	10.5	15	1,000	T2	B
TWCB336*075□LSZ0000					5	2.01							
TWCD406*075□CSZ0000	40	75	2	12	9	2.99	60	-16	10.5	12	1,250	T3	D
TWCD406*075□LSZ0000					4.5	1.5							
TWCD566*075□CSZ0000	56	75	2	17	11	2.61	60	-28	10.5	15	1,335	T3	D
TWCD566*075□LSZ0000					5.5	1.31							

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.



### STANDARD RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF (Max)	ESR Max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size	
			+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		Standard	AVX
TWCE117*075□CSZ0000	110	75	9	36	12	1.45	29	-35	20	20	1,850	T4	E
TWCE117*075□LSZ0000					6	0.73							
TWCA255*100□CSZ0000	2.5	100	1	2	2	10.62	950	-16	7	8	505	T1	A
TWCA255*100□LSZ0000					1	5.31							
TWCA475*100□CSZ0000	4.7	100	1	2	3	8.47	500	-16	7	8	565	T1	A
TWCA475*100□LSZ0000					1.5	4.24							
TWCB116*100□CSZ0000	11	100	1	4	5	6.03	200	-16	8	8	835	T2	B
TWCB116*100□LSZ0000					2.5	3.02							
TWCB226*100□CSZ0000	22	100	1	9	7.5	4.52	100	-16	8	8	965	T2	B
TWCB226*100□LSZ0000					3.75	2.26							
TWCD306*100□CSZ0000	30	100	2	12	7	3.1	80	-16	8	8	1,240	T3	D
TWCD306*100□LSZ0000					3.5	1.56							
TWCD436*100□CSZ0000	43	100	2	17	8.5	2.62	70	-20	8	8	1,335	T3	D
TWCD436*100□LSZ0000					4.25	1.31							
TWCE866*100□CSZ0000	86	100	9	36	10	1.54	30	-25	15	15	1,800	T4	E
TWCE866*100□LSZ0000					5	0.77							
TWCA175*125□CSZ0000	1.7	125	1	2	2	15.61	1,250	-16	7	8	415	T1	A
TWCA175*125□LSZ0000					1	7.81							
TWCA365*125□CSZ0000	3.6	125	1	2	2.7	9.95	600	-16	7	8	520	T1	A
TWCA365*125□LSZ0000					1.35	4.98							
TWCB905*125□CSZ0000	9	125	1	5	5	7.37	240	-16	7	8	755	T2	B
TWCB905*125□LSZ0000					2.5	3.69							
TWCB146*125□CSZ0000	14	125	1	7	6	5.69	167	-16	7	8	860	T2	B
TWCB146*125□LSZ0000					3	2.85							
TWCD186*125□CSZ0000	18	125	2	9	5	3.69	129	-16	7	8	1,130	T3	D
TWCD186*125□LSZ0000					2.5	1.85							
TWCD256*125□CSZ0000	25	125	2	13	6	3.18	93	-16	7	8	1,200	T3	D
TWCD256*125□LSZ0000					3	1.59							
TWCE566*125□CSZ0000	56	125	10	40	6.5	1.54	32	-25	15	15	1,800	T4	E
TWCE566*125□LSZ0000					3.25	0.77							

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.

# TWC Series



## COTS-Plus Conventional Wet Tantalum

### EXTENDED RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF (Max)	ESR Max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size	
			+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		Standard	AVX
TWCA227*006□CSZ0000	220	6	2	9	50	3.02	36	-64	13	16	1,000	T1	A
TWCA227*006□LSZ0000					25	1.51							
TWCB827*006□CSZ0000	820	6	3	14	155	2.51	18	-88	16	20	1,500	T2	B
TWCB827*006□LSZ0000					77.5	1.26							
TWCD158*006□CSZ0000	1,500	6	5	20	172	1.52	18	-90	20	25	1,900	T3	D
TWCD158*006□LSZ0000					86	0.76							
TWCE228*006□CSZ0000	2,200	6	6	24	170	1.03	13	-90	25	30	2,300	T4	E
TWCE228*006□LSZ0000					85	0.52							
TWCA187*008□CSZ0000	180	8	2	9	41	3.02	45	-60	13	16	1,000	T1	A
TWCA187*008□LSZ0000					20.5	1.51							
TWCB687*008□CSZ0000	680	8	3	14	130	2.54	22	-83	16	20	1,500	T2	B
TWCB687*008□LSZ0000					65	1.27							
TWCD158*008□CSZ0000	1,500	8	5	20	170	1.5	18	-90	20	25	1,900	T3	D
TWCD158*008□LSZ0000					85	0.75							
TWCE188*008□CSZ0000	1,800	8	7	25	138	1.02	14	-90	25	30	2,300	T4	E
TWCE188*008□LSZ0000					69	0.51							
TWCA157*010□CSZ0000	150	10	2	9	34	3.01	54	-55	13	16	900	T1	A
TWCA157*010□LSZ0000					17	1.51							
TWCB567*010□CSZ0000	560	10	3	16	106	2.51	27	-77	16	20	1,450	T2	B
TWCB567*010□LSZ0000					53	1.26							
TWCD128*010□CSZ0000	1,200	10	5	20	137	1.51	18	-88	20	25	1,850	T3	D
TWCD128*010□LSZ0000					68.5	0.76							
TWCE158*010□CSZ0000	1,500	10	7	25	114	1.01	15	-88	25	30	2,300	T4	E
TWCE158*010□LSZ0000					57	0.51							
TWCA107*015□CSZ0000	100	15	2	9	30	3.98	72	-44	13	16	900	T1	A
TWCA107*015□LSZ0000					15	1.99							
TWCB397*015□CSZ0000	390	15	3	16	74	2.52	31	-66	16	20	1,450	T2	B
TWCB397*015□LSZ0000					37	1.26							
TWCD827*015□CSZ0000	820	15	6	24	111	1.8	22	-77	20	25	1,800	T3	D
TWCD827*015□LSZ0000					55.5	0.9							
TWCE108*015□CSZ0000	1,000	15	8	32	92	1.22	17	-77	25	30	2,300	T4	E
TWCE108*015□LSZ0000					46	0.61							
TWCA686*025□CSZ0000	68	25	2	9	22	4.29	90	-40	12	15	850	T1	A
TWCA686*025□LSZ0000					11	2.15							
TWCB277*025□CSZ0000	270	25	3	16	55	2.7	33	-62	13	16	1,400	T2	B
TWCB277*025□LSZ0000					27.5	1.35							
TWCD567*025□CSZ0000	560	25	7	28	76	1.8	24	-72	20	25	1,750	T3	D
TWCD567*025□LSZ0000					38	0.9							
TWCE687*025□CSZ0000	680	25	8	32	63	1.23	19	-72	25	30	2,100	T4	E
TWCE687*025□LSZ0000					31.5	0.62							
TWCA566*030□CSZ0000	56	30	2	9	22	5.21	100	-38	12	15	800	T1	A
TWCA566*030□LSZ0000					11	2.61							
TWCB227*030□CSZ0000	220	30	3	16	42	2.53	36	-60	13	16	1,200	T2	B
TWCB227*030□LSZ0000					21	1.27							
TWCD477*030□CSZ0000	470	30	8	32	64	1.81	25	-65	20	25	1,500	T3	D
TWCD477*030□LSZ0000					32	0.91							
TWCE567*030□CSZ0000	560	30	9	36	55	1.3	20	-65	25	30	2,000	T4	E
TWCE567*030□LSZ0000					27.5	0.65							
TWCA336*050□CSZ0000	33	50	2	9	12.3	4.95	135	-29	10	12	700	T1	A
TWCA336*050□LSZ0000					6.15	2.48							
TWCB127*050□CSZ0000	120	50	4	24	22.5	2.49	49	-42	12	15	1,200	T2	B
TWCB127*050□LSZ0000					11.3	1.25							
TWCD277*050□CSZ0000	270	50	8	32	37	1.82	29	-46	20	25	1,450	T3	D
TWCD277*050□LSZ0000					18.5	0.91							
TWCE337*050□CSZ0000	330	50	9	36	38	1.53	22	-46	25	30	1,900	T4	E
TWCE337*050□LSZ0000					19	0.77							
TWCA276*060□CSZ0000	27	60	3	12	10.2	5.01	144	-24	10	12	700	T1	A
TWCA276*060□LSZ0000					5.1	2.51							
TWCB107*060□CSZ0000	100	60	4	20	19	2.52	54	-36	12	15	1,100	T2	B
TWCB107*060□LSZ0000					9.5	1.26							
TWCD227*060□CSZ0000	220	60	8	32	30	1.81	29	-40	16	20	1,400	T3	D
TWCD227*060□LSZ0000					15	0.91							

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.



### EXTENDED RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (µF) 25°C at 120Hz	DC Rated Voltage (V) at 85°C	DC Leakage (µA)		DF (Max)	ESR Max (Ohms) at 120Hz	Impedance max (Ohms) -55°C at 120Hz	Maximum Capacitance Change (%)			AC Ripple (mA rms) 85°C at 40kHz	Case Size	
			+25°C	+85°C & +125°C				-55°C	+85°C	+125°C		Standard	AVX
TWCE277*060□CSZ0000	270	60	9	36	27	1.33	23	-45	20	25	1,850	T4	E
TWCE277*060□LSZ0000					13.5	0.67							
TWCA226*075□CSZ0000	22	75	3	12	8.5	5.13	157	-19	10	12	600	T1	A
TWCA226*075□LSZ0000					4.25	2.57							
TWCB826*075□CSZ0000	82	75	4	24	15.2	2.46	63	-30	12	15	1,000	T2	B
TWCB826*075□LSZ0000					7.6	1.23							
TWCD187*075□CSZ0000	180	75	9	36	24.4	2.23	30	-35	16	20	1,300	T3	D
TWCD187*075□LSZ0000					12.2	0.9							
TWCE227*075□CSZ0000	220	75	10	40	37	1.8	24	-40	20	25	1,800	T4	E
TWCE227*075□LSZ0000					18.5	1.12							
TWCA106*100□CSZ0000	10	100	3	12	4.5	5.97	200	-17	10	12	800	T1	A
TWCA106*100□LSZ0000					2.25	2.99							
TWCB396*100□CSZ0000	39	100	5	24	10.4	3.54	80	-20	12	15	1,300	T2	B
TWCB396*100□LSZ0000					5.2	1.77							
TWCD686*100□CSZ0000	68	100	10	40	11.3	2.21	40	-30	14	16	1,600	T3	D
TWCD686*100□LSZ0000					5.65	1.11							
TWCE127*100□CSZ0000	120	100	12	48	25	2.76	30	-35	15	17	2,000	T4	E
TWCE127*100□LSZ0000					12.5	1.38							
TWCA685*125□CSZ0000	6.8	125	3	12	6	11.71	300	-14	10	12	700	T1	A
TWCA685*125□LSZ0000					3	5.86							
TWCB276*125□CSZ0000	27	125	5	24	7.2	3.54	90	-18	12	15	1,200	T2	B
TWCB276*125□LSZ0000					3.6	1.77							
TWCD476*125□CSZ0000	47	125	10	40	7.9	2.23	50	-26	14	16	1,500	T3	D
TWCD476*125□LSZ0000					3.95	1.12							
TWCE826*125□CSZ0000	82	125	12	48	17.4	2.82	32	-30	15	17	1,900	T4	E
TWCE826*125□LSZ0000					8.7	1.41							

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

NOTE: AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.

### TESTING

All TWC COTS-Plus product is tested using MIL-PRF-39006 test procedures.

#### Lot Conformance Testing\*

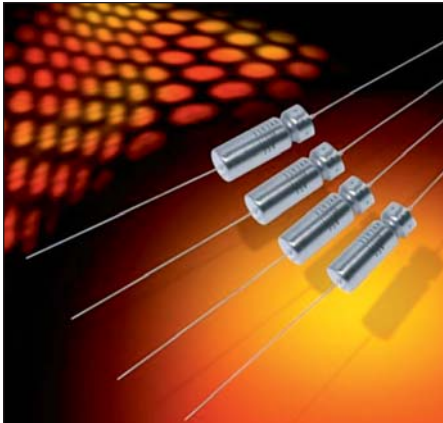
Inspection	Sampling Procedure
Constant Voltage Conditioning DC Leakage Capacitance Dissipation Factor Seal, Condition A or D	100% Inspection
Visual Examination  Material Marking Workmanship	13 Samples

\*Additional testing and inspection is available, please contact the factory for details.

# TWC-Y High Temperature Series



## COTS-Plus 200°C Wet Tantalum



The TWC-Y high temperature series represents a COTS-Plus version of conventional wet electrolytic tantalum capacitors that are designed for use at 200°C. The components listed are now capable of 500 hours of operation at extreme temperature with the applicable derated voltage.

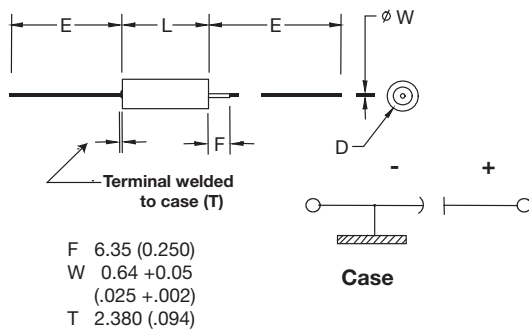
This design includes a welded tantalum can and header assembly that provides a hermetic seal to withstand harsh environments.

This is a new product line so please contact the factory for availability and additional details.

### CASE DIMENSIONS: millimeters (inches)

Standard Case Size	AVX Case Size	L +0.79 (0.031) -0.41 (0.016)	D Basic Case ±0.41 (0.016)	D Insulated Case Max	E ±6.35 (0.250)
T1	A	11.51 (0.453)	4.78 (0.188)	5.56 (0.219)	38.10 (1.500)
T2	B	16.28 (0.641)	7.14 (0.281)	7.92 (0.312)	57.15 (2.250)
T3	D	19.46 (0.766)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)
T4	E	26.97 (1.062)	9.52 (0.375)	10.31 (0.406)	57.15 (2.250)

### OUTLINE DIMENSIONS



#### 200°C LIFE TEST:

These components are capable of 500 hours of operation at 200°C with the applicable 60% derated voltage. Following the life test components which are stabilized at 25°C ± 5°C shall exhibit:

Leakage less than 200% the original requirement or ± 10µA (whichever is greater)

ESR not greater than 200% the original requirement

Capacitance increase less than 10% or decrease less than 20% the initial measurement

### HOW TO ORDER

#### AVX PART NUMBER:

<b>TWC</b>	<b>B</b>	<b>476</b>	<b>*</b>	<b>050</b>	<b>□</b>	<b>C</b>	<b>Y</b>	<b>Z</b>	<b>00</b>	<b>00</b>
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance M = ±20% K = ±10%	Voltage Code	Insulation Sleeve C = Without Sleeve S = With Sleeve	ESR C = Standard ESR	Qualification Y = High Temp.	Reliability Z = Non-ER	Termination Finish 00 = Sn/Pb 60/40 07 = 100% Tin	Custom Test Options 00 = Standard



### TECHNICAL SPECIFICATIONS

Technical Data: Unless otherwise specified, all technical data relate to an ambient temperature of +25°C

Capacitance Tolerance: ±10%; ±20%

Rated Voltage (V <sub>R</sub> )	≤ 85°C:	6	8	10	15	25	30	50	60	75	100	125
Category Voltage (V <sub>C</sub> )	≤ 125°C:	4	5	7	10	15	20	30	40	50	65	85
<b>High Temp, Voltage (V<sub>T</sub>)</b>	<b>≤ 200°C:</b>	<b>3.6</b>	<b>4.8</b>	<b>6</b>	<b>9</b>	<b>12</b>	<b>18</b>	<b>30</b>	<b>36</b>	<b>45</b>	<b>60</b>	<b>75</b>
Surge Voltage (V <sub>S</sub> )	≤ 85°C:	6.9	9.2	11.5	17.3	28.8	34.5	57.5	69	86.3	115	144

Temperature Range: -55°C to +200°C



# TWC-Y High Temperature Series



## COTS-Plus 200°C Wet Tantalum

### STANDARD RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (µF) +25°C at 120Hz	DC Rated Voltage (V) at +85°C	DC Leakage (µA)		DF (max)	ESR Max (Ohms) at 120Hz	Maximum Capacitance Change (%)			Case Size	
			+25°C	+85°C & +125°C			-55°C	+85°C	+125°C	Standard	AVX
<b>6 VDC at 85°C 4 VDC at 125°C 3.6 VDC at 200°C</b>											
TWCB147*006□CYZ0000	140	6	1	3	21	1.99	-40	14	16	T2	B
TWCD337*006□CYZ0000	330	6	2	7.9	36	1.45	-44	14	16	T3	D
TWCD567*006□CYZ0000	560	6	2	13	55	1.30	-64	17.5	20	T3	D
<b>8 VDC at 85°C 5 VDC at 125°C 4.8 VDC at 200°C</b>											
TWCB127*008□CYZ0000	120	8	1	2	20	2.21	-44	17.5	20	T2	B
TWCD297*008□CYZ0000	290	8	2	6	34	1.56	-64	17.5	20	T3	D
TWCD437*008□CYZ0000	430	8	2	14	46	1.42	-64	17.5	20	T3	D
<b>10 VDC at 85°C 7 VDC at 125°C 6 VDC at 200°C</b>											
TWCB107*010□CYZ0000	100	10	1	4	15	1.99	-36	14	16	T2	B
TWCD257*010□CYZ0000	250	10	2	10	30	1.59	-40	14	16	T3	D
TWCD397*010□CYZ0000	390	10	2	16	44	1.50	-64	17.5	20	T3	D
<b>15 VDC at 85°C 10 VDC at 125°C 9 VDC at 200°C</b>											
TWCB706*015□CYZ0000	70	15	1	4	13	2.46	-28	14	16	T2	B
TWCD177*015□CYZ0000	170	15	2	10	25	1.95	-32	14	16	T3	D
TWCD277*015□CYZ0000	270	15	2	16	32	1.57	-56	17.6	20	T3	D
<b>25 VDC at 85°C 15 VDC at 125°C 15 VDC at 200°C</b>											
TWCA226*025□CYZ0000	22	25	1	2	6.6	3.98	-20	10.5	12	T1	A
TWCA686*025□CYZ0000	68	25	2	9	22	4.29	-50	12	15	T1	A
TWCB107*025□CYZ0000	100	25	1	10	15	1.99	-28	13	15	T2	B
TWCD127*025□CYZ0000	120	25	2	6	21	2.32	-32	13	15	T3	D
TWCD187*025□CYZ0000	180	25	2	18	26	1.92	-48	13	15	T3	D
TWCB277*025□CYZ0000	270	25	3	16	55	2.70	-62	13	16	T2	B
TWCD567*025□CYZ0000	560	25	7	28	76	1.80	-77	20	25	T3	D
<b>30 VDC at 85°C 20 VDC at 125°C 18 VDC at 200°C</b>											
TWCA156*030□CYZ0000	15	30	1	2	5	4.42	-20	10.5	12	T1	A
TWCA566*030□CYZ0000	56	30	2	9	22	5.21	-48	12	15	T1	A
TWCB686*030□CYZ0000	68	30	1	8	13	2.54	-24	13	15	T2	B
TWCD107*030□CYZ0000	100	30	2	12	17	2.26	-28	10.5	12	T3	D
TWCD157*030□CYZ0000	150	30	2	18	23	2.03	-48	13	15	T3	D
TWCB227*030□CYZ0000	220	30	3	16	42	2.53	-60	13	16	T2	B
TWCE307*030□CYZ0000	300	30	8	32	31	1.37	-60	25	25	T4	E
TWCD397*030□CYZ0000	390	30	6	18	53	1.80	-65	18	25	T3	D
TWCD477*030□CYZ0000	470	30	8	32	64	1.81	-70	20	25	T3	D
TWCE567*030□CYZ0000	560	30	9	36	55	1.30	-65	25	30	T4	E
<b>50 VDC at 85°C 30 VDC at 125°C 30 VDC at 200°C</b>											
TWCA106*050□CYZ0000	10	50	1	2	4	5.31	-24	8	9	T1	A
TWCA336*050□CYZ0000	33	50	2	9	12.3	4.95	-39	10	12	T1	A
TWCB476*050□CYZ0000	47	50	1	9	11	3.11	-28	13	15	T2	B
TWCD606*050□CYZ0000	60	50	2	12	12	2.65	-16	10.5	12	T3	D
TWCD826*050□CYZ0000	82	50	2	16	15	2.43	-32	13	15	T3	D
TWCB127*050□CYZ0000	120	50	4	24	22.5	2.49	-42	12	15	T2	B
TWCE167*050□CYZ0000	160	50	8	32	17	1.41	-50	25	25	T4	E
TWCD277*050□CYZ0000	270	50	8	32	37	1.82	-51	20	25	T3	D
TWCE337*050□CYZ0000	330	50	9	36	38	1.53	-46	25	30	T4	E
<b>60V VDC at 85°C 40 VDC at 125°C 36 VDC at 200°C</b>											
TWCA825*060□CYZ0000	8.2	60	1	2	4	6.47	-24	8	9	T1	A
TWCA276*060□CYZ0000	27	60	3	12	10.2	5.01	-34	10	12	T1	A
TWCD506*060□CYZ0000	50	60	2	12	10	2.65	-16	10.5	12	T3	D
TWCD686*060□CYZ0000	68	60	2	16	13	2.54	-32	10.5	12	T3	D
TWCB107*060□CYZ0000	100	60	4	20	19	2.52	.36	12	15	T2	B
TWCE147*060□CYZ0000	140	60	8	32	16	1.52	-40	20	20	T4	E
TWCD227*060□CYZ0000	220	60	8	32	30	1.81	-45	16	20	T3	D
TWCE277*060□CYZ0000	270	60	9	36	27	1.33	-45	20	25	T4	E
<b>75V VDC at 85°C 50 VDC at 125°C 45 VDC at 200°C</b>											
TWCA685*075□CYZ0000	6.8	75	1	2	3.5	6.83	-20	8	9	T1	A
TWCA226*075□CYZ0000	22	75	3	12	8.5	5.13	-29	10	12	T1	A
TWCD566*075□CYZ0000	56	75	2	17	11	2.61	-28	10.5	15	T3	D
TWCB826*075□CYZ0000	82	75	4	24	15.2	2.46	-30	12	15	T2	B
TWCE117*075□CYZ0000	110	75	9	36	12	1.45	-35	20	20	T4	E
TWCD187*075□CYZ0000	180	75	9	36	24.4	2.23	-40	16	20	T3	D
TWCE227*075□CYZ0000	220	75	10	40	37	1.80	-40	20	25	T4	E
<b>100 VDC at 85°C 65 VDC at 125°C 60 VDC at 200°C</b>											
TWCB226*100□CYZ0000	22	100	1	9	7.5	4.52	-16	8	8	T2	B
TWCE127*100□CYZ0000	120	100	12	48	25	2.76	-35	15	17	T4	E
<b>125 VDC at 85°C 85 VDC at 125°C 75 VDC at 200°C</b>											
TWCB276*125□CYZ0000	27	125	5	24	7.2	3.54	-18	12	15	T2	B
TWCE826*125□CYZ0000	82	125	12	48	17.4	2.82	-30	15	17	T4	E

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes. Note: AVX reserves the right to supply higher voltage rating in the same case size to the same reliability standards.



## Wet Tantalum Super Capacitor

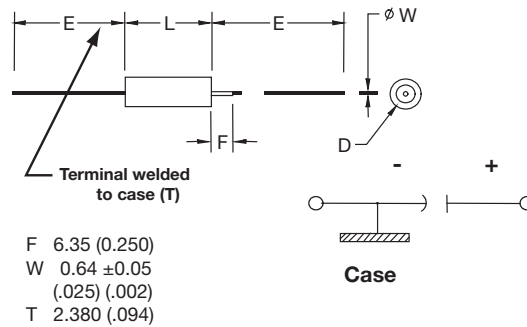


The TWD series is an axial leaded wet electrolytic tantalum capacitor designed for DC (hold-up) and low frequency pulse applications.

Utilising high CV tantalum powders allows achieving super high capacitance values similar to super capacitor range while bringing additional benefits in terms of extended temperature range up to 85°C, and reflow soldering capability and thus addressing the two main issues of super capacitors.

Well-established wet tantalum design is suitable for applications with hi-reliability requirements. Contact the factory about design possibilities beyond those contained in this datasheet.

### OUTLINE DIMENSIONS



### CASE DIMENSIONS: millimeters (inches)

DSCC Case Size	AVX Case Size	L		D		E
		+0.79 (0.031) -0.41 (0.016)		Without Insulating Sleeve ±0.41 (0.016)	With Insulating Sleeve Max	
T4	E	26.97 (1.062)		9.52 (0.375)	10.31 (0.406)	57.15 (2.250)

### VOLTAGE RATINGS (Operating Temperature -55°C to 85°C)

Voltage (DC)	Rated voltage DC (V <sub>R</sub> ) to 85°C			
	Rated Voltage: (V <sub>R</sub> )	85°C	2.5	6.3
Surge Voltage: (V <sub>S</sub> )	85°C	2.8	7.2	11.5

### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

DC Capacitance		Rated Voltage DC (V <sub>R</sub> ) to 85°C		
mF	Code	2.5V	6.3V	10V
25	253			E*
50	503		E	
150	154	E*		

Released codes

Engineering samples - please contact manufacturer

\*Codes under development

# TWD DCU UltraMax™ Series





## Wet Tantalum Super Capacitor

### HOW TO ORDER

#### AVX PART NUMBER:

<b>TWD</b>	<b>E</b>	<b>503</b>	<b>*</b>	<b>006</b>	<b>□</b>	<b>B</b>	<b>0</b>	<b>Z</b>	<b>0</b>	<b>^</b>	<b>00</b>
Type	Case Size	Capacitance Code	Capacitance Tolerance	Voltage Code	Insulation Sleeve	Packaging	Inspection Level	Reliability	Qualification Level	Termination Finish	Custom Test Options
		µF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	K = ±10% M = ±20%	002 = 2.5Vdc 006 = 6.3Vdc 010 = 10Vdc	C = Without Sleeve S = With Sleeve	B = Tray Pack	0 = N/A	Z = Non-ER	0 = N/A	0 = Sn/Pb 60/40 7 = Matte tin	00 = Standard

LEAD-FREE  
LEAD-FREE COMPATIBLE COMPONENT  
For RoHS compliant products, please select correct termination style.

### RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (mF) 25°C	DC Rated Voltage (V) at 85°C	ESR Max (mOhms) at 1kHz	DC Leakage max (µA)		Maximum Capacitance Change (%)		Case Size	
				+25°C	+85°C	-55°C	+85°C	AVX	DSCC
				2.5 VDC at 85°C		6.3 VDC at 85°C		10 VDC at 85°C	
TWDE154*002_B0Z0^00	150	2.5	400	60	180	-15	+20	E	T4
TWDE503*006_B0Z0^00	50	6.3	400	20	60	-15	+20	E	T4
TWDE253*010_B0Z0^00	25	10	400	10	30	-15	+20	E	T4

DCL is measured at rated voltage after 20 minutes



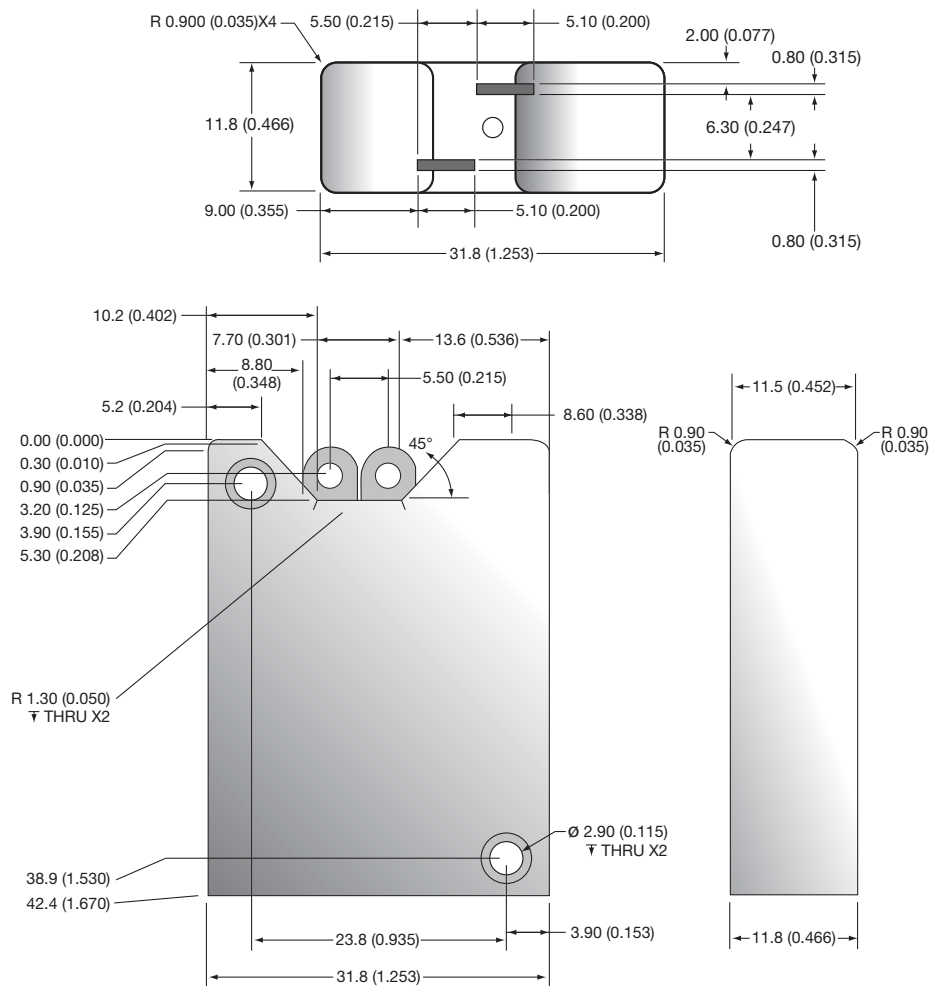




AVX modular packaged  
93026 style capacitors.

**Capacitance Range:** 200uF to 6600uF  
**Voltage Range:** 25 to 125V  
**Temperature Range:** -55°C to 125 °C  
**Tolerance Range:** 10%, 20%

## DIMENSIONS: millimeters (inches)



## VOLTAGE RATINGS (Operating Temperature -55°C to 125°C)

Voltage (DC)		25	30	50	60	75	100	125
Rated Voltage: (Ur)	85°C	25	30	50	60	75	100	125
Derated Voltage: (Uc)	125°C	15	20	30	40	50	65	85
Surge Voltage: (Us)	85°C	28.8	34.5	57.5	69	86.3	115	144

## HOW TO ORDER

### AVX PART NUMBER:

<b>TW</b>	<b>2E</b>	<b>227</b>	<b>*</b>	<b>050</b>	<b>C</b>	<b>B</b>	<b>@</b>	<b>Z</b>	<b>0</b>	<b>S</b>	<b>++</b>
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance K = ±10% M = ±20%	Voltage	C = N/A	Packaging B = Bulk	Qualification S = COTS-PLus	Established Reliability Z = Non-ER	Reliability Grade 0 = Standard	Termination Finish S = Silver Plating	Special Code 00 = Standard

**Not RoHS Compliant**

*SnPb termination option is not RoHS compliant.*

## RIPPLE CURRENT MULTIPLIERS vs. Frequency, temperature and applied voltage<sup>1/2/</sup>

Frequency of Applied Ripple Current	120Hz				800Hz				1kHz				
	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
% of 85°C	100%	0.60	0.39	-	-	0.71	0.43	-	-	0.72	0.45	-	-
Rated Peak Voltage	90%	0.60	0.46	-	-	0.71	0.55	-	-	0.72	0.55	-	-
	80%	0.60	0.52	0.35	-	0.71	0.62	0.42	-	0.72	0.62	0.42	-
	70%	0.60	0.58	0.44	-	0.71	0.69	0.52	-	0.72	0.70	0.52	-
	66-2/3%	0.60	0.60	0.46	0.27	0.71	0.71	0.55	0.32	0.72	0.72	0.55	0.32

Frequency of Applied Ripple Current	10kHz				40kHz				100kHz				
	≤55	85	105	125	≤55	85	105	125	≤55	85	105	125	
% of 85°C	100%	0.88	0.55	-	-	1.00	0.63	-	-	1.10	0.69	-	-
Rated Peak Voltage	90%	0.88	0.67	-	-	1.00	0.77	-	-	1.10	0.85	-	-
	80%	0.88	0.76	0.52	-	1.00	0.87	0.59	-	1.10	0.96	0.65	-
	70%	0.88	0.85	0.64	-	1.00	0.97	0.73	-	1.10	1.07	0.80	-
	66-2/3%	0.88	0.88	0.68	0.40	1.00	1.00	0.77	0.45	1.10	1.10	0.85	0.50

1/ At 125°C the rated voltage of the capacitors decreases to 66 2/3 of the 85°C rated voltage.

2/ The peak of the applied ac ripple voltage plus the applied dc voltage must not exceed the dc voltage rating of the capacitors.

## RATINGS & PART NUMBER REFERENCE

AVX Part Number	Cap (uF)	DC Rated Voltage (V)	ESR Max (ohms)	DC Leakage Max (uA)		Max Impedance (Ohms)	Maximum Capacitance Change* (%)			Max AC Ripple* (mA rms)
	25°C at 120Hz	85°C	120Hz	+25°C	+85 and +125°C	-55°C at 120 Hz	-55°C	+85°C	+125°C	85°C at 40kHz
TW2D248*025CB@Z0S++	2400	25	0.33	10	40	3.50	-70	12	18	5200
TW3D368*025CB@Z0S++	3600	25	0.22	15	60	2.33	-70	12	18	7800
TW2E368*025CB@Z0S++	3600	25	0.25	12	50	3.50	-75	12	20	6200
TW2E448*025CB@Z0S++	4400	25	0.25	20	160	5.00	-90	30	50	6400
TW3E548*025CB@Z0S++	5400	25	0.17	18	75	2.33	-75	12	20	9300
TW3E668*025CB@Z0S++	6600	25	0.17	30	240	3.33	-90	30	50	9600
TW2D208*030CB@Z0S++	2000	30	0.35	14	50	3.50	-70	10	18	5000
TW3D308*030CB@Z0S++	3000	30	0.23	21	75	2.33	-70	10	18	7500
TW2E308*030CB@Z0S++	3000	30	0.30	24	70	3.00	-72	10	20	6000
TW3E458*030CB@Z0S++	4500	30	0.20	36	105	2.00	-72	10	20	9000
TW2D947*050CB@Z0S++	940	50	0.38	6	50	5.00	-50	8	15	4200
TW2E148*050CB@Z0S++	1360	50	0.35	10	80	4.00	-58	10	20	5500
TW3D148*050CB@Z0S++	1410	50	0.25	9	75	3.33	-50	8	15	6300
TW3E208*050CB@Z0S++	2040	50	0.23	15	120	2.67	-58	10	20	8250
TW2E308*050CB@Z0S++	3000	50	0.50	38	200	7.50	-90	25	35	6000
TW3E458*050CB@Z0S++	4500	50	0.33	57	300	5.00	-90	25	35	9000
TW2D787*060CB@Z0S++	780	60	0.45	6	50	7.50	-60	8	15	4200
TW2E118*060CB@Z0S++	1120	60	0.40	10	80	5.00	-58	8	15	5500
TW3D128*060CB@Z0S++	1170	60	0.30	9	75	5.00	-60	8	15	6300
TW3E178*060CB@Z0S++	1680	60	0.27	15	120	3.33	-58	8	15	8250
TW2E208*060CB@Z0S++	2000	60	0.50	24	180	10.00	-90	30	50	6400
TW3E308*060CB@Z0S++	3000	60	0.33	36	270	6.67	-90	30	50	9600
TW2D667*075CB@Z0S++	660	75	0.50	6	60	6.00	-45	6	10	4200
TW2E947*075CB@Z0S++	940	75	0.45	10	100	6.00	-55	6	10	5500
TW3D997*075CB@Z0S++	990	75	0.33	9	90	4.00	-45	6	10	6300
TW3E148*075CB@Z0S++	1410	75	0.30	15	150	4.00	-55	6	10	8250
TW2D307*100CB@Z0S++	300	100	0.80	6	50	11.00	-35	6	12	4200
TW2E447*100CB@Z0S++	440	100	0.60	10	100	7.50	-40	6	12	5500
TW3D457*100CB@Z0S++	450	100	0.53	9	75	7.33	-35	6	12	6300
TW3E667*100CB@Z0S++	660	100	0.40	15	150	5.00	-40	6	12	8250
TW2D207*125CB@Z0S++	200	125	0.90	6	50	17.50	-35	5	12	4200
TW3D307*125CB@Z0S++	300	125	0.60	9	75	11.67	-35	5	12	6300
TW2E307*125CB@Z0S++	300	125	0.80	10	100	10.00	-35	6	12	5500
TW3E457*125CB@Z0S++	450	125	0.53	15	150	6.67	-35	6	12	8250

\*For reference only, contact factory for more details

# TAJ ESCC Tantalum Capacitors



## SMD Solid Tantalum Chip Capacitors



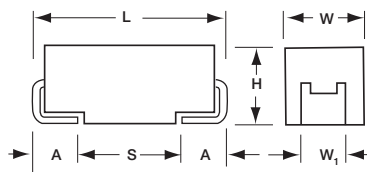
Capacitors, Fixed, Leadless Surface Mount, Chip, Solid electrolyte Tantalum for use in ESCC space programs, according to ESCC Generic Specification 3012 and associated Detail Specification 3012/001 as recommended by the Space Components Coordination Group (ranges in table below).



### CASE DIMENSIONS: millimeters (inches)

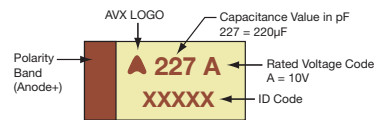
Code	EIA Code	Variant	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	3216-18	01	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	3528-21	02	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	6032-28	13	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	7343-31	14	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	7343-43	17	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.



### MARKING

#### A, B, C, D, E CASE



### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) at 85°C							
µF	Code	4V (G)	6.3V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
0.10	104							A	A
0.15	154							A	B
0.22	224							A	B
0.33	334							A	B
0.47	474						A	A/B	C
0.68	684					A	A	A/B	C
1.0	105				A	A	A	B	C
1.5	155			A	A	A	A	B/C	D
2.2	225		A	A	A/B	B	B	B/C	D
3.3	335	A	A	A	A/B	B	B/C	C	D
4.7	475	A	A	A/B	B	B/C	C	C/D	D
6.8	685	A	A/B	B	B/C	C	C/D	D	D*
10	106	A/B	B	B/C	C	C	C/D	D	E*
15	156	B	B/C	C	C	C/D	D	D	
22	226	B/C	C	C	C/D	D	D	E	
33	336	C	C	C/D	D	D	E		
47	476	C/D	C/D	D	D	E			
68	686	C/D	D	D	D	E			
100	107	D	D	D	E				
150	157	D	D	E					
220	227	E	E	E					

\*Codes under development - subject to change.



# TAJ ESCC Tantalum Capacitors



## SMD Solid Tantalum Chip Capacitors

### HOW TO ORDER

#### AVX PART NUMBER:

<b>TAJ</b>	<b>A</b>	<b>475</b>	<b>K</b>	<b>010</b>	<b>ESA</b>	<b>*</b>	<b>Not RoHS Compliant</b>
<b>Type</b>	<b>Case Size</b> See table above	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Tolerance</b> K = ±10% M = ±20%	<b>Rated DC Voltage</b> 004 = 4Vdc 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	<b>ESCC Suffix</b>	Please contact manufacturer for details on LAT, and other requirements.	

#### ESCC PART NUMBER – MANDATORY FOR ORDERING:

<b>3012</b>	<b>001</b>	<b>01</b>	<b>C</b>	<b>226</b>	<b>V</b>	<b>K</b>	<b>Not RoHS Compliant</b>
<b>Detail Specification</b>	<b>Variant Basic</b> Specification ESCC 23500	<b>Testing Level</b> B = Level B (Xray) C = Level C	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Voltage</b> G = 4V J = 6.3V A = 10V C = 16V D = 20V E = 25V V = 35V T = 50V	<b>Tolerance</b> K = ±10%		

### LAT TESTING

AVX can perform the following Lot Acceptance Test according to ESCC

- LAT 3 Qty. 10 pcs. - 4 pieces of which are “destructive samples”, the remaining 6 pieces may be for part of the Order Qty. OR be additional to the order Qty.
- LAT 2 Qty. 26 pcs. - including the 10 pieces of LAT3. The additional 16 pieces are “destructive samples”.
- LAT 1 Qty. 34 pcs. - including the 26 pieces of LAT2. The additional 8 pieces are all “destructive samples”.

### OPTION

Packaging: Tape and reel available on request – Contact marketing.



# TES Low ESR – QPL ESCC

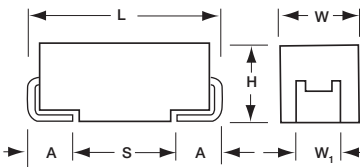


## Low ESR Tantalum Chip Capacitor



- QPL ESCC approved series
- Manufactured in EU, ESA qualified plant, according to ESCC 3012
- Detailed specification 3012/004
- Low ESR designed parts, multianode D and E case included
- Robust against higher thermo-mechanical stresses during assembly process
- CV range 1.0 - 470uF/6.3 - 50V
- Improved reliability design

### CASE DIMENSIONS: millimeters (inches)

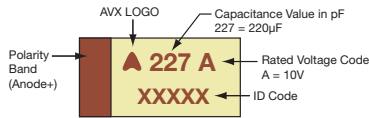


Code	EIA Code	Variant	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	3216-18	01	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	3528-21	02	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	6032-28	03	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	7343-31	04	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)
E	7343-43	05	7.30 (0.287)	4.30 (0.169)	4.10 (0.162)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.

### MARKING

#### A, B, C, D, E CASE



### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) at 85°C							
µF	Code	6.3V (J)	10V (A)	12V (B)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
1.0	105						A(3000)		B(2000)
1.5	155								
2.2	225								
3.3	335								
4.7	475				A(2000)	A(2500)	B(1000)	B(1000) C(600)	C(1000) D(200)
6.8	685								
10	106		A(1800)			B(1000)	C(600)	D(120)	
15	156								
22	226	A(900)			B(600)	C(400)		D(100)	
33	336		B(650)			C(300)	D(65) E(65)	E(65)	
47	476	B(500)			C(350)	D(55)			
68	686								
100	107		C(200)		D(55) E(40)	E(45)			
150	157	C(300)	D(45)						
220	227		D(35)	E(35)					
330	337	D(35)	E(35)						
470	477	E(30)							

Available Ratings: ESR limits quoted in brackets (mOhms)

Engineering samples - please contact manufacturer

\*Codes under development - subject to change.



# TES Low ESR – QPL ESCC



## Low ESR Tantalum Chip Capacitor

### HOW TO ORDER

#### AVX PART NUMBER:

<b>TES</b>	<b>E</b>	<b>477</b>	<b>K</b>	<b>006</b>		<b>U</b>	<b>0</b>	<b>@</b>	<b>^</b>	<b>Not RoHS Compliant</b>
<b>Type</b>	<b>Case Size</b> See table above	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Tolerance</b> K = ±10% M = ±20%	<b>Voltage Code</b> 006 = 6.3Vdc 010 = 10Vdc 012 = 12Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	<b>Packaging SnPb Termination</b> X = 4" E = Bulk H = 7"	<b>ESR Level</b> C = Standard L = Mirror Multianode U = Multianode	<b>LAT</b> 0 = N/A 1 = LAT1 2 = LAT2 3 = LAT3	<b>Screening Level</b> B = Level B (Xray) C = Level C Z = non-ER (not for flight parts)	<b>FCSI</b> 0 = N/A 1 = YES	

#### ESCC PART NUMBER – MANDATORY FOR ORDERING:

<b>3012</b>	<b>004</b>	<b>01</b>	<b>B</b>	<b>477</b>	<b>K</b>	<b>E</b>	<b>0030</b>	<b>Not RoHS Compliant</b>
<b>Detail Specification</b>	<b>Variant</b> 01 02 03 04 05	<b>Testing Level</b> B = Level B (Xray) C = Level C	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Tolerance</b> K = ±10% M = ±20%	<b>Voltage</b> J = 6.3V A = 10V B = 12V C = 16V D = 20V E = 25V V = 35V T = 50V	<b>ESR in mΩ</b>		

### LAT TESTING

AVX can perform the following Lot Acceptance Test according to ESCC

- LAT 3 Qty. 10 pcs. - 4 pieces of which are “destructive samples”, the remaining 6 pieces may be for part of the Order Qty. OR be additional to the order Qty.
- LAT 2 Qty. 26 pcs. - including the 10 pieces of LAT3. The additional 16 pieces are “destructive samples”.
- LAT 1 Qty. 34 pcs. - including the 26 pieces of LAT2. The additional 8 pieces are all “destructive samples”.

### OPTION

Packaging: Tape and reel available on request – Contact marketing.



# TES Low ESR – QPL ESCC



## Low ESR Tantalum Chip Capacitor

### RATINGS & PART NUMBER REFERENCE

ESCC Part Number	AVX Part Number	Case Size	Cap (µF)	Rated Voltage (V)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @100kHz	100kHz Ripple Current Rating (A)			100kHz Ripple Voltage Ratings (V)		
								25°C	85°C	125°C	25°C	85°C	125°C
<b>6.3 Volt @ 85°C (4 Volt @ 125°C)</b>													
301200401#226*J0900	TES A 226 * 006 □ C 0 @ ^	A	22	6.3	1.32	6	900	289	260	115	260	234	104
301200402#476*J0500	TES B 476 * 006 □ C 0 @ ^	B	47	6.3	2.82	6	500	412	371	165	206	186	82
301200403#157*J0300	TES C 157 * 006 □ C 0 @ ^	C	150	6.3	9	6	300	606	545	242	182	163	73
301200404#337*J0035	TES D 337 * 006 □ L 0 @ ^	D	330	6.3	19.8	8	35	2699	2429	1080	94	85	38
301200405#477*J0030	TES E 477 * 006 □ U 0 @ ^	E	470	6.3	28.2	6	30	3000	2700	1200	90	81	36
<b>10 Volt @ 85°C (7 Volt @ 125°C)</b>													
301200401#106*A1800	TES A 106 * 010 □ C 0 @ ^	A	10	10	1	6	1800	204	184	82	367	331	147
301200402#336*A0650	TES B 336 * 010 □ C 0 @ ^	B	33	10	3.3	6	650	362	325	145	235	212	94
301200403#107*A0200	TES C 107 * 010 □ C 0 @ ^	C	100	10	10	6	200	742	667	297	148	133	59
301200404#157*A0045	TES D 157 * 010 □ L 0 @ ^	D	150	10	15	6	45	2380	2142	952	107	96	43
301200404#227*A0035	TES D 227 * 010 □ L 0 @ ^	D	220	10	22	6	35	2699	2429	1080	94	85	38
301200405#337*A0035	TES E 337 * 010 □ U 0 @ ^	E	330	10	33	6	35	2777	2500	1111	97	87	39
<b>12 Volt @ 85°C (8 Volt @ 125°C)</b>													
301200405#227*B0035	TES E 227 * 012 □ U 0 @ ^	E	220	12	26.4	6	35	2777	2500	1111	97	87	39
<b>16 Volt @ 85°C (10 Volt @ 125°C)</b>													
301200401#475*C2000	TES A 475 * 016 □ C 0 @ ^	A	4.7	16	0.75	6	2000	194	174	77	387	349	155
301200402#226*C0600	TES B 226 * 016 □ C 0 @ ^	B	22	16	3.52	6	600	376	339	151	226	203	90
301200403#476*C0350	TES C 476 * 016 □ C 0 @ ^	C	47	16	7.52	6	350	561	505	224	196	177	78
301200404#107*C0055	TES D 107 * 016 □ L 0 @ ^	D	100	16	16	6	55	2153	1938	861	118	107	47
301200405#157*C0040	TES E 157 * 016 □ U 0 @ ^	E	150	16	24	6	40	2598	2338	1039	104	94	42
<b>20 Volt @ 85°C (13 Volt @ 125°C)</b>													
301200401#335*D2500	TES A 335 * 020 □ C 0 @ ^	A	3.3	20	0.66	6	2500	173	156	69	433	390	173
301200402#106*D1000	TES B 106 * 020 □ C 0 @ ^	B	10	20	2	6	1000	292	262	117	292	262	117
301200403#226*D0400	TES C 226 * 020 □ C 0 @ ^	C	22	20	4.4	6	400	524	472	210	210	189	84
301200403#336*D0300	TES C 336 * 020 □ C 0 @ ^	C	33	20	6.6	6	300	606	545	242	182	163	73
301200404#476*D0055	TES D 476 * 020 □ L 0 @ ^	D	47	20	9.4	6	55	2153	1938	861	118	107	47
301200405#107*D0045	TES E 107 * 020 □ U 0 @ ^	E	100	20	20	6	45	2449	2205	980	110	99	44
<b>25 Volt @ 85°C (17 Volt @ 125°C)</b>													
301200401#105*E3000	TES A 105 * 025 □ C 0 @ ^	A	1.0	25	0.25	6	3000	158	142	63	474	427	190
301200402#475*E1000	TES B 475 * 025 □ C 0 @ ^	B	4.7	25	1.18	6	1000	292	262	117	292	262	117
301200403#106*E0600	TES C 106 * 025 □ C 0 @ ^	C	10	25	2.5	6	600	428	385	171	257	231	103
301200404#336*E0065	TES D 336 * 025 □ L 0 @ ^	D	33	25	8.25	6	65	1981	1783	792	129	116	51
301200405#476*E0065	TES E 476 * 025 □ U 0 @ ^	E	47	25	11.8	6	65	2038	1834	815	132	119	53
<b>35 Volt @ 85°C (23 Volt @ 125°C)</b>													
301200402#335*V1000	TES B 335 * 035 □ C 0 @ ^	B	3.3	35	1.16	6	1000	292	262	117	292	262	117
301200403#475*V0600	TES C 475 * 035 □ C 0 @ ^	C	4.7	35	1.65	6	600	428	385	171	257	231	103
301200404#106*V0120	TES D 106 * 035 □ L 0 @ ^	D	10	35	3.5	6	120	1458	1312	583	175	157	70
301200404#226*V0100	TES D 226 * 035 □ L 0 @ ^	D	22	35	7.7	6	100	1597	1437	639	160	144	64
301200405#336*V0065	TES E 336 * 035 □ U 0 @ ^	E	33	35	11.6	6	65	2038	1834	815	132	119	53
<b>50 Volt @ 85°C (33 Volt @ 125°C)</b>													
301200402#105*T2000	TES B 105 * 050 □ C 0 @ ^	B	1.0	50	0.5	6	2000	206	186	82	412	271	165
301200403#335*T1000	TES C 335 * 050 □ C 0 @ ^	C	3.3	50	1.65	6	1000	332	298	133	332	298	133
301200404#475*T0200	TES D 475 * 050 □ L 0 @ ^	D	4.7	50	2.35	6	200	1129	1016	452	226	203	90

The parts are supplied in dry pack with Moisture Sensitivity Level (MSL) level 3 - defined according to J-STD-020.

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

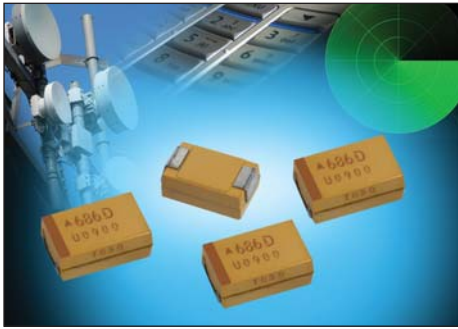
NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



# TAJ CECC Tantalum Capacitors



## SMD Solid Tantalum Chip Capacitors



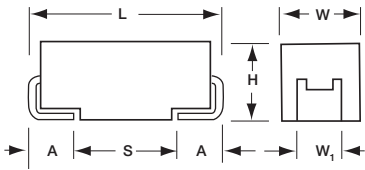
Capacitors, Fixed, Leadless Surface Mount, Chip, Solid electrolyte Tantalum for use in avionics and industrial applications, tested to CECC Specification 30801-005 and 30801-011 (CTC4).



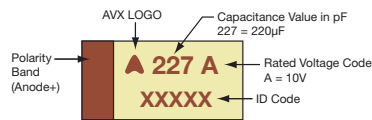
### CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	Variant	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
A	3216-18	01&11	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	3528-21	02&12	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	6032-28	03&13	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	7343-31	04&14	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

W<sub>1</sub> dimension applies to the termination width for A dimensional area only.



### MARKING A, B, C, D CASE



### CAPACITANCE AND RATED VOLTAGE, V<sub>R</sub> (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

#### BS CECC30801-005

Capacitance		Rated Voltage DC (V <sub>R</sub> ) at 85°C						
µF	Code	6.3V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
0.10	104						A	A
0.15	154						A	A/B
0.22	224						A	A/B
0.33	334						A	B
0.47	474					A	A/B	C
0.68	684				A	A	A/B	C
1.0	105			A	A	A	B	C
1.5	155		A	A	A	A/B	B/C	D
2.2	225	A	A	A/B	B	B	B/C	D
3.3	335	A	A	A/B	B	B/C	C/D	D
4.7	475	A	A/B	B/C	B/C	C	C/D	D
6.8	685	A/B	B	B/C	C/D	C/D	D	D
10	106	A/B	B/C	B/C/D	C	C/D	D	
15	156	B/C	B/C/D	C	C/D	D	D	
22	226	B/C/D	C	C/D	D	D		
33	336	C	C/D	D	D			
47	476	C/D	D	D				
68	686	C/D	D	D				
100	107	D	D					

#### BS CECC30801-011 (CTC4)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) at 85°C						
µF	Code	6.3V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
0.10	104						A	A
0.15	154						A	B
0.22	224						A	B
0.33	334						A	B
0.47	474					A	B	C
0.68	684				A		B	C
1.0	105			A			B	C
1.5	155		A			B	C	D
2.2	225	A			B		C	D
3.3	335			B			C	D
4.7	475		B			C	D	D
6.8	685	B			C		D	
10	106			C		D	D	
15	156		C		D	D		
22	226	C		D	D			
33	336		D	D				
47	476	D	D					
68	686	D						

NOTE: Voltage ratings are minimum values. AVX reserves the rights to supply higher voltage rating in the same case size, to the same reliability standards.



# TAJ CECC Tantalum Capacitors



## SMD Solid Tantalum Chip Capacitors

### HOW TO ORDER

<b>TAJ</b> 	<b>A</b> 	<b>475</b> 	<b>K</b> 	<b>010</b> 	<b>R</b> 	<b>FJ</b> 
<b>Type</b>	<b>Case Size</b> See table above	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	<b>Tolerance</b> K = ±10% M = ±20%	<b>Rated DC Voltage</b> 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	<b>Termination Finish</b> R = 7" T/R 100% Tin S = 13" T/R 100% Tin A = Gold Plating 7" Reel B = Gold Plating 13" Reel H = Tin Lead 7" Reel K = Tin Lead 13" Reel	<b>Suffix</b> FJ = CECC 30801-011(CTC4) Y = CECC 30801-005



### TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C								
Capacitance Range:	0.10 µF to 100 µF								
Capacitance Tolerance:	±10%; ±20%								
Rated Voltage DC (V <sub>R</sub> )	≤ +85°C:	6.3	10	16	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	4	7	10	13	17	23	33	
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	8	13	20	26	32	46	65	
Surge Voltage (V <sub>S</sub> )	≤ +125°C:	5	8	13	16	20	28	40	
Temperature Range:	-55°C to +125°C								
Reliability:	1% per 1000 hours at 85°C, V <sub>R</sub> with 0.1Ω/V series Impedance, 60% confidence level								



# TCH Low ESR Hermetic Series



## SMD Low ESR Tantalum Capacitors with Conductive Polymer Electrode in Hermetic Package



### FEATURES

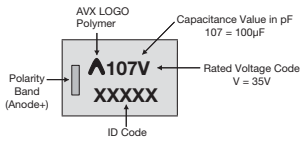
- Aerospace & Hi-Rel applications
- Low ESR conductive polymer electrode
- Endurance up to 10 000 hrs. on selected codes
- Ceramic case hermetic packaging
- Stability under humidity and ambient atmosphere exposure
- Large case sizes including CTC-21D provide high capacitance values
- Developed with ESA to suit aerospace applications
- Ongoing ESA qualification
- Manufacturing and screening utilizing AVX patented Q-Process to effectively remove components that may experience excessive parametric shifts or instability in operation life

### APPLICATIONS

- Aerospace
- Defence
- Power supplies
- Pulse power

### MARKING

#### 9 CASE



For additional information on Q-process please consult the AVX technical publication "Reaching the Highest Reliability for Tantalum Capacitors" (see the link: <http://www.avx.com/docs/techinfo/Qprocess.pdf>)

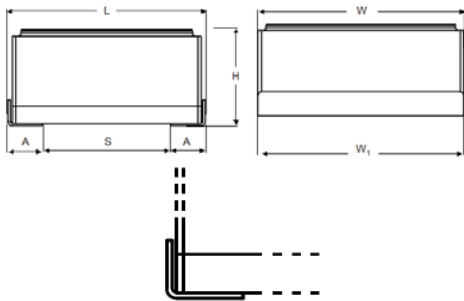
### CASE DIMENSIONS: millimeters (inches)

Code	Type	L	W	H Max.	W <sub>1</sub>	A	S Min.
9 (CTC-21D)	J-lead (L-shape)	11.50 ± 0.50 (0.453 ± 0.020)	12.50 ± 0.50 (0.492 ± 0.020)	6.15 (0.242)	12.50 ± 0.50 (0.492 ± 0.020)	1.90 ± 0.50 (0.075 ± 0.020)	7.00 (0.276)
9 (CTC-21D)	Undertab	11.00 ± 0.20 (0.433 ± 0.008)	12.50 ± 0.20 (0.492 ± 0.008)	5.95 (0.234)	10.50 ± 0.20 (0.413 ± 0.008)	1.50 ± 0.20 (0.059 ± 0.008)	7.80 (0.307)

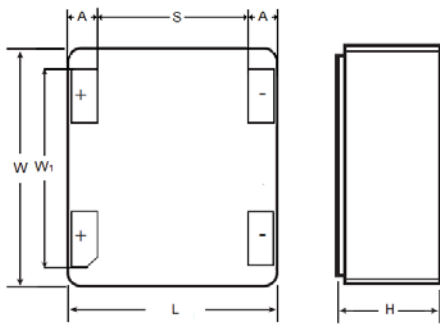
Available ratings

Engineering samples - please contact manufacturer

#### 'J' Lead Termination (L-shape)



#### Undertab Termination



# TCH Low ESR Hermetic Series



## SMD Low ESR Tantalum Capacitors with Conductive Polymer Electrode in Hermetic Package

### CAPACITANCE AND VOLTAGE RANGE (CASE CODE BEFORE THE BRACKETS)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) at 85°C								
μF	Code	10V	16V	20V	25V	35V	50V	63V	75V	100V
15	156									9(150)*
22	226								9(120)*	9(150)
33	336							9(100)*	9(120)	
47	476						9(70)	9(100)*		
68	686						9(70)*			
100	107				9(50)*	9(55)				
150	157			9(45)*	9(50)	9(55)*				
220	227	9(40)*	9(40)	9(45)*	9(50)*					
330	337	9(40)	9(40)*	9(45)*						
470	477	9(40)*	9(40)*							
680	687	9(40)*	9(40)*							

Available Ratings: (ESR ratings in mOhms in brackets)

Engineering samples - please contact manufacturer

\*Codes under development - upon request, please contact manufacturer

## HOW TO ORDER

### AVX PART NUMBER

<b>TCH</b>	<b>9</b>	<b>687</b>	<b>M</b>	<b>016</b>	<b>W</b>	<b>0040</b>	<b>U</b>
Type	Case Size See table above	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Tolerance M = ±20%	Rated DC Voltage 010 = 10Vdc 050 = 50Vdc 016 = 16Vdc 063 = 63Vdc 020 = 20Vdc 075 = 75Vdc 025 = 25Vdc 100 = 100Vdc 035 = 35Vdc	Packaging W = Waffle B = Bulk	ESR in mΩ	Termination J = 'J' lead L-shape (Gold) L = 'J' lead L-shape (Sn/Pb) U = Undertab



## TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C										
Capacitance Range:	15 μF to 680 μF										
Capacitance Tolerance:	±20%										
Leakage Current DCL:	0.1CV										
Rated Voltage (V <sub>R</sub> )	≤ +85°C:	10	16	20	25	35	50	63	75	100	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	7	11	13.5	17	23.5	33	42	50	66	
Temperature Range:	-55°C to +125°C										
Reliability:	1% per 1000 hours at 85°C, V <sub>r</sub> with 0.1Ω/V series impedance, 60% confidence level										
Termination Finish:	Gold Plating (Undertab), Gold Plating (J-lead), Sn/Pb Plating (J-lead)										



# TCH Low ESR Hermetic Series



## SMD Low ESR Tantalum Capacitors with Conductive Polymer Electrode in Hermetic Package

### RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (A)		
											25°C	85°C	125°C
<b>10 Volt @ 85°C</b>													
TCH9227M010W0040#	9	220	10	85	7	125	220	8	40	1	3.16	2.84	1.26
TCH9337M010W0040#	9	330	10	85	7	125	330	8	40	1	3.16	2.84	1.26
TCH9477M010W0040#	9	470	10	85	7	125	470	8	40	1	3.16	2.84	1.26
TCH9687M010W0040#	9	680	10	85	7	125	680	8	40	1	3.16	2.84	1.26
<b>16 Volt @ 85°C</b>													
TCH9227M016W0040#	9	220	16	85	10	125	352	8	40	1	3.16	2.84	1.26
TCH9337M016W0040#	9	330	16	85	10	125	528	8	40	1	3.16	2.84	1.26
TCH9477M016W0040#	9	470	16	85	10	125	752	8	40	1	3.16	2.84	1.26
TCH9687M016W0040#	9	680	16	85	10	125	1088	8	40	1	3.16	2.84	1.26
<b>20 Volt @ 85°C</b>													
TCH9157M020W0045#	9	150	20	85	13	125	300	8	45	1	2.98	2.68	1.19
TCH9227M020W0045#	9	220	20	85	13	125	440	8	45	1	2.98	2.68	1.19
TCH9337M020W0045#	9	330	20	85	13	125	660	8	45	1	2.98	2.68	1.19
<b>25 Volt @ 85°C</b>													
TCH9107M025W0050#	9	100	25	85	17	125	250	8	50	1	2.83	2.55	1.13
TCH9157M025W0050#	9	150	25	85	17	125	375	8	50	1	2.83	2.55	1.13
TCH9227M025W0050#	9	220	25	85	17	125	550	8	50	1	2.83	2.55	1.13
<b>35 Volt @ 85°C</b>													
TCH9107M035W0055#	9	100	35	85	23	125	350	8	55	1	2.69	2.42	1.08
TCH9157M035W0055#	9	150	35	85	23	125	525	8	55	1	2.69	2.42	1.08
<b>50 Volt @ 85°C</b>													
TCH9476M050W0070#	9	47	50	85	33	125	235	8	70	1	2.39	2.15	0.96
TCH9686M050W0070#	9	68	50	85	33	125	340	8	70	1	2.39	2.15	0.96
<b>63 Volt @ 85°C</b>													
TCH9336M063W0100#	9	33	63	85	42	125	215	8	100	1	2.00	1.80	0.80
TCH9476M063W0100#	9	47	63	85	42	125	296	8	100	1	2.00	1.80	0.80
<b>75 Volt @ 85°C</b>													
TCH9226M075W0120#	9	22	75	85	50	125	165	8	120	1	1.82	1.64	0.73
TCH9336M075W0120#	9	33	75	85	50	125	248	8	120	1	1.82	1.64	0.73
<b>100 Volt @ 85°C</b>													
TCH9156M100W0150#	9	15	100	85	66	125	150	8	150	1	1.63	1.47	0.65
TCH9226M100W0150#	9	22	100	85	66	125	220	8	150	1	1.63	1.47	0.65

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with a maximum DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

# TCH Low ESR Hermetic Series



## SMD Low ESR Tantalum Capacitors with Conductive Polymer Electrode in Hermetic Package

### QUALIFICATION TABLE

TEST	TCH low ESR hermetic series (Temperature range -55°C to +125°C)										
	Condition			Characteristics							
<b>Endurance</b>	Determine after application of rated voltage for 2000 (10000) +48/0 hours at 85±2°C and then leaving min. 2 hours at room temperature. Also determine of 125°C temperature, category voltage for 2000 +48/-0 hours and then leaving min. 2 hours at room temperature. Power supply impedance to be < 3Ω.			Visual examination	no visible damage						
				DCL	1.25 x initial limit						
				ΔC/C	within ±20% of initial value						
				DF	1.5 x initial limit						
				ESR	2 x initial limit						
<b>Storage Life</b>	125°C, 0V, 2000h			Visual examination	no visible damage						
				DCL	2 x initial limit						
				ΔC/C	within ±20% of initial value						
				DF	1.5 x initial limit						
				ESR	2 x initial limit						
<b>Humidity</b>	Determine after storage without applied voltage at 40±2°C and 90±2% relative humidity for 56 days and then recovery min. 2 hours at room temperature.			Visual examination	no visible damage						
				DCL	1.25 x initial limit						
				ΔC/C	within ±10% of initial value						
				DF	initial limit						
				ESR	1.25 x initial limit						
<b>Temperature Stability</b>	Step	Temperature°C	Duration (min)		+20°C	-55°C	+20°C	+85°C	+125°C	+20°C	
	1	+22	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*	
	2	-55	15								
	3	+22	15	ΔC/C	IL*	+0/-20%	±5%	+20/-0%	+30/-0%	±5%	
	4	+85	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*	
	5	+125	15	ESR	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.5 x IL*	1.5 x IL*	1.25 x IL*	
	6	+22	15								
<b>Surge Voltage</b>	Test temperature: 85°C±3/0°C Surge voltage: 1.3 x rated voltage Series protection resistance: 33Ω Discharge resistance: 33Ω Number of cycles: 1000x Cycle duration: 6 min; 30 sec charge, 5 min 30 sec discharge			Visual examination	no visible damage						
				DCL	initial limit						
				ΔC/C	within ±20% of initial value						
				DF	initial limit						
				ESR	1.25 x initial limit						

\*Initial Limit



# THH 230°C Hermetic Series



## SMD 230°C High Temperature Tantalum Capacitor in Hermetic Package



### FEATURES

- High temperature applications
- Operational condition 230°C / 0.5U<sub>R</sub> / 1000hrs or 200°C / 0.5U<sub>R</sub> / 10.000hrs
- Ceramic case hermetic packaging
- Stability under humidity and ambient atmosphere exposure
- Large case sizes including CTC-21D provide high capacitance values
- Manufacturing and screening utilizing AVX patented Q-Process to effectively remove components that may experience excessive parametric shifts or instability in operation life



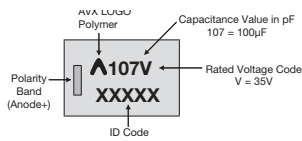
### APPLICATIONS

- Oil drilling
- Extreme temperature applications

For additional information on Q-process please consult the AVX technical publication "Reaching the Highest Reliability for Tantalum Capacitors" (see the link: <http://www.avx.com/docs/techinfo/Qprocess.pdf>)

### MARKING

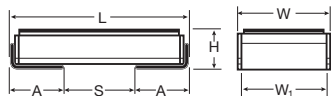
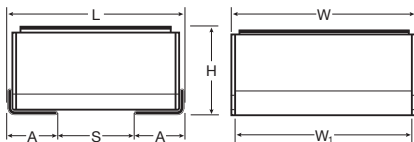
#### 9, I CASE



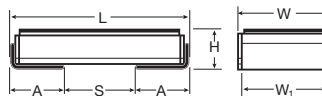
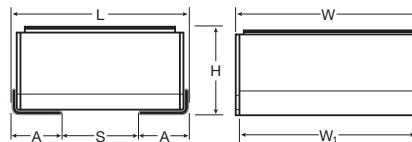
### CASE DIMENSIONS: millimeters (inches)

Code	Type	L±0.50 (0.020)	W±0.50 (0.020)	H Max.	W <sub>1</sub> ±0.50 (0.020)	A±0.50 (0.020)	S Min.
9 (CTC-21D)	J-lead (L-shape)	11.50 (0.453)	12.50 (0.492)	6.15 (0.242)	12.50 (0.492)	1.90 (0.075)	7.00 (0.276)
9 (CTC-21D)	J-lead (flex)	12.10 (0.476)	12.50 (0.492)	6.50 (0.256)	12.00 (0.472)	2.00 (0.079)	7.20 (0.283)
9 (CTC-21D)	Undertab	11.00 ± 0.20 (0.433 ± 0.008)	12.50 ± 0.20 (0.492 ± 0.008)	5.95 (0.234)	10.50 ± 0.20 (0.413 ± 0.008)	1.50 ± 0.20 (0.059 ± 0.008)	7.80 (0.307)
I	J-lead (L-shape)	11.50 (0.453)	6.00 (0.236)	2.70 (0.106)	6.00 (0.236)	3.50 (0.138)	4.00 (0.157)
I	J-lead (flex)	11.90 (0.469)	6.00 (0.236)	3.00 (0.118)	5.50 (0.217)	3.60 (0.142)	4.20 (0.165)
I	Undertab	11.00 ± 0.20 (0.433 ± 0.008)	6.00 ± 0.20 (0.236 ± 0.008)	2.50 (0.098)	4.00 ± 0.20 (0.157 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)	4.40 (0.173)

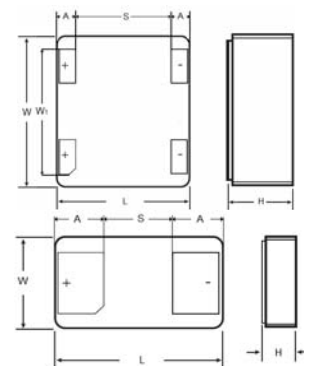
#### 'J' Lead Termination (flex)



#### 'J' Lead Termination (L-shape)



#### Undertab Termination



# THH 230°C Hermetic Series



## SMD 230°C High Temperature Tantalum Capacitor in Hermetic Package

### CAPACITANCE AND VOLTAGE RANGE (CODE DENOTES THE CASE SIZE)

Capacitance		Rated Voltage DC (V <sub>R</sub> ) at 175°C					
μF	Code	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)	63V (J)
3.3	335					I*	I*
4.7	475					I*	I*
6.8	685				I	I*	
10	106				I		
15	156		I*	I*	I*		
22	226	I	I*	I*	I*		
33	336	I*	I*	I*			9*
47	476	I	I*			9*	9
68	686					9*	
100	107			9*	9		
150	157		9*	9*	9*		
220	227	9*	9*				
330	337	9*					

Available ratings

Engineering samples - please contact manufacturer

\*Codes under development – upon request, please contact manufacturer

## HOW TO ORDER

### AVX PART NUMBER

<b>THH</b>	<b>9</b>	<b>107</b>	<b>M</b>	<b>035</b>	<b>W</b>	<b>0250</b>	<b>J</b>
Type	Case Size See table above	Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	Tolerance M = ±20%	Rated DC Voltage 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc 063 = 63Vdc	Packaging W = Waffle B = Bulk	ESR in mΩ	Termination J = 'J' lead (L-shape) W = 'J' lead (flex) U = Undertab



## TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C							
Capacitance Range:	3.3 μF to 330 μF							
Capacitance Tolerance:	±20%							
Leakage Current DCL:	0.01CV							
Rated Voltage (V <sub>R</sub> )	≤ +175°C:	16	20	25	35	50	63	
Category Voltage (V <sub>C</sub> )	≤ +200°C:	13	16	20	28	40	50	
Category Voltage (V <sub>C</sub> )	≤ +215°C:	10	13	16	23	33	41	
Category Voltage (V <sub>C</sub> )	≤ +230°C:	8	10	12	17	25	31	
Temperature Range:	-55°C to +230°C for case size "9", -55°C to +215°C for case size "I"							
Reliability:	1% per 1000 hours at 85°C, V <sub>r</sub> with 0.1Ω/V series impedance, 60% confidence level							
Termination Finish:	Gold Plating (Undertab), Gold Plating (J-lead L shape), Nickel Plating (J-lead flex)							





# THH 230°C Hermetic Series



## SMD 230°C High Temperature Tantalum Capacitor in Hermetic Package

### RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (A)			Product Category
											25°C	85°C	230°C	
<b>16 Volt @ 175°C</b>														
THH1226M016W0500#	I	22	16	175	10	215	3.6	8	500	1	0.81	0.73	0.73	215
THH1336M016W0500#	I	33	16	175	10	215	5.3	8	500	1	0.81	0.73	0.73	215
THH1476M016W0500#	I	47	16	175	10	215	7.5	8	500	1	0.81	0.73	0.73	215
THH9227M016W0250#	9	220	16	175	8	230	35.2	8	250	1	1.26	1.13	1.13	230
THH9337M016W0250#	9	330	16	175	8	230	52.8	8	250	1	1.26	1.13	1.13	230
<b>20 Volt @ 175°C</b>														
THH1156M020W0500#	I	15	20	175	13	215	3	8	500	1	0.81	0.73	0.73	215
THH1226M020W0500#	I	22	20	175	13	215	4.4	8	500	1	0.81	0.73	0.73	215
THH1336M020W0500#	I	33	20	175	13	215	6.6	8	500	1	0.81	0.73	0.73	215
THH1476M020W0500#	I	47	20	175	13	215	9.4	8	500	1	0.81	0.73	0.73	215
THH9157M020W0250#	9	150	20	175	10	230	30	8	250	1	1.26	1.13	1.13	230
THH9227M020W0250#	9	220	20	175	10	230	44	8	250	1	1.26	1.13	1.13	230
<b>25 Volt @ 175°C</b>														
THH1156M025W0500#	I	15	25	175	16	215	3.8	8	500	1	0.81	0.73	0.73	215
THH1226M025W0500#	I	22	25	175	16	215	5.5	8	500	1	0.81	0.73	0.73	215
THH1336M025W0500#	I	33	25	175	16	215	8.3	8	500	1	0.81	0.73	0.73	215
THH9107M025W0250#	9	100	25	175	12	230	25	8	250	1	1.26	1.13	1.13	230
THH9157M025W0250#	9	150	25	175	12	230	37.5	8	250	1	1.26	1.13	1.13	230
<b>35 Volt @ 175°C</b>														
THH1685M035W0500#	I	6.8	35	175	23	215	2.4	8	500	1	0.81	0.73	0.73	215
THH1106M035W0500#	I	10	35	175	23	215	3.5	8	500	1	0.81	0.73	0.73	215
THH1156M035W0500#	I	15	35	175	23	215	5.3	8	500	1	0.81	0.73	0.73	215
THH1226M035W0500#	I	22	35	175	23	215	7.7	8	500	1	0.81	0.73	0.73	215
THH9107M035W0250#	9	100	35	175	17	230	35	8	250	1	1.26	1.13	1.13	230
THH9157M035W0250#	9	150	35	175	17	230	52.5	8	250	1	1.26	1.13	1.13	230
<b>50 Volt @ 175°C</b>														
THH1335M050W0500#	I	3.3	50	175	33	215	1.7	8	500	1	0.81	0.73	0.73	215
THH1475M050W0500#	I	4.7	50	175	33	215	2.4	8	500	1	0.81	0.73	0.73	215
THH1685M050W0500#	I	6.8	50	175	33	215	3.4	8	500	1	0.81	0.73	0.73	215
THH9476M050W0250#	9	47	50	175	25	230	23.5	8	250	1	1.26	1.13	1.13	230
THH9686M050W0250#	9	68	50	175	25	230	34	8	250	1	1.26	1.13	1.13	230
<b>63 Volt @ 175°C</b>														
THH1335M063W0500#	I	3.3	63	175	41	215	2.1	8	500	1	0.81	0.73	0.73	215
THH1475M063W0500#	I	4.7	63	175	41	215	3	8	500	1	0.81	0.73	0.73	215
THH9336M063W0250#	9	33	63	175	31	230	20.8	8	250	1	1.26	1.13	1.13	230
THH9476M063W0250#	9	47	63	175	31	230	29.6	8	250	1	1.26	1.13	1.13	230

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5V RMS with a maximum DC bias of 2.2 volts.

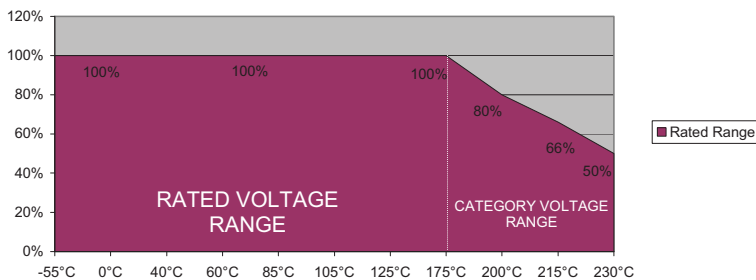
DCL is measured at rated voltage after 5 minutes.

ESR change post 1000hrs allowed up to 3 times catalog limit.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

### TEMPERATURE VOLTAGE DERATING

THH 230°C Voltage vs Temperature Rating for 1000 hrs service life



# THH 230°C Hermetic Series



## SMD 230°C High Temperature Tantalum Capacitor in Hermetic Package

### QUALIFICATION TABLE

TEST	THH 230°C hermetic series (Temperature range -55°C to +230°C)												
	Condition			Characteristics									
Endurance	Determine after application of rated voltage for 1000 +48/0 hours at 175±2°C and then leaving min. 2 hours at room temperature. Also determine of 200°C temperature, category voltage for 2000+48/-0 hours and then leaving min. 2 hours at room temperature. Also determine after application of 230°C temperature, category voltage for 1000+48/-0 hours and then leaving min. 2 hours at room temperature. Power supply impedance to be <3Ω.			Visual examination	no visible damage								
				DCL	1.25 x initial limit								
				ΔC/C	within ±20% of initial value								
				DF	1.5 x initial limit								
				ESR	3 x initial limit								
Endurance	Determine after application of 0.5U <sub>R</sub> for 10000+48/-0 hours at 200°C temperature and then leaving min. 2 hours at room temperature. Power supply impedance to be <3Ω.			Visual examination	no visible damage								
				DCL	1.25 x initial limit								
				ΔC/C	within ±20% of initial value								
				DF	1.5 x initial limit								
				ESR	3 x initial limit								
Storage Life	230°C, 0V, 1000h + 48/-0 hours			Visual examination	no visible damage								
				DCL	initial limit								
				ΔC/C	within ±5% of initial value								
				DF	initial limit								
				ESR	1.25 x initial limit								
Biased Humidity	Determine after leaving for 1000 hours at 85±2°C, 85% relative humidity and rated voltage and then recovery min. 2 hours at room temperature.			Visual examination	no visible damage								
				DCL	initial limit								
				ΔC/C	within ±10% of initial value								
				DF	initial limit								
				ESR	1.25 x initial limit								
Temperature Stability	Step	Temperature°C	Duration (min)		+20°C	-55°C	+22°C	+85°C	+125°C	+175°C	+200°C	+230°C	+22°C
	1	+22	15										
	2	-55	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	n/a	n/a	n/a	IL*
	3	+22	15										
	4	+85	15	ΔC/C	n/a	+0/-20%	±5%	+20/-0%	+30/-0%	+30/-0%	+30/-0%	+30/-0%	±5%
	5	+125	15										
	6	+175	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	2 x IL*	2 x IL*	2 x IL*	IL*
	7	+200	15										
	8	+230	15	ESR	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*
	9	+22	15										
Surge Voltage	Test temperature: 85°C±3/0°C Surge voltage: 1.3 x rated voltage Series protection resistance: 33Ω Discharge resistance: 33Ω Number of cycles: 1000x Cycle duration: 5 min; 30 sec charge, 5 min 30 sec discharge			Visual examination	no visible damage								
				DCL	initial limit								
				ΔC/C	within ±20% of initial value								
				DF	initial limit								
				ESR	1.25 x initial limit								

\*Initial Limit



# High Reliability Tantalum MSL



## Storage, Bake out, and Handling Recommendations

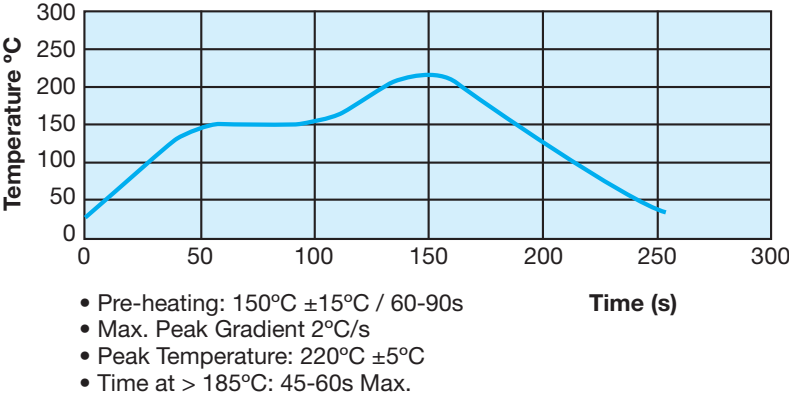
AVX Biddeford ships all COTS+, military, space level, and \*medical grade surface mount tantalum capacitors in moisture resistant bags as a part of best practice. This includes CWR, TAZ, TBJ, TBC, TBM, and TCP product. This has improved our service to customers by alleviating the potential for long term exposure to high humidity conditions during shipping and storage.

Biddeford product that is considered to be MSL 3 includes TBMs, TCPs, TCBs, T4Js, TBJ V, U and E case, and TAZ H, V and X case sizes. The remainder of our tantalum capacitors are rated MSL 1 for moisture (per J-STD-020D). AVX MSL 1 Tantalum capacitors are unaffected by storage for 2 years at the following conditions: a temperature between -10°C and +35°C, maximum of 85% RH, and atmospheric pressure between 860 mbar and 1060mbar. Exposure to humidity in excess of the above conditions can occur during shipping or

storage; this may affect the leakage current of resin protected capacitors and possibly result in damaging the capacitors during reflow.

If high exposure occurs, MSL 1 product can be dried by baking at temperatures between 85°C for 16 hours to 125°C for 4 hours. Product packaged in tape and reel requires special handling as the tape and reels cannot withstand these temperatures. Extended bake out at 55°C with less than 10% humidity for 48-hours can be performed for product in tape and reel packaging. MSL 3 product should be baked out for 168 hours at 40°C.

The reflow profile below is recommended to ensure parametric integrity of the capacitors is maintained. An improper combination of temperature and time can lead to damage in the dielectric of the component and this profile minimizes that risk.



\*For implantable medical applications please contact the factory for further recommendations.

# TAZ Cots+, CWR09, CWR19, CWR29 and TAZ HRC5000 Series



## Tape & Reel Packaging

Solid Tantalum Chip TAZ Tape and reel packaging for automatic component placement.  
Please enter required Suffix on order. Bulk packaging is standard.

### TAZ TAPING SUFFIX TABLE

Case Size reference	Tape width mm	P mm	180mm (7") reel		330mm (13") reel	
			Suffix	Qty.	Suffix	Qty.
A	8	4	R	2500	S	9000
R	8	4	R	2500	S	-
B	12	4	R	2500	S	9000
C	12	4	R	2500	S	9000
D	12	4	R	2500	S	8000
E	12	4	R	2500	S	8000
F	12	8	R	1000	S	3000
G	12	8	R	500	S	2500
H	12	8	R	500	S	2500
X	12	8	R	500	S	2000

Total Tape Thickness – K max	
TAZ	
Case size reference	Millimeters (Inches) DIM
A	2.0 (0.079)
R	2.0 (0.079)
B	4.0 (0.157)
D	4.0 (0.157)
E	4.0 (0.157)
F	4.0 (0.157)
G	4.0 (0.157)
H	4.0 (0.157)
X	4.0 (0.157)

Code	8mm Tape		12mm Tape	
P*	4±0.1 or 8±0.1	(0.157±0.004)  (0.315±0.004)	4±0.1 or 8±0.1	(0.157±0.004)  (0.315±0.004)
G	0.75 min	(0.03 min)	0.75 min	(0.03 min)
F	3.5±0.04	(0.138±0.002)	5.5±0.05	(0.22±0.002)
E	1.75±0.1	(0.069±0.004)	1.75±0.1	(0.069±0.004)
W	8±0.3	(0.315±0.012)	12±0.3	(0.472±0.012)
P <sub>2</sub>	2±0.05	(0.079±0.002)	2±0.05	(0.079±0.002)
P <sub>0</sub>	4±0.1	(0.157±0.004)	4±0.1	(0.157±0.004)
D	1.5±0.1 -0	(0.059±0.004) (-0)	1.5±0.1 -0	(0.059±0.004) (-0)
D <sub>1</sub>	1.0 min	(0.039 min)	1.5 min	(0.059 min)

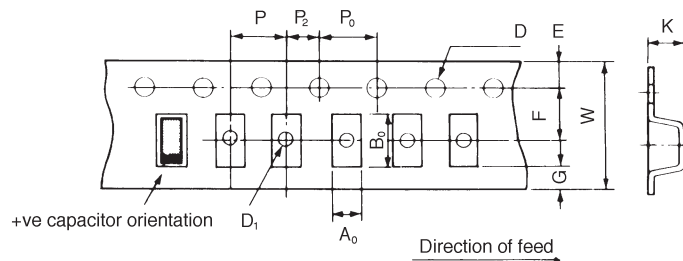
\*See taping suffix tables for actual P dimension (component pitch).

### TAPE SPECIFICATION

Tape dimensions comply to EIA RS 481 A  
Dimensions A<sub>0</sub> and B<sub>0</sub> of the pocket and the tape thickness, K, are dependent on the component size.

Tape materials do not affect component solderability during storage.

Carrier Tape Thickness <0.4mm



# TAJ ESCC, TAJ CECC, TBJ CWR11, TBJ COTS+, T4J, TBM, NBM, NBS, TES, TBC CWR15, TBC COTS+, TBC HRC5000 and TBC HRC6000 Series

## Tape & Reel Packaging



Tape and reel packaging for automatic component placement. Please enter required Suffix on order. Bulk packaging is not available.

### TAPE SPECIFICATION

Tape dimensions comply to EIA 481-1 Dimensions  $A_0$  and  $B_0$  of the pocket and the tape thickness,  $K$ , are dependent on the component size. Tape materials do not affect component solderability during storage. Carrier Tape Thickness <0.4mm.

### TAPING TABLE TAJ ESCC, TAJ CECC, TBJ CWR11, TBJ COTS+, T4J, TBM, NBM, NBS, TES AND TCB SERIES

Case Size	Tape width mm	P mm	180mm (7") reel Qty.	330mm (13") reel Qty.
A	8	4	2,000	8,000
B	8	4	2,000	8,000
C	12	8	500	3,000
D	12	8	500	2,500
E	12	8	400	1,500
U	16	8	400	-
V	12	8	400	1,500

### TAPING SUFFIX TABLE TBC CWR15, COTS+, TBC HRC5000 AND TBC HRC6000 SERIES

Case Size	Tape width mm	P mm	100mm (4") reel		180mm (7") reel	
			Designator	Qty.	Designator	Qty.
A	12	4			R	2,000
B	12	8			R	1,000
K	8	2			R	10,000
L	8	4	X	500	R	3,500
R	8	4	X	500	R	2,500
S	12	4			R	2,000

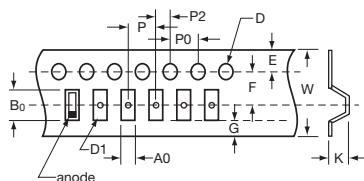
### PLASTIC TAPE DIMENSIONS TAJ ESCC, TAJ CECC, TBJ CWR11, TBJ COTS+, T4J, TBM, NBM, NBS, TES AND TCB SERIES

Case	$A_0 \pm 0.10$	$B_0 \pm 0.10$	$K \pm 0.10$	$W \pm 0.30$	$E \pm 0.10$	$F \pm 0.05$	G min.	$P \pm 0.10$	$P_2 \pm 0.05$	$P_0 \pm 0.10$	$D^{+0.20}_{-0.00}$	$D_1^{+0.25}_{-0.00}$
A	1.83	3.57	1.87	8.00	1.75	3.50	0.75	4.00	2.00	4.00	1.50	1.00
B	3.15	3.77	2.22	8.00	1.75	3.50	0.75	4.00	2.00	4.00	1.50	1.00
C	3.45	6.40	2.92	12.00	1.75	5.50	0.75	8.00	2.00	4.00	1.50	1.50
D	4.48	7.62	3.22	12.00	1.75	5.50	0.75	8.00	2.00	4.00	1.50	1.50
E	4.50	7.50	4.50	12.00	1.75	5.50	0.75	8.00	2.00	4.00	1.50	1.50
U	6.19	7.66	4.72	16.00	1.75	7.50	0.75	8.00	2.00	4.00	1.50	1.50
V	6.43	7.44	3.84	12.00	1.75	5.50	0.75	8.00	2.00	4.00	1.50	1.50

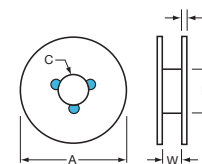
### PLASTIC TAPE DIMENSIONS TBC CWR15, COTS+, TBC HRC5000 AND TBC HRC6000 SERIES

Case	$A_0 \pm 0.10$	$B_0 \pm 0.10$	$K \pm 0.10$	$W \pm 0.30$	$E \pm 0.10$	$F \pm 0.05$	G min.	$P \pm 0.10$	$P_2 \pm 0.05$	$P_0 \pm 0.10$	$D \pm 0.05$
A	1.91	3.53	1.93	12.00	1.75	5.50	0.75	4.00	2.00	4.00	1.55
B	3.30	4.17	2.03	12.00	1.75	5.50	0.75	8.00	2.00	4.00	1.55
K	0.75	1.26	0.67	8.00	1.75	3.50	0.75	2.00	2.00	4.00	1.55
L	1.05	1.90	1.17	8.00	1.75	3.50	0.75	4.00	2.00	4.00	1.55
S	1.91	3.53	1.93	12.00	1.75	5.50	0.75	4.00	2.00	4.00	1.55
R	1.65	2.45	1.68	8.00	1.75	3.50	0.75	4.00	2.00	4.00	1.55

### REEL DIMENSIONS



Reel Size	Tape	A	B	C	W	t
180mm (7")	12mm	178±2.00	50 min	13.0±0.50	12.4+1.5/-0	1.50±0.50
180mm (7")	8mm	178±2.00	50 min	13.0±0.50	8.4+1.5/-0	1.50±0.50
330mm (13")	12mm	328±2.00	50 min	13.0±0.50	12.4+1.5/-0	1.50±0.50
330mm (13")	8mm	328±2.00	50 min	13.0±0.50	8.4+1.5/-0	1.50±0.50
108mm (4.25")	8mm	108±2.00		13.0±0.50	8.4+1.5/-0	1.50±0.50



### COVER TAPE NOMINAL DIMENSIONS

Thickness: 75µm  
 Width of tape: 5.5mm (8mm tape)  
 9.5mm (12mm tape)

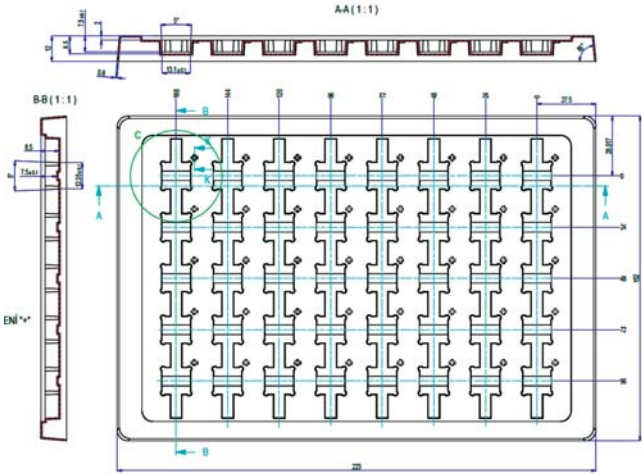


# TCH and THH

## Packaging

### TCH AND THH PACKAGING SPECIFICATION

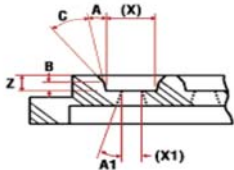
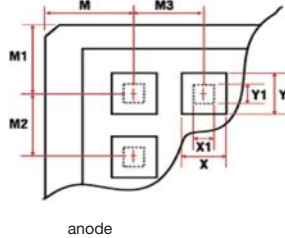
The dimensions of the tray see in the figure below. Tolerance of dimensions are  $\pm 0.1$  mm. Both case size "9" and "I" have 40 pcs per tray.



### OVERALL CHIP TRAY SIZE

Size	Height	Flatness
50.80mm $\pm 0.10$ mm	3.96mm <sup>+0.05mm</sup> / <sub>-0.08mm</sub>	0.10mm

### PLASTIC CHIP TRAY



E Case

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