

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 _t)	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 (0.273)	5.41 (0.213)	2.74 (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_R (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated voltage DC (V _R) 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					A		
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	X
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					



HOW TO ORDER

COTS-PLUS & MIL QPL (CWR19):

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	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 8 for additional packaging options.	Inspection Level S = Std. Conformance L = Group A M = MIL (JAN) CWR19	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

For RoHS compliant products, please select correct termination style.

CWR19 P/N CROSS REFERENCE:

CWR19	D	^	227	*	@	H	+	□
Type	Voltage Code C = 4Vdc D = 6Vdc F = 10Vdc H = 15Vdc J = 20Vdc K = 25Vdc M = 35Vdc	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	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 8 for additional packaging options.

For RoHS compliant products, please select correct termination style.

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	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 8 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

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 _R)	≤ 85°C:	4	6	10	15	20	25	35	
Category Voltage (V _C)	≤ 125°C:	2.7	4	6.7	10	13.3	16.7	23.3	
Surge Voltage (V _S)	≤ 85°C:	5.3	8	13.3	20	26.7	33.3	46.7	
Surge Voltage (V _S)	≤ 125°C:	3.5	5.3	8.7	13.3	17.8	22.2	31.1	
Temperature Range:	-55°C to +125°C								

RATING & PART NUMBER REFERENCE

CWR19 P/N	AVX MIL & COTS-Plus P/N		AVX SRC9000 P/N		Case	Parametric Specifications by Rating per MIL-PRF-55365/11			Typical RMS Ripple Data by Rating									
	AVX MIL & COTS-Plus P/N	AVX SRC9000 P/N	Cap @ 120Hz µF @ 25°C	DC Rated Voltage @ ±85°C		ESR @ 100kHz @ +25°C	DF Max +(-65/125)°C	DF Max +25°C (%)	DF Max -55°C (%)	Power Dissipation W	25°C Ripple (100kHz) A	85°C Ripple (100kHz) A	125°C Ripple (100kHz) A	25°C Ripple (100kHz) V	85°C Ripple (100kHz) V	125°C Ripple (100kHz) V		
CWR19H105@A+	TAZ A 105 * 015 C □ □ @ 0 A ++	TAZ A 105 * 015 C □ □ @ 9 A ++	A	1	15	15	6	8	8	0.050	0.06	0.05	0.02	0.87	0.78	0.35		
CWR19H155@A+	TAZ A 155 * 015 C □ □ @ 0 A ++	TAZ A 155 * 015 C □ □ @ 9 A ++	A	1.5	15	15	6	8	8	0.050	0.06	0.05	0.02	0.87	0.78	0.35		
CWR19H225@A+	TAZ A 225 * 015 C □ □ @ 0 A ++	TAZ A 225 * 015 C □ □ @ 9 A ++	A	2.2	15	15	6	8	8	0.050	0.06	0.05	0.02	0.87	0.78	0.35		
CWR19H335@B+	TAZ B 335 * 015 C □ □ @ 0 A ++	TAZ B 335 * 015 C □ □ @ 9 A ++	B	3.3	15	9	6	8	8	0.070	0.09	0.08	0.04	0.79	0.71	0.32		
CWR19H475@B+	TAZ B 475 * 015 C □ □ @ 0 A ++	TAZ B 475 * 015 C □ □ @ 9 A ++	B	4.7	15	5	6	8	8	0.070	0.12	0.11	0.05	0.59	0.53	0.24		
CWR19H475@D+	TAZ D 475 * 015 C □ □ @ 0 A ++	TAZ D 475 * 015 C □ □ @ 9 A ++	D	4.7	15	5.5	6	8	8	0.080	0.12	0.10	0.05	0.64	0.58	0.28		
CWR19H475@H+	TAZ H 475 * 015 C □ □ @ 0 A ++	TAZ H 475 * 015 C □ □ @ 9 A ++	H	4.7	15	6	6	8	8	0.080	0.12	0.10	0.05	0.69	0.62	0.28		
CWR19H685@D+	TAZ D 685 * 015 C □ □ @ 0 A ++	TAZ D 685 * 015 C □ □ @ 9 A ++	D	6.8	15	6	6	8	8	0.080	0.12	0.10	0.05	0.69	0.62	0.28		
CWR19H106@D+	TAZ D 106 * 015 C □ □ @ 0 A ++	TAZ D 106 * 015 C □ □ @ 9 A ++	D	10	15	6	6	8	8	0.080	0.12	0.10	0.05	0.69	0.62	0.28		
CWR19H106@E+	TAZ E 106 * 015 C □ □ @ 0 A ++	TAZ E 106 * 015 C □ □ @ 9 A ++	E	10	15	4	6	8	8	0.090	0.15	0.14	0.06	0.80	0.54	0.24		
CWR19H156@E+	TAZ E 156 * 015 C □ □ @ 0 A ++	TAZ E 156 * 015 C □ □ @ 9 A ++	E	15	15	4	6	8	8	0.090	0.15	0.14	0.06	0.80	0.54	0.24		
CWR19H156@F+	TAZ F 156 * 015 C □ □ @ 0 A ++	TAZ F 156 * 015 C □ □ @ 9 A ++	F	15	15	3	6	8	10	0.100	0.18	0.16	0.07	0.55	0.49	0.22		
CWR19H226@F+	TAZ F 226 * 015 C □ □ @ 0 A ++	TAZ F 226 * 015 C □ □ @ 9 A ++	F	22	15	3	6	8	10	0.100	0.18	0.16	0.07	0.55	0.49	0.22		
CWR19H336@G+	TAZ G 336 * 015 C □ □ @ 0 A ++	TAZ G 336 * 015 C □ □ @ 9 A ++	G	33	15	1.1	6	8	10	0.125	0.34	0.30	0.13	0.37	0.33	0.15		
CWR19H476@G+	TAZ G 476 * 015 C □ □ @ 0 A ++	TAZ G 476 * 015 C □ □ @ 9 A ++	G	47	15	1.1	10	10	10	0.125	0.34	0.30	0.13	0.37	0.33	0.15		
CWR19H686@H+	TAZ H 686 * 015 C □ □ @ 0 A ++	TAZ H 686 * 015 C □ □ @ 9 A ++	H	68	15	0.9	10	10	10	0.150	0.41	0.37	0.16	0.37	0.33	0.15		
CWR19H107@H+	TAZ H 107 * 015 C □ □ @ 0 A ++	TAZ H 107 * 015 C □ □ @ 9 A ++	H	100	15	0.9	15	10	12	0.150	0.41	0.37	0.16	0.37	0.33	0.15		
CWR19J684@A+	TAZ A 684 * 020 C □ □ @ 0 A ++	TAZ A 684 * 020 C □ □ @ 9 A ++	A	0.68	20	15	10	12	6	8	0.050	0.06	0.05	0.02	0.87	0.78	0.35	
CWR19J105@A+	TAZ A 105 * 020 C □ □ @ 0 A ++	TAZ A 105 * 020 C □ □ @ 9 A ++	A	1	20	15	10	12	6	8	0.050	0.06	0.05	0.02	0.87	0.78	0.35	
CWR19J155@B+	TAZ B 155 * 020 C □ □ @ 0 A ++	TAZ B 155 * 020 C □ □ @ 9 A ++	B	1.5	20	9	10	12	6	8	0.070	0.09	0.08	0.04	0.79	0.71	0.32	
CWR19J225@B+	TAZ B 225 * 020 C □ □ @ 0 A ++	TAZ B 225 * 020 C □ □ @ 9 A ++	B	2.2	20	9	10	12	6	8	0.070	0.09	0.08	0.04	0.79	0.71	0.32	
CWR19J335@D+	TAZ D 335 * 020 C □ □ @ 0 A ++	TAZ D 335 * 020 C □ □ @ 9 A ++	D	3.3	20	6	10	12	6	8	0.080	0.12	0.10	0.05	0.69	0.62	0.28	
CWR19J475@E+	TAZ E 475 * 020 C □ □ @ 0 A ++	TAZ E 475 * 020 C □ □ @ 9 A ++	E	4.7	20	5	2	20	24	6	8	0.090	0.12	0.11	0.05	0.73	0.66	0.29
CWR19J106@E+	TAZ E 106 * 020 C □ □ @ 0 A ++	TAZ E 106 * 020 C □ □ @ 9 A ++	E	10	20	5	2	20	24	6	8	0.090	0.13	0.12	0.05	0.67	0.60	0.27
CWR19J156@F+	TAZ F 156 * 020 C □ □ @ 0 A ++	TAZ F 156 * 020 C □ □ @ 9 A ++	F	15	20	3	3	30	36	6	8	0.100	0.18	0.16	0.07	0.55	0.49	0.22
CWR19J226@G+	TAZ G 226 * 020 C □ □ @ 0 A ++	TAZ G 226 * 020 C □ □ @ 9 A ++	G	22	20	2.5	4	40	48	6	8	0.125	0.22	0.20	0.09	0.56	0.50	0.22
CWR19J336@H+	TAZ H 336 * 020 C □ □ @ 0 A ++	TAZ H 336 * 020 C □ □ @ 9 A ++	H	33	20	0.9	6	60	72	8	8	0.150	0.41	0.37	0.16	0.37	0.33	0.15
CWR19J476@H+	TAZ H 476 * 020 C □ □ @ 0 A ++	TAZ H 476 * 020 C □ □ @ 9 A ++	H	47	20	0.9	10	100	120	8	10	0.150	0.41	0.37	0.16	0.37	0.33	0.15
CWR19J476@X+	TAZ X 476 * 020 C □ □ @ 0 A ++	TAZ X 476 * 020 C □ □ @ 9 A ++	X	47	20	0.9	10	100	120	8	10	0.150	0.41	0.37	0.16	0.37	0.33	0.15
CWR19K474@A+	TAZ A 474 * 025 C □ □ @ 0 A ++	TAZ A 474 * 025 C □ □ @ 9 A ++	A	0.47	25	15	1	10	12	6	8	0.050	0.06	0.05	0.02	0.87	0.78	0.35
CWR19K105@B+	TAZ B 105 * 025 C □ □ @ 0 A ++	TAZ B 105 * 025 C □ □ @ 9 A ++	B	1	25	10	1	10	12	6	8	0.070	0.08	0.08	0.03	0.84	0.75	0.33
CWR19K225@D+	TAZ D 225 * 025 C □ □ @ 0 A ++	TAZ D 225 * 025 C □ □ @ 9 A ++	D	2.2	25	6	1	10	12	6	8	0.080	0.12	0.10	0.05	0.69	0.62	0.28
CWR19K335@F+	TAZ F 335 * 025 C □ □ @ 0 A ++	TAZ F 335 * 025 C □ □ @ 9 A ++	F	3.3	25	4	1	10	12	6	8	0.090	0.15	0.14	0.06	0.60	0.54	0.24
CWR19K476@G+	TAZ G 476 * 025 C □ □ @ 0 A ++	TAZ G 476 * 025 C □ □ @ 9 A ++	G	4.7	25	3	2	20	24	6	8	0.100	0.18	0.16	0.07	0.55	0.49	0.22
CWR19K156@H+	TAZ H 156 * 025 C □ □ @ 0 A ++	TAZ H 156 * 025 C □ □ @ 9 A ++	H	15	25	1.4	4	40	48	6	8	0.125	0.30	0.27	0.12	0.42	0.38	0.17
CWR19K226@H+	TAZ H 226 * 025 C □ □ @ 0 A ++	TAZ H 226 * 025 C □ □ @ 9 A ++	H	22	25	1.4	6	60	72	6	8	0.125	0.30	0.27	0.12	0.42	0.38	0.17
CWR19K336@H+	TAZ H 336 * 025 C □ □ @ 0 A ++	TAZ H 336 * 025 C □ □ @ 9 A ++	H	33	25	0.9	10	100	120	8	10	0.150	0.41	0.37	0.16	0.37	0.33	0.15
CWR19M334@A+	TAZ A 334 * 035 C □ □ @ 0 A ++	TAZ A 334 * 035 C □ □ @ 9 A ++	A	0.33	35	22	2	10	12	6	8	0.050	0.06	0.04	0.02	1.05	0.94	0.42
CWR19M685@G+	TAZ G 685 * 035 C □ □ @ 0 A ++	TAZ G 685 * 035 C □ □ @ 9 A ++	G	6.8	35	1.5	3	30	36	6	8	0.125	0.29	0.26	0.12	0.43	0.39	0.17
CWR19M106@H+	TAZ H 106 * 035 C □ □ @ 0 A ++	TAZ H 106 * 035 C □ □ @ 9 A ++	H	10	35	0.9	4	40	48	8	10	0.150	0.41	0.37	0.16	0.37	0.33	0.15
CWR19M156@X+	TAZ X 156 * 035 C □ □ @ 0 A ++	TAZ X 156 * 035 C □ □ @ 9 A ++	X	15	35	0.9	6	60	72	6	8	0.200	0.47	0.42	0.19	0.42	0.38	0.17

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.

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