

# SMPS Stacked MLC Capacitors



## (SM Style) Technical Information on SMPS Capacitors

### ELECTRICAL SPECIFICATIONS

#### Temperature Coefficient

C0G: A Temperature Coefficient -  $0 \pm 30$  ppm/°C, -55° to +125°C  
 X7R: C Temperature Coefficient -  $\pm 15\%$ , -55° to +125°C  
 Z5U: E Temperature Coefficient - +22, -56%, +10° to +85°C

#### Capacitance Test (MIL-STD-202 Method 305)

C0G: 25°C,  $1.0 \pm 0.2$  Vrms (open circuit voltage) at 1KHz  
 X7R: 25°C,  $1.0 \pm 0.2$  Vrms (open circuit voltage) at 1KHz  
 Z5U: 25°C, 0.5 Vrms max (open circuit voltage) at 1KHz

#### Dissipation Factor 25°C

C0G: 0.15% Max @ 25°C,  $1.0 \pm 0.2$  Vrms (open circuit voltage) at 1KHz  
 X7R: 2.5% Max @ 25°C,  $1.0 \pm 0.2$  Vrms (open circuit voltage) at 1KHz  
 Z5U: 3.0% Max @ 25°C, 0.5 Vrms max (open circuit voltage) at 1KHz

#### Insulation Resistance 25°C (MIL-STD-202 Method 302)

C0G and X7R: 100K MΩ or 1000 MΩ-μF, whichever is less.  
 Z5U: 10K MΩ or 1000 MΩ-μF, whichever is less.

#### Insulation Resistance 125°C (MIL-STD-202 Method 302)

C0G and X7R: 10K MΩ or 100 MΩ-μF, whichever is less.  
 Z5U: 1K MΩ or 100 MΩ-μF, whichever is less.

#### Dielectric Withstanding Voltage 25°C (Flash Test)

C0G and X7R: 250% rated voltage for 5 seconds with 50 mA max charging current. (500 Volt units @ 750 VDC)  
 Z5U: 200% rated voltage for 5 seconds with 50 mA max charging current.

#### Life Test (1000 hrs)

C0G and X7R: 200% rated voltage at +125°C. (500 Volt units @ 600 VDC)  
 Z5U: 150% rated voltage at +85°C

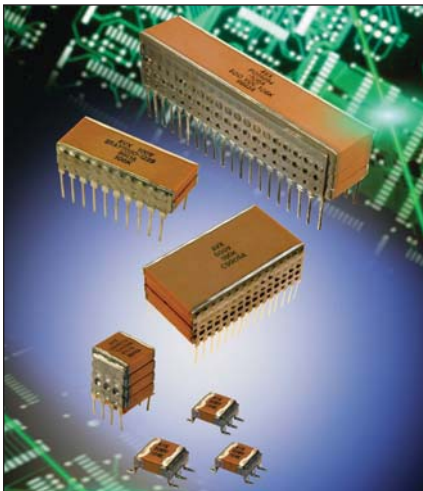
#### Moisture Resistance (MIL-STD-202 Method 106)

C0G, X7R, Z5U: Ten cycles with no voltage applied.

#### Thermal Shock (MIL-STD-202 Method 107, Condition A)

#### Immersion Cycling (MIL-STD-202 Method 104, Condition B)

#### Resistance To Solder Heat (MIL-STD-202, Method 210, Condition B, for 20 seconds)



### Typical ESR Performance (mΩ)

	Aluminum Electrolytic 100μF/50V	Low ESR Solid Tantalum 100μF/10V	Solid Aluminum Electrolytic 100μF/16V	MLCC SMPS 100μF/50V	MLCC SMPS 4.7μF/50V
ESR @ 10KHz	300	72	29	3	66
ESR @ 50KHz	285	67	22	2	23
ESR @ 100KHz	280	62	20	2.5	15
ESR @ 500KHz	265	56	18	4	8
ESR @ 1MHz	265	56	17	7	7.5
ESR @ 5MHz	335	72	17	12.5	8
ESR @ 10MHz	560	91	22	20	14

### HOW TO ORDER

### AVX Styles: SM-1, SM-2, SM-3, SM-4, SM-5, SM-6

SM0	1	7	C	106	M	A	N	650
<b>AVX Style</b> SM0 = Uncoated SM5 = Epoxy Coated	<b>Size</b> See Dimensions chart	<b>Voltage</b> 50V = 5 100V = 1 200V = 2 500V = 7	<b>Temperature Coefficient</b> C0G = A X7R = C Z5U = E	<b>Capacitance Code</b> (2 significant digits + number of zeros) 10 pF = 100 100 pF = 101 1,000 pF = 102 22,000 pF = 223 220,000 pF = 224 1 μF = 105 10 μF = 106 100 μF = 107	<b>Capacitance Tolerance</b> C0G: J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$ X7R: K = $\pm 10\%$ M = $\pm 20\%$ Z = +80%, -20% Z5U: M = $\pm 20\%$ Z = +80%, -20% P = GMV (+100, -0%)	<b>Test Level</b> A = Standard B = Hi-Rel* 5 = Standard/MIL**	<b>Termination</b> N = Straight Lead J = Leads formed in L = Leads formed out P = P Style Leads Z = Z Style Leads	<b>Height</b> Max Dimension "A" 120 = 0.120" 240 = 0.240" 360 = 0.360" 480 = 0.480" 650 = 0.650"

Note: Capacitors with X7R and Z5U dielectrics are not intended for applications across AC supply mains or AC line filtering with polarity reversal. Contact plant for recommendations.

\*Hi-Rel screening for C0G and X7R only. Screening consists of 100% Group A (B Level), Subgroup 1 per MIL-PRF-49470.

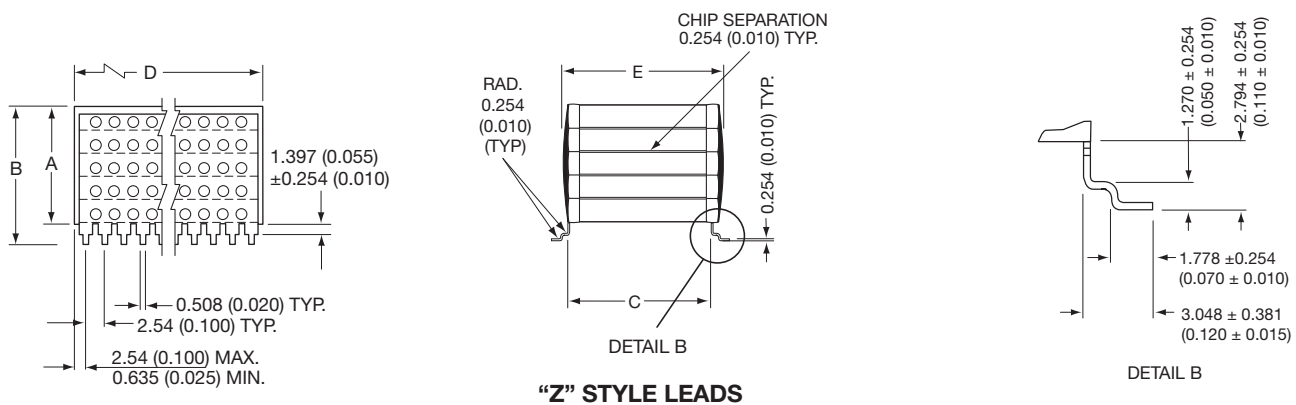
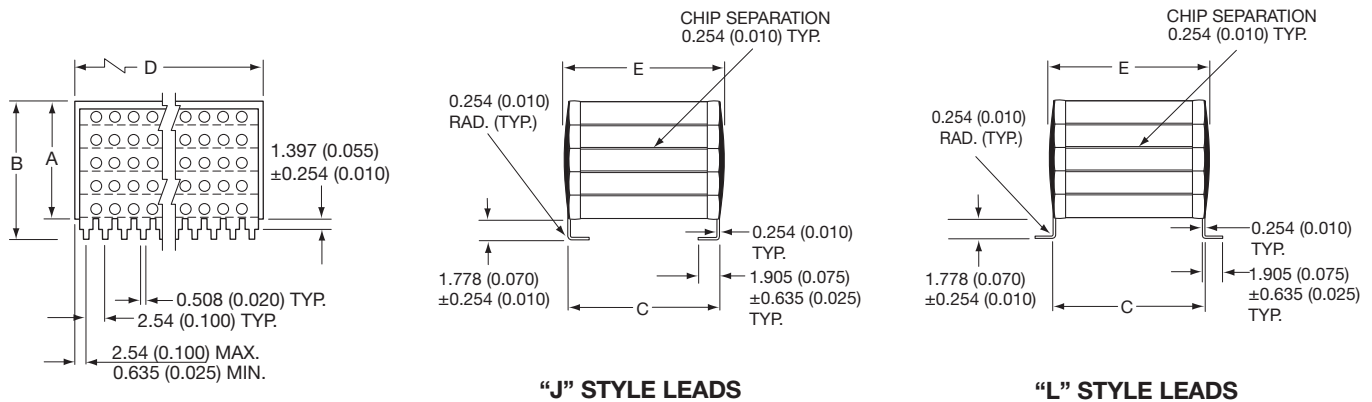
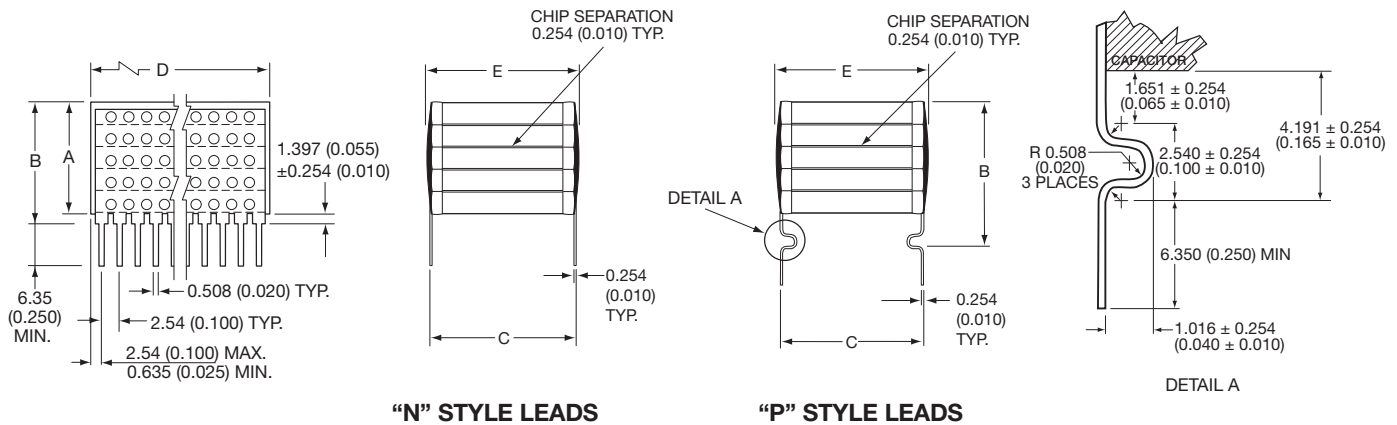
\*\*Form, fit & Function equivalent to MIL-PRF-49470 Part. Applies to 50V rated parts only. No Screening.



# SMPS Stacked MLC Capacitors



(SM Style) Surface Mount and Thru-Hole Styles (SM0, SM5)



## DIMENSIONS

millimeters (inches)

Style	A (max.)	B (max.)	C ±.635 (±0.025)	D ±.635 (±0.025)	E (max.)	No. of Leads per side
SM-1	See page 10 for maximum "A" Dimension	For "N" Style Leads: "A" Dimension Plus 1.651 (0.065) For "J" & "L" Style Leads: "A" Dimension Plus 2.032 (0.080) For "P" Style Leads: "A" Dimension Plus 4.445 (0.175) For "Z" Style Leads: "A" Dimension Plus 3.048 (0.120)	11.4 (0.450)	52.1 (2.050)	12.7 (0.500)	20
SM-2			20.3 (0.800)	38.4 (1.510)	22.1 (0.870)	15
SM-3			11.4 (0.450)	26.7 (1.050)	12.7 (0.500)	10
SM-4			10.2 (0.400)	10.2 (0.400)	11.2 (0.440)	4
SM-5			6.35 (0.250)	6.35 (0.250)	7.62 (0.300)	3
SM-6			31.8 (1.250)	52.1 (2.050)	34.3 (1.350)	20

Note: For SM5 add 0.127 (0.005) to max. and nominal dimensions A, B, D, & E



# SMPS Stacked MLC Capacitors



(SM Style)

## Max Capacitance (μF) Available Versus Style with Height (A) of 0.120" - 3.05mm

AVX STYLE	SM01 _____ AN120				SM02 _____ AN120				SM03 _____ AN120				SM04 _____ AN120				SM05 _____ AN120				SM06 _____ AN120							
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	1.0	.70	.40	.18	1.2	1.0	.60	.26	.47	.40	.20	.09	.16	.13	.07	.02	.05	.04	.02	.01	3.2	2.4	1.3	.50				
X7R	27	12	7.0	2.6	41	18	11	4.0	18	6.0	3.6	1.3	7.5	1.8	1.1	.40	2.8	.68	.40	.16	80	40	24	9.4				
Z5U	84	32	12	--	110	46	34	--	40	15	6.0	--	12	4.6	3.0	--	4.6	1.8	.72	--	260	140	92	--				

## Max Capacitance (μF) Available Versus Style with Height (A) of 0.240" - 6.10mm

AVX STYLE	SM01 _____ AN240				SM02 _____ AN240				SM03 _____ AN240				SM04 _____ AN240				SM05 _____ AN240				SM06 _____ AN240							
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	2.0	1.4	.80	.36	2.4	2.0	1.2	.52	1.0	.80	.40	.18	.32	.26	.14	.05	.10	.08	.05	.02	6.4	4.8	2.6	1.0				
X7R	54	24	14	5.2	82	36	22	8.0	36	12	7.2	2.6	15	3.6	2.2	.80	5.6	1.3	.80	.32	160	80	48	18				
Z5U	160	64	24	--	230	92	68	--	80	30	12	--	24	9.2	6.0	--	9.2	3.6	1.4	--	520	280	180	--				

## Max Capacitance (μF) Available Versus Style with Height (A) of 0.360" - 9.14mm

AVX STYLE	SM01 _____ AN360				SM02 _____ AN360				SM03 _____ AN360				SM04 _____ AN360				SM05 _____ AN360				SM06 _____ AN360							
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	3.0	2.1	1.2	.54	3.6	3.0	1.8	.78	1.5	1.2	.60	.27	.48	.39	.21	.07	.15	.12	.07	.03	9.6	7.2	3.9	1.5				
X7R	82	36	21	7.8	120	54	33	12	54	18	10	3.9	22	5.4	3.3	1.2	8.2	2.0	1.2	.48	240	120	72	28				
Z5U	250	96	36	--	350	130	100	--	120	45	18	--	36	13	9.0	--	13	5.4	2.1	--	780	430	270	--				

## Max Capacitance (μF) Available Versus Style with Height (A) of 0.480" - 12.2mm

AVX STYLE	SM01 _____ AN480				SM02 _____ AN480				SM03 _____ AN480				SM04 _____ AN480				SM05 _____ AN480				SM06 _____ AN480							
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	4.0	2.8	1.6	.72	4.8	4.0	2.2	1.0	2.0	1.6	.80	.36	.64	.52	.28	.10	.20	.16	.10	.04	12	9.6	5.2	2.0				
X7R	110	48	28	10	160	72	44	16	72	24	14	5.2	30	7.2	4.4	1.6	10	2.7	1.6	.64	320	160	96	37				
Z5U	330	120	48	--	470	180	130	--	160	60	24	--	48	18	12	--	18	7.2	2.8	--	1000	570	360	--				

## Max Capacitance (μF) Available Versus Style with Height (A) of 0.650" - 16.5mm

AVX STYLE	SM01 _____ AN650				SM02 _____ AN650				SM03 _____ AN650				SM04 _____ AN650				SM05 _____ AN650				SM06 _____ AN650							
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	5.0	3.5	2.0	.90	6.0	5.0	3.0	1.3	2.5	2.0	1.0	.47	.80	.65	.35	.12	.25	.20	.12	.05	16	12	6.5	2.5				
X7R	130	60	35	13	200	90	55	20	90	30	18	6.5	36	9.0	5.5	2.0	12	3.4	2.0	.80	400	200	120	47				
Z5U	420	160	60	--	590	230	170	--	200	75	30	--	60	23	15	--	23	9.0	3.6	--	1300	720	460	--				

# SMPS Stacked MLC Capacitors



## (SM Style) SM Military Styles MIL-PRF-49470

### AVX IS QUALIFIED TO MIL-PRF-49470/1 AND MIL-PRF-49470/2

The SMPS capacitors are designed for high current, high-power and high-temperature applications. These capacitors have very low ESR (Equivalent Series Resistance) and ESL (Equivalent Series Inductance). SMPS Series capacitors offer design and component engineers a proven technology specifically designed for programs requiring high reliability performance in harsh environments.

MIL-PRF-49470 SMPS Series capacitors are primarily used in input/output filters of high-power and high-voltage power supplies as well as in bus filters and DC snubbers for high power inverters and other high-current applications. These capacitors are available with through-hole and surface mount leads. The operating temperature is -55°C to +125°C. The MIL-PRF-49470 capacitors are preferred over the

DSCC drawing 87106 capacitors. MIL-PRF-49470 specification was created to produce a robust replacement for DSCC 87106. MIL-PRF-49470 offers two product levels.

Level “B” is the standard reliability. Level “T” is the high reliability suitable for space application.

AVX is qualified to supply MIL-PRF-49470/1 parts. These are unencapsulated ceramic dielectric, switch mode power supply capacitors. AVX is also qualified to supply MIL-PRF-49470/2 parts. These are encapsulated ceramic dielectric, switch mode power supply capacitors.

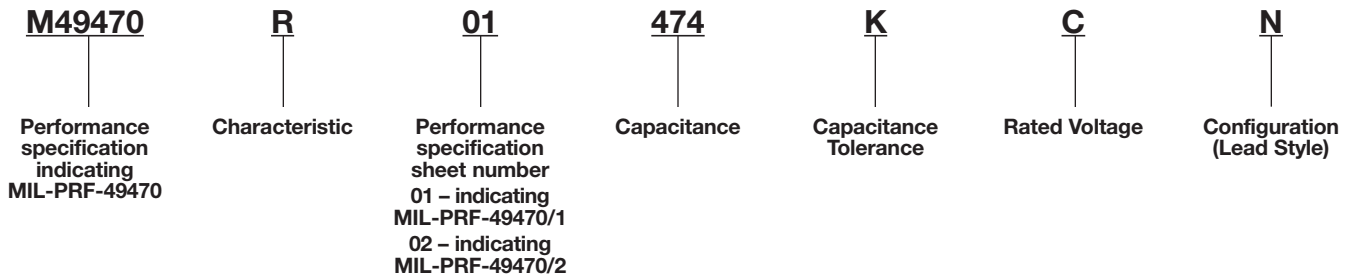
#### PLEASE CONTACT THE DSCC WEBSITE

[\[http://www.dscclia.mil/Programs/MilSpec/DocSearch.asp\]](http://www.dscclia.mil/Programs/MilSpec/DocSearch.asp) for details on testing, electrical, mechanical and part number options.

#### PLEASE CONTACT THE DSCC WEBSITE

[\[http://www.dscclia.mil/Programs/QmlQpl/\]](http://www.dscclia.mil/Programs/QmlQpl/) for the latest QPL (Qualified Products List).

### HOW TO ORDER



For “T” level parts, replace the “M” in the pin with “T” (for example M49470R01474KCN becomes T49470R01474KCN) MIL-PRF-49470 contains additional capacitors that are not available in 87106, such as additional lead configurations and lower profile parts.

On the pages to follow is the general dimensional outline along with a cross reference from 87106 parts to MIL-PRF-49470 parts.

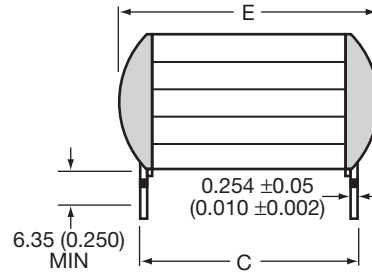
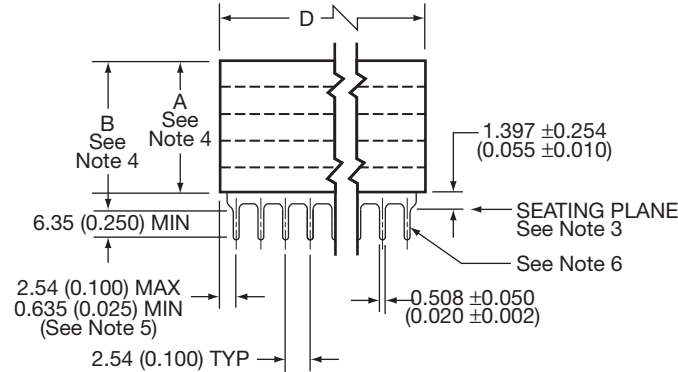
# SMPS Stacked MLC Capacitors



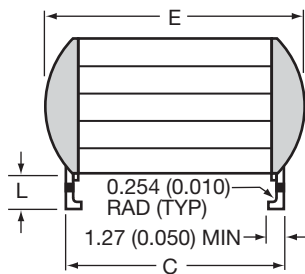
## (SM Style) SM Military Styles MIL-PRF-49470/1

### MIL-PRF-49470/1

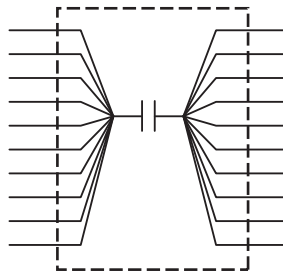
MIL-PRF-49470/1 - capacitor, fixed, ceramic dielectric, switch mode power supply (general purpose and temperature stable), standard reliability and high reliability unencapsulated, Style PS01.



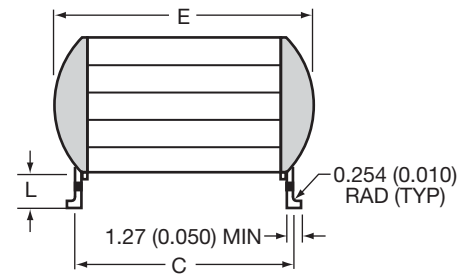
**LEAD STYLE N AND A**



**LEAD STYLE J AND C**



**CIRCUIT DIAGRAM**



**LEAD STYLE L AND B**

### DIMENSIONS:

millimeters (inches)

Case Code	C ±0.635 (±0.025)	D		E (max.)	Number of Leads per side
		Min.	Max.		
1	11.4 (0.450)	49.5 (1.950)	52.7 (2.075)	12.7 (0.500)	20
2	20.3 (0.800)	36.8 (1.450)	40.0 (1.535)	22.1 (0.870)	15
3	11.4 (0.450)	24.1 (0.950)	27.3 (1.075)	12.7 (0.500)	10
4	10.2 (0.400)	8.89 (0.350)	10.8 (0.425)	11.2 (0.440)	4
5	6.35 (0.250)	6.20 (0.224)	6.97 (0.275)	7.62 (0.300)	3
6	31.8 (1.250)	49.5 (1.950)	52.7 (2.075)	34.3 (1.350)	20

#### NOTES:

1. Dimensions are in millimeters (inches)
2. Unless otherwise specified, tolerances are 0.254 (±0.010).
3. Lead frame configuration is shown as typical above the seating plane.
4. See table I of MIL-PRF-49470/1 for specific maximum A dimension. For maximum B dimension, add 1.65 (0.065) to the appropriate A dimension. For all lead styles, the number of chips is determined by the capacitance and voltage rating.
5. For case code 5, dimensions shall be 2.54 (0.100) maximum and 0.305 (0.012) minimum.
6. Lead alignment within pin rows shall be within ±0.10 (0.005).

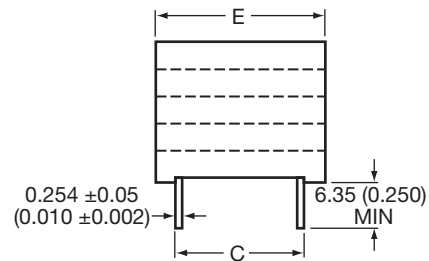
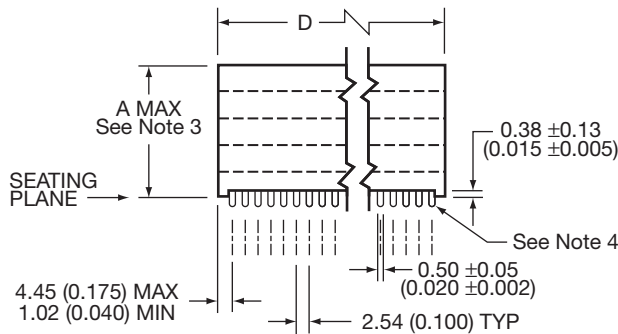
# SMPS Stacked MLC Capacitors



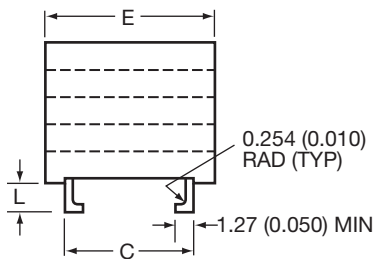
## (SM Style) SM Military Styles MIL-PRF-49470/2

### MIL-PRF-49470/2

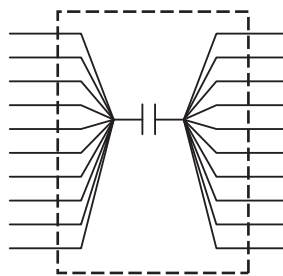
MIL-PRF-49470/2 - capacitor, fixed, ceramic dielectric, switch mode power supply (general purpose and temperature stable), standard reliability and high reliability encapsulated, Style PS02.



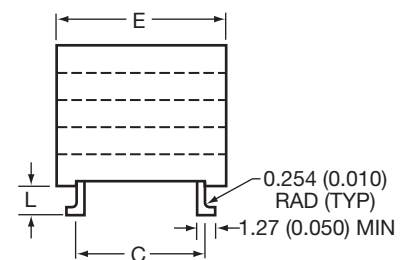
**LEAD STYLE N AND A**



**LEAD STYLE J AND C**



**CIRCUIT DIAGRAM**



**LEAD STYLE L AND B**

### DIMENSIONS:

millimeters (inches)

Case Code	C ±0.635 (±0.025)	D ±0.635 (±0.025)	E (max)	Number of Leads per side
1	11.4 (0.450)	54.7 (2.155)	14.7 (0.580)	20
2	20.3 (0.800)	41.0 (1.615)	24.1 (0.950)	15
3	11.4 (0.450)	29.3 (1.155)	14.7 (0.580)	10
4	10.2 (0.400)	12.3 (0.485)	12.3 (0.485)	4
5	6.35 (0.250)	9.02 (0.355)	9.02 (0.355)	3
6	31.8 (1.250)	54.7 (2.155)	36.3 (1.430)	20

#### NOTES:

1. Dimensions are in millimeters (inches)
2. Unless otherwise specified, tolerances are 0.254 (±0.001).
3. See table I of MIL-PRF-49470/2 for specific maximum A dimension. For all lead styles, the number of chips is determined by the capacitance and voltage rating.
4. Lead alignment within pin rows shall be within ±0.10 (0.004).



# SMPS Stacked MLC Capacitors



## (SM Style) SM Military Styles MIL-PRF-49470

87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
1	M49470X01105KAN	SM055C105KHN120	1.0	±10%	5	50
2	M49470X01105MAN	SM055C105MHN120	1.0	±20%	5	50
3	M49470X01125KAN	SM055C125KHN120	1.2	±10%	5	50
4	M49470X01125MAN	SM055C125MHN120	1.2	±20%	5	50
5	M49470X01155KAN	SM055C155KHN240	1.5	±10%	5	50
6	M49470X01155MAN	SM055C155MHN240	1.5	±20%	5	50
7	M49470X01185KAN	SM055C185KHN240	1.8	±10%	5	50
8	M49470X01185MAN	SM055C185MHN240	1.8	±20%	5	50
9	M49470X01225KAN	SM055C225KHN240	2.2	±10%	5	50
10	M49470X01225MAN	SM055C225MHN240	2.2	±20%	5	50
11	M49470X01275KAN	SM055C275KHN360	2.7	±10%	5	50
12	M49470X01275MAN	SM055C275MHN360	2.7	±20%	5	50
13	M49470X01335KAN	SM055C335KHN360	3.3	±10%	5	50
14	M49470X01335MAN	SM055C335MHN360	3.3	±20%	5	50
15	M49470X01395KAN	SM055C395KHN480	3.9	±10%	5	50
16	M49470X01395MAN	SM055C395MHN480	3.9	±20%	5	50
17	M49470X01475KAN	SM055C475KHN480	4.7	±10%	5	50
18	M49470X01475MAN	SM055C475MHN480	4.7	±20%	5	50
	M49470X01475KAA	SM045C475KHN240	4.7	±10%	4	50
	M49470X01475MAA	SM045C475MHN240	4.7	±20%	4	50
19	M49470X01565KAN	SM055C565KHN650	5.6	±10%	5	50
20	M49470X01565MAN	SM055C565MHN650	5.6	±20%	5	50
	M49470X01565KAA	SM045C565KHN240	5.6	±10%	4	50
	M49470X01565MAA	SM045C565MHN240	5.6	±20%	4	50
21	M49470X01825KAN	SM045C825KHN360	8.2	±10%	4	50
22	M49470X01825MAN	SM045C825MHN360	8.2	±20%	4	50
23	M49470X01106KAN	SM045C106KHN480	10	±10%	4	50
24	M49470X01106MAN	SM045C106MHN480	10	±20%	4	50
25	M49470X01126KAN	SM045C126KHN480	12	±10%	4	50
26	M49470X01126MAN	SM045C126MHN480	12	±20%	4	50
27	M49470X01156KAN	SM045C156KHN650	15	±10%	4	50
28	M49470X01156MAN	SM045C156MHN650	15	±20%	4	50
	M49470X01156KAA	SM035C156KHN240	15	±10%	3	50
	M49470X01156MAA	SM035C156MHN240	15	±20%	3	50
29	M49470X01186KAN	SM035C186KHN240	18	±10%	3	50
30	M49470X01186MAN	SM035C186MHN240	18	±20%	3	50
31	M49470X01226KAN	SM035C226KHN360	22	±10%	3	50
32	M49470X01226MAN	SM035C226MHN360	22	±20%	3	50
33	M49470X01276KAN	SM035C276KHN360	27	±10%	3	50
34	M49470X01276MAN	SM035C276MHN360	27	±20%	3	50
35	M49470X01336KAN	SM035C336KHN360	33	±10%	3	50
36	M49470X01336MAN	SM035C336MHN360	33	±20%	3	50
37	M49470X01396KAN	SM035C396KHN480	39	±10%	3	50
38	M49470X01396MAN	SM035C396MHN480	39	±20%	3	50
39	M49470X01476KAN	SM035C476KHN650	47	±10%	3	50
40	M49470X01476MAN	SM035C476MHN650	47	±20%	3	50
	M49470X01476KAA	SM025C476KHN240	47	±10%	2	50
	M49470X01476MAA	SM025C476MHN240	47	±20%	2	50
41	M49470X01686KAN	SM015C686KHN480	68	±10%	1	50
42	M49470X01686MAN	SM015C686MHN480	68	±20%	1	50
	M49470X01686KAA	SM025C686KHN360	68	±10%	2	50
	M49470X01686MAA	SM025C686MHN360	68	±20%	2	50
43	M49470X01826KAN	SM015C826KHN480	82	±10%	1	50
44	M49470X01826MAN	SM015C826MHN480	82	±20%	1	50
	M49470X01826KAA	SM025C826KHN360	82	±10%	2	50
	M49470X01826MAA	SM025C826MHN360	82	±20%	2	50
45	M49470X01107KAN	SM015C107KHN650	100	±10%	1	50
46	M49470X01107MAN	SM015C107MHN650	100	±20%	1	50
	M49470X01107KAA	SM025C107KHN480	100	±10%	2	50
	M49470X01107MAA	SM025C107MHN480	100	±20%	2	50
47	M49470X01157KAN	SM025C157KHN650	150	±10%	2	50
48	M49470X01157MAN	SM025C157MHN650	150	±20%	2	50

87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
49	M49470X01187KAN	SM065C187KHN480	180	±10%	6	50
50	M49470X01187MAN	SM065C187MHN480	180	±20%	6	50
51	M49470X01227KAN	SM065C227KHN480	220	±10%	6	50
52	M49470X01227MAN	SM065C227MHN480	220	±20%	6	50
53	M49470X01277KAN	SM065C277KHN650	270	±10%	6	50
54	M49470X01277MAN	SM065C277MHN650	270	±20%	6	50
55	M49470X01684KBN	SM051C684KHN120	0.68	±10%	5	100
56	M49470X01684MBN	SM051C684MHN120	0.68	±20%	5	100
57	M49470X01824KBN	SM051C824KHN240	0.82	±10%	5	100
58	M49470X01824MBN	SM051C824MHN240	0.82	±20%	5	100
59	M49470X01105KBN	SM051C105KHN240	1.0	±10%	5	100
60	M49470X01105MBN	SM051C105MHN240	1.0	±20%	5	100
61	M49470X01125KBN	SM051C125KHN240	1.2	±10%	5	100
62	M49470X01125MBN	SM051C125MHN240	1.2	±20%	5	100
63	M49470X01155KBN	SM051C155KHN360	1.5	±10%	5	100
64	M49470X01155MBN	SM051C155MHN360	1.5	±20%	5	100
65	M49470X01185KBN	SM051C185KHN360	1.8	±10%	5	100
66	M49470X01185MBN	SM051C185MHN360	1.8	±20%	5	100
67	M49470X01225KBN	SM051C225KHN480	2.2	±10%	5	100
68	M49470X01225MBN	SM051C225MHN480	2.2	±20%	5	100
	M49470X01225KBA	SM041C225KHN240	2.2	±10%	4	100
	M49470X01225MBA	SM041C225MHN240	2.2	±20%	4	100
69	M49470X01275KBN	SM051C275KHN480	2.7	±10%	5	100
70	M49470X01275MBN	SM051C275MHN480	2.7	±20%	5	100
71	M49470X01335KBN	SM051C335KHN650	3.3	±10%	5	100
72	M49470X01335MBN	SM051C335MHN650	3.3	±20%	5	100
	M49470X01335KBA	SM041C335KHN240	3.3	±10%	4	100
	M49470X01335MBA	SM041C335MHN240	3.3	±20%	4	100
73	M49470X01395KBN	SM041C395KHN360	3.9	±10%	4	100
74	M49470X01395MBN	SM041C395MHN360	3.9	±20%	4	100
75	M49470X01475KBN	SM041C475KHN360	4.7	±10%	4	100
76	M49470X01475MBN	SM041C475MHN360	4.7	±20%	4	100
77	M49470X01565KBN	SM041C565KHN480	5.6	±10%	4	100
78	M49470X01565MBN	SM041C565MHN480	5.6	±20%	4	100
79	M49470X01685KBN	SM041C685KHN480	6.8	±10%	4	100
80	M49470X01685MBN	SM041C685MHN480	6.8	±20%	4	100
81	M49470X01825KBN	SM041C825KHN650	8.2	±10%	4	100
82	M49470X01825MBN	SM041C825MHN650	8.2	±20%	4	100
	M49470X01825KBA	SM031C825KHN240	8.2	±10%	3	100
	M49470X01825MBA	SM031C825MHN240	8.2	±20%	3	100
83	M49470X01126KBN	SM031C126KHN240	12	±10%	3	100
84	M49470X01126MBN	SM031C126MHN240	12	±20%	3	100
85	M49470X01156KBN	SM031C156KHN360	15	±10%	3	100
86	M49470X01156MBN	SM031C156MHN360	15	±20%	3	100
87	M49470X01186KBN	SM031C186KHN360	18	±10%	3	100
88	M49470X01186MBN	SM031C186MHN360	18	±20%	3	100
89	M49470X01226KBN	SM031C226KHN480	22	±10%	3	100
90	M49470X01226MBN	SM031C226MHN480	22	±20%	3	100
91	M49470X01276KBN	SM031C276KHN650	27	±10%	3	100
92	M49470X01276MBN	SM031C276MHN650	27	±20%	3	100
	M49470X01276KBA	SM021C276KHN240	27	±10%	2	100
	M49470X01276MBA	SM021C276MHN240	27	±20%	2	100
93	M49470X01336KBN	SM011C336KHN360	33	±10%	1	100
94	M49470X01336MBN	SM011C336MHN360	33	±20%	1	100
	M49470X01336KBA	SM021C336KHN240	33	±10%	2	100
	M49470X01336MBA	SM021C336MHN240	33	±20%	2	100
95	M49470X01396KBN	SM011C396KHN480	39	±10%	1	100
96	M49470X01396MBN	SM011C396MHN480	39	±20%	1	100
	M49470X01396KBA	SM021C396KHN360	39	±10%	2	100
	M49470X01396MBA	SM021C396MHN360	39	±20%	2	100
97	M49470X01476KBN	SM011C476KHN480	47	±10%	1	100
98	M49470X01476MBN	SM011C476MHN480	47	±20%	1	100



# SMPS Stacked MLC Capacitors



## (SM Style) SM Military Styles MIL-PRF-49470

87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
	M49470X01476KBA	SM021C476KHN360	47	±10%	2	100
	M49470X01476MBA	SM021C476MHN360	47	±20%	2	100
99	M49470X01566KBN	SM011C566KHN650	56	±10%	1	100
100	M49470X01566MBN	SM011C566MHN650	56	±20%	1	100
101	M49470X01686KBN	SM021C686KHN480	68	±10%	2	100
102	M49470X01686MBN	SM021C686MHN480	68	±20%	2	100
103	M49470X01826KBN	SM021C826KHN650	82	±10%	2	100
104	M49470X01826MBN	SM021C826MHN650	82	±20%	2	100
105	M49470X01107KBN	SM061C107KHN360	100	±10%	6	100
106	M49470X01107MBN	SM061C107MHN360	100	±20%	6	100
107	M49470X01127KBN	SM061C127KHN360	120	±10%	6	100
108	M49470X01127MBN	SM061C127MHN360	120	±20%	6	100
109	M49470X01157KBN	SM061C157KHN480	150	±10%	6	100
110	M49470X01157MBN	SM061C157MHN480	150	±20%	6	100
111	M49470X01187KBN	SM061C187KHN650	180	±10%	6	100
112	M49470X01187MBN	SM061C187MHN650	180	±20%	6	100
113	M49470R01474KCN	SM052C474KHN240	0.47	±10%	5	200
114	M49470R01474MCN	SM052C474MHN240	0.47	±20%	5	200
115	M49470R01564KCN	SM052C564KHN240	0.56	±10%	5	200
116	M49470R01564MCN	SM052C564MHN240	0.56	±20%	5	200
117	M49470R01684KCN	SM052C684KHN360	0.68	±10%	5	200
118	M49470R01684MCN	SM052C684MHN360	0.68	±20%	5	200
119	M49470R01824KCN	SM052C824KHN360	0.82	±10%	5	200
120	M49470R01824MCN	SM052C824MHN360	0.82	±20%	5	200
121	M49470R01105KCN	SM052C105KHN480	1.0	±10%	5	200
122	M49470R01105MCN	SM052C105MHN480	1.0	±20%	5	200
	M49470R01105KCA	SM042C105KHN120	1.0	±10%	4	200
	M49470R01105MCA	SM042C105MHN120	1.0	±20%	4	200
123	M49470R01125KCN	SM052C125KHN480	1.2	±10%	5	200
124	M49470R01125MCN	SM052C125MHN480	1.2	±20%	5	200
	M49470R01125KCA	SM042C125KHN240	1.2	±10%	4	200
	M49470R01125MCA	SM042C125MHN240	1.2	±20%	4	200
125	M49470R01155KCN	SM052C155KHN650	1.5	±10%	5	200
126	M49470R01155MCN	SM052C155MHN650	1.5	±20%	5	200
	M49470R01155KCA	SM042C155KHN240	1.5	±10%	4	200
	M49470R01155MCA	SM042C155MHN240	1.5	±20%	4	200
127	M49470R01185KCN	SM042C185KHN360	1.8	±10%	4	200
128	M49470R01185MCN	SM042C185MHN360	1.8	±20%	4	200
129	M49470R01225KCN	SM042C225KHN360	2.2	±10%	4	200
130	M49470R01225MCN	SM042C225MHN360	2.2	±20%	4	200
131	M49470R01275KCN	SM042C275KHN480	2.7	±10%	4	200
132	M49470R01275MCN	SM042C275MHN480	2.7	±20%	4	200
133	M49470R01335KCN	SM042C335KHN480	3.3	±10%	4	200
134	M49470R01335MCN	SM042C335MHN480	3.3	±20%	4	200
135	M49470R01395KCN	SM042C395KHN650	3.9	±10%	4	200
136	M49470R01395MCN	SM042C395MHN650	3.9	±20%	4	200
	M49470R01395KCA	SM032C395KHN240	3.9	±10%	3	200
	M49470R01395MCA	SM032C395MHN240	3.9	±20%	3	200
137	M49470R01475KCN	SM032C475KHN240	4.7	±10%	3	200
138	M49470R01475MCN	SM032C475MHN240	4.7	±20%	3	200
139	M49470R01565KCN	SM032C565KHN240	5.6	±10%	3	200
140	M49470R01565MCN	SM032C565MHN240	5.6	±20%	3	200
141	M49470R01685KCN	SM032C685KHN360	6.8	±10%	3	200
142	M49470R01685MCN	SM032C685MHN360	6.8	±20%	3	200
143	M49470R01825KCN	SM032C825KHN360	8.2	±10%	3	200
144	M49470R01825MCN	SM032C825MHN360	8.2	±20%	3	200
145	M49470R01106KCN	SM032C106KHN480	10	±10%	3	200
146	M49470R01106MCN	SM032C106MHN480	10	±20%	3	200
147	M49470R01126KCN	SM032C126KHN650	12	±10%	3	200
148	M49470R01126MCN	SM032C126MHN650	12	±20%	3	200
	M49470R01126KCA	SM022C126KHN240	12	±10%	2	200
	M49470R01126MCA	SM022C126MHN240	12	±20%	2	200

87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
149	M49470R01156KCN	SM012C156KHN360	15	±10%	1	200
150	M49470R01156MCN	SM012C156MHN360	15	±20%	1	200
	M49470R01156KCA	SM022C156KHN240	15	±10%	2	200
	M49470R01156MCA	SM022C156MHN240	15	±20%	2	200
151	M49470R01186KCN	SM012C186KHN480	18	±10%	1	200
152	M49470R01186MCN	SM012C186MHN480	18	±20%	1	200
	M49470R01186KCA	SM022C186KHN360	18	±10%	2	200
	M49470R01186MCA	SM022C186MHN360	18	±20%	2	200
153	M49470R01226KCN	SM012C226KHN650	22	±10%	1	200
154	M49470R01226MCN	SM012C226MHN650	22	±20%	1	200
	M49470R01226KCA	SM022C226KHN360	22	±10%	2	200
	M49470R01226MCA	SM022C226MHN360	22	±20%	2	200
155	M49470R01276KCN	SM012C276KHN650	27	±10%	1	200
156	M49470R01276MCN	SM012C276MHN650	27	±20%	1	200
	M49470R01276KCA	SM022C276KHN480	27	±10%	2	200
	M49470R01276MCA	SM022C276MHN480	27	±20%	2	200
157	M49470R01336KCN	SM022C336KHN480	33	±10%	2	200
158	M49470R01336MCN	SM022C336MHN480	33	±20%	2	200
159	M49470R01396KCN	SM022C396KHN650	39	±10%	2	200
160	M49470R01396MCN	SM022C396MHN650	39	±20%	2	200
161	M49470R01476KCN	SM062C476KHN240	47	±10%	6	200
162	M49470R01476MCN	SM062C476MHN240	47	±20%	6	200
163	M49470R01566KCN	SM062C566KHN360	56	±10%	6	200
164	M49470R01566MCN	SM062C566MHN360	56	±20%	6	200
165	M49470R01686KCN	SM062C686KHN360	68	±10%	6	200
166	M49470R01686MCN	SM062C686MHN360	68	±20%	6	200
167	M49470R01826KCN	SM062C826KHN480	82	±10%	6	200
168	M49470R01826MCN	SM062C826MHN480	82	±20%	6	200
169	M49470R01107KCN	SM062C107KHN650	100	±10%	6	200
170	M49470R01107MCN	SM062C107MHN650	100	±20%	6	200
171	M49470R01127KCN	SM062C127KHN650	120	±10%	6	200
172	M49470R01127MCN	SM062C127MHN650	120	±20%	6	200
173	M49470Q01154KEN	SM057C154KHN120	0.15	±10%	5	500
174	M49470Q01154MEN	SM057C154MHN120	0.15	±20%	5	500
175	M49470Q01184KEN	SM057C184KHN240	0.18	±10%	5	500
176	M49470Q01184MEN	SM057C184MHN240	0.18	±20%	5	500
177	M49470Q01224KEN	SM057C224KHN240	0.22	±10%	5	500
178	M49470Q01224MEN	SM057C224MHN240	0.22	±20%	5	500
179	M49470Q01274KEN	SM057C274KHN240	0.27	±10%	5	500
180	M49470Q01274MEN	SM057C274MHN240	0.27	±20%	5	500
181	M49470Q01334KEN	SM057C334KHN360	0.33	±10%	5	500
182	M49470Q01334MEN	SM057C334MHN360	0.33	±20%	5	500
183	M49470Q01394KEN	SM057C394KHN360	0.39	±10%	5	500
184	M49470Q01394MEN	SM057C394MHN360	0.39	±20%	5	500
185	M49470Q01474KEN	SM057C474KHN360	0.47	±10%	5	500
186	M49470Q01474MEN	SM057C474MHN360	0.47	±20%	5	500
187	M49470Q01564KEN	SM057C564KHN480	0.56	±10%	5	500
188	M49470Q01564MEN	SM057C564MHN480	0.56	±20%	5	500
	M49470Q01564KEA	SM047C564KHN240	0.56	±10%	4	500
	M49470Q01564MEA	SM047C564MHN240	0.56	±20%	4	500
189	M49470Q01684KEN	SM057C684KHN650	0.68	±10%	5	500
190	M49470Q01684MEN	SM057C684MHN650	0.68	±20%	5	500
	M49470Q01684KEA	SM047C684KHN360	0.68	±10%	4	500
	M49470Q01684MEA	SM047C684MHN360	0.68	±20%	4	500
191	M49470Q01105KEN	SM047C105KHN360	1.0	±10%	4	500
192	M49470Q01105MEN	SM047C105MHN360	1.0	±20%	4	500
193	M49470Q01125KEN	SM047C125KHN360	1.2	±10%	4	500
194	M49470Q01125MEN	SM047C125MHN360	1.2	±20%	4	500
195	M49470Q01155KEN	SM047C155KHN480	1.5	±10%	4	500
196	M49470Q01155MEN	SM047C155MHN480	1.5	±20%	4	500
197	M49470Q01185KEN	SM047C185KHN650	1.8	±10%	4	500
198	M49470Q01185MEN	SM047C185MHN650	1.8	±20%	4	500





# SMPS Stacked MLC Capacitors



## (SM Style) SM Military Styles MIL-PRF-49470

87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
	M49470Q01185KEA	SM037C185KHN240	1.8	±10%	3	500
	M49470Q01185MEA	SM037C185MHN240	1.8	±20%	3	500
199	M49470Q01275KEN	SM037C275KHN360	2.7	±10%	3	500
200	M49470Q01275MEN	SM037C275MHN360	2.7	±20%	3	500
201	M49470Q01335KEN	SM037C335KHN360	3.3	±10%	3	500
202	M49470Q01335MEN	SM037C335MHN360	3.3	±20%	3	500
203	M49470Q01395KEN	SM037C395KHN360	3.9	±10%	3	500
204	M49470Q01395MEN	SM037C395MHN360	3.9	±20%	3	500
205	M49470Q01475KEN	SM037C475KHN480	4.7	±10%	3	500
206	M49470Q01475MEN	SM037C475MHN480	4.7	±20%	3	500
207	M49470Q01565KEN	SM037C565KHN650	5.6	±10%	3	500
208	M49470Q01565MEN	SM037C565MHN650	5.6	±20%	3	500
	M49470Q01565KEA	SM027C565KHN240	5.6	±10%	2	500
	M49470Q01565MEA	SM027C565MHN240	5.6	±20%	2	500
209	M49470Q01825KEN	SM017C825KHN480	8.2	±10%	1	500
210	M49470Q01825MEN	SM017C825MHN480	8.2	±20%	1	500
	M49470Q01825KEA	SM027C825KHN360	8.2	±10%	2	500
	M49470Q01825MEA	SM027C825MHN360	8.2	±20%	2	500
211	M49470Q01106KEN	SM017C106KHN480	10	±10%	1	500
212	M49470Q01106MEN	SM017C106MHN480	10	±20%	1	500
	M49470Q01106KEA	SM027C106KHN360	10	±10%	2	500
	M49470Q01106MEA	SM027C106MHN360	10	±20%	2	500
213	M49470Q01126KEN	SM017C126KHN650	12	±10%	1	500
214	M49470Q01126MEN	SM017C126MHN650	12	±20%	1	500
	M49470Q01126KEA	SM027C126KHN480	12	±10%	2	500
	M49470Q01126MEA	SM027C126MHN480	12	±20%	2	500
215	M49470Q01186KEN	SM027C186KHN650	18	±10%	2	500
216	M49470Q01186MEN	SM027C186MHN650	18	±20%	2	500
217	M49470Q01276KEN	SM067C276KHN360	27	±10%	6	500
218	M49470Q01276MEN	SM067C276MHN360	27	±20%	6	500
219	M49470Q01336KEN	SM067C336KHN480	33	±10%	6	500
220	M49470Q01336MEN	SM067C336MHN480	33	±20%	6	500
221	M49470Q01396KEN	SM067C396KHN650	39	±10%	6	500
222	M49470Q01396MEN	SM067C396MHN650	39	±20%	6	500
223	M49470X01685KAN	SM045C685KHN360	6.8	±10%	4	50
224	M49470X01685MAN	SM045C685MHN360	6.8	±20%	4	50
225	M49470X01566KAN	SM015C566KHN360	56	±10%	1	50
226	M49470X01566MAN	SM015C566MHN360	56	±20%	1	50
	M49470X01566KAA	SM025C566KHN240	56	±10%	2	50
	M49470X01566MAA	SM025C566MHN240	56	±20%	2	50
227	M49470X01127KAN	SM025C127KHN480	120	±10%	2	50
228	M49470X01127MAN	SM025C127MHN480	120	±20%	2	50
229	M49470X01106KBN	SM031C106KHN240	10	±10%	3	100
230	M49470X01106MBN	SM031C106MHN240	10	±20%	3	100
231	M49470Q01824KEN	SM047C824KHN360	0.82	±10%	4	500
232	M49470Q01824MEN	SM047C824MHN360	0.82	±20%	4	500
233	M49470Q01225KEN	SM037C225KHN240	2.2	±10%	3	500
234	M49470Q01225MEN	SM037C225MHN240	2.2	±20%	3	500
235	M49470Q01685KEN	SM017C685KHN480	6.8	±10%	1	500
236	M49470Q01685MEN	SM017C685MHN480	6.8	±20%	1	500
	M49470Q01685KEA	SM027C685KHN240	6.8	±10%	2	500
	M49470Q01685MEA	SM027C685MHN240	6.8	±20%	2	500
237	M49470Q01156KEN	SM027C156KHN650	15	±10%	2	500
238	M49470Q01156MEN	SM027C156MHN650	15	±20%	2	500
239	M49470Q01226KEN	SM067C226KHN360	22	±10%	6	500
240	M49470Q01226MEN	SM067C226MHN360	22	±20%	6	500
241	M49470X01105KAJ	SM055C105KHJ120	1.0	±10%	5	50
242	M49470X01105MAJ	SM055C105MHJ120	1.0	±20%	5	50
243	M49470X01125KAJ	SM055C125KHJ120	1.2	±10%	5	50
244	M49470X01125MAJ	SM055C125MHJ120	1.2	±20%	5	50
245	M49470X01155KAJ	SM055C155KHJ240	1.5	±10%	5	50
246	M49470X01155MAJ	SM055C155MHJ240	1.5	±20%	5	50

87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
247	M49470X01185KAJ	SM055C185KHJ240	1.8	±10%	5	50
248	M49470X01185MAJ	SM055C185MHJ240	1.8	±20%	5	50
249	M49470X01225KAJ	SM055C225KHJ240	2.2	±10%	5	50
250	M49470X01225MAJ	SM055C225MHJ240	2.2	±20%	5	50
251	M49470X01275KAJ	SM055C275KHJ360	2.7	±10%	5	50
252	M49470X01275MAJ	SM055C275MHJ360	2.7	±20%	5	50
253	M49470X01335KAJ	SM055C335KHJ360	3.3	±10%	5	50
254	M49470X01335MAJ	SM055C335MHJ360	3.3	±20%	5	50
255	M49470X01395KAJ	SM055C395KHJ480	3.9	±10%	5	50
256	M49470X01395MAJ	SM055C395MHJ480	3.9	±20%	5	50
257	M49470X01475KAJ	SM055C475KHJ480	4.7	±10%	5	50
258	M49470X01475MAJ	SM055C475MHJ480	4.7	±20%	5	50
	M49470X01475KAC	SM045C475KHJ240	4.7	±10%	4	50
	M49470X01475MAC	SM045C475MHJ240	4.7	±20%	4	50
259	M49470X01565KAJ	SM055C565KHJ650	5.6	±10%	5	50
260	M49470X01565MAJ	SM055C565MHJ650	5.6	±20%	5	50
	M49470X01565KAC	SM045C565KHJ240	5.6	±10%	4	50
	M49470X01565MAC	SM045C565MHJ240	5.6	±10%	4	50
261	M49470X01685KAJ	SM045C685KHJ360	6.8	±10%	4	50
262	M49470X01685MAJ	SM045C685MHJ360	6.8	±20%	4	50
263	M49470X01825KAJ	SM045C825KHJ360	8.2	±10%	4	50
264	M49470X01825MAJ	SM045C825MHJ360	8.2	±20%	4	50
265	M49470X01106KAJ	SM045C106KHJ480	10	±10%	4	50
266	M49470X01106MAJ	SM045C106MHJ480	10	±20%	4	50
267	M49470X01126KAJ	SM045C126KHJ480	12	±10%	4	50
268	M49470X01126MAJ	SM045C126MHJ480	12	±20%	4	50
269	M49470X01156KAJ	SM045C156KHJ650	15	±10%	4	50
270	M49470X01156MAJ	SM045C156MHJ650	15	±20%	4	50
	M49470X01156KAC	SM035C156KHJ240	15	±10%	3	50
	M49470X01156MAC	SM035C156MHJ240	15	±20%	3	50
271	M49470X01186KAJ	SM035C186KHJ240	18	±10%	3	50
272	M49470X01186MAJ	SM035C186MHJ240	18	±20%	3	50
273	M49470X01226KAJ	SM035C226KHJ360	22	±10%	3	50
274	M49470X01226MAJ	SM035C226MHJ360	22	±20%	3	50
275	M49470X01276KAJ	SM035C276KHJ360	27	±10%	3	50
276	M49470X01276MAJ	SM035C276MHJ360	27	±20%	3	50
277	M49470X01336KAJ	SM035C336KHJ360	33	±10%	3	50
278	M49470X01336MAJ	SM035C336MHJ360	33	±20%	3	50
279	M49470X01396KAJ	SM035C396KHJ480	39	±10%	3	50
280	M49470X01396MAJ	SM035C396MHJ480	39	±20%	3	50
281	M49470X01476KAJ	SM035C476KHJ650	47	±10%	3	50
282	M49470X01476MAJ	SM035C476MHJ650	47	±20%	3	50
	M49470X01476KAC	SM025C476KHJ240	47	±10%	2	50
	M49470X01476MAC	SM025C476MHJ240	47	±20%	2	50
283	M49470X01566KAJ	SM015C566KHJ360	56	±10%	1	50
284	M49470X01566MAJ	SM015C566MHJ360	56	±20%	1	50
	M49470X01566KAC	SM025C566KHJ240	56	±10%	2	50
	M49470X01566MAC	SM025C566MHJ240	56	±20%	2	50
285	M49470X01686KAJ	SM015C686KHJ480	68	±10%	1	50
286	M49470X01686MAJ	SM015C686MHJ480	68	±20%	1	50
	M49470X01686KAC	SM025C686KHJ360	68	±10%	2	50
	M49470X01686MAC	SM025C686MHJ360	68	±20%	2	50
287	M49470X01826KAJ	SM015C826KHJ480	82	±10%	1	50
288	M49470X01826MAJ	SM015C826MHJ480	82	±20%	1	50
	M49470X01826KAC	SM025C826KHJ360	82	±10%	2	50
	M49470X01826MAC	SM025C826MHJ360	82	±20%	2	50
289	M49470X01107KAJ	SM015C107KHJ650	100	±10%	1	50
290	M49470X01107MAJ	SM015C107MHJ650	100	±20%	1	50
	M49470X01107KAC	SM025C107KHJ480	100	±10%	2	50
	M49470X01107MAC	SM025C107MHJ480	100	±20%	2	50
291	M49470X01127KAJ	SM025C127KHJ480	120	±10%	2	50
292	M49470X01127MAJ	SM025C127MHJ480	120	±20%	2	50



# SMPS Stacked MLC Capacitors



## (SM Style) SM Military Styles MIL-PRF-49470

87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
293	M49470X01157KAJ	SM025C157KHJ650	150	±10%	2	50
294	M49470X01157MAJ	SM025C157MHJ650	150	±20%	2	50
295	M49470X01187KAJ	SM065C187KHJ480	180	±10%	6	50
296	M49470X01187MAJ	SM065C187MHJ480	180	±20%	6	50
297	M49470X01227KAJ	SM065C227KHJ480	220	±10%	6	50
298	M49470X01227MAJ	SM065C227MHJ480	220	±20%	6	50
299	M49470X01277KAJ	SM065C277KHJ650	270	±10%	6	50
300	M49470X01277MAJ	SM065C277MHJ650	270	±20%	6	50
301	M49470X01684KBJ	SM051C684KHJ120	0.68	±10%	5	100
302	M49470X01684MBJ	SM051C684MHJ120	0.68	±20%	5	100
303	M49470X01824KBJ	SM051C824KHJ240	0.82	±10%	5	100
304	M49470X01824MBJ	SM051C824MHJ240	0.82	±20%	5	100
305	M49470X01105KBJ	SM051C105KHJ240	1.0	±10%	5	100
306	M49470X01105MBJ	SM051C105MHJ240	1.0	±20%	5	100
307	M49470X01125KBJ	SM051C125KHJ240	1.2	±10%	5	100
308	M49470X01125MBJ	SM051C125MHJ240	1.2	±20%	5	100
309	M49470X01155KBJ	SM051C155KHJ360	1.5	±10%	5	100
310	M49470X01155MBJ	SM051C155MHJ360	1.5	±20%	5	100
311	M49470X01185KBJ	SM051C185KHJ360	1.8	±10%	5	100
312	M49470X01185MBJ	SM051C185MHJ360	1.8	±20%	5	100
313	M49470X01225KBJ	SM051C225KHJ480	2.2	±10%	5	100
314	M49470X01225MBJ	SM051C225MHJ480	2.2	±20%	5	100
	M49470X01225KBC	SM041C225KHJ240	2.2	±10%	4	100
	M49470X01225MBC	SM041C225MHJ240	2.2	±20%	4	100
315	M49470X01275KBJ	SM051C275KHJ480	2.7	±10%	5	100
316	M49470X01275MBJ	SM051C275MHJ480	2.7	±20%	5	100
317	M49470X01335KBJ	SM051C335KHJ650	3.3	±10%	5	100
318	M49470X01335MBJ	SM051C335MHJ650	3.3	±20%	5	100
	M49470X01335KBC	SM041C335KHJ240	3.3	±10%	4	100
	M49470X01335MBC	SM041C335MHJ240	3.3	±20%	4	100
319	M49470X01395KBJ	SM041C395KHJ360	3.9	±10%	4	100
320	M49470X01395MBJ	SM041C395MHJ360	3.9	±20%	4	100
321	M49470X01475KBJ	SM041C475KHJ360	4.7	±10%	4	100
322	M49470X01475MBJ	SM041C475MHJ360	4.7	±20%	4	100
323	M49470X01565KBJ	SM041C565KHJ480	5.6	±10%	4	100
324	M49470X01565MBJ	SM041C565MHJ480	5.6	±20%	4	100
325	M49470X01685KBJ	SM041C685KHJ480	6.8	±10%	4	100
326	M49470X01685MBJ	SM041C685MHJ480	6.8	±20%	4	100
327	M49470X01825KBJ	SM041C825KHJ650	8.2	±10%	4	100
328	M49470X01825MBJ	SM041C825MHJ650	8.2	±20%	4	100
	M49470X01825KBC	SM031C825KHJ240	8.2	±10%	3	100
	M49470X01825MBC	SM031C825MHJ240	8.2	±20%	3	100
329	M49470X01106KBJ	SM031C106KHJ240	10	±10%	3	100
330	M49470X01106MBJ	SM031C106MHJ240	10	±20%	3	100
331	M49470X01126KBJ	SM031C126KHJ240	12	±10%	3	100
332	M49470X01126MBJ	SM031C126MHJ240	12	±20%	3	100
333	M49470X01156KBJ	SM031C156KHJ360	15	±10%	3	100
334	M49470X01156MBJ	SM031C156MHJ360	15	±20%	3	100
335	M49470X01186KBJ	SM031C186KHJ360	18	±10%	3	100
336	M49470X01186MBJ	SM031C186MHJ360	18	±20%	3	100
337	M49470X01226KBJ	SM031C226KHJ480	22	±10%	3	100
338	M49470X01226MBJ	SM031C226MHJ480	22	±20%	3	100
339	M49470X01276KBJ	SM031C276KHJ650	27	±10%	3	100
340	M49470X01276MBJ	SM031C276MHJ650	27	±20%	3	100
	M49470X01276KBC	SM021C276KHJ240	27	±10%	2	100
	M49470X01276MBC	SM021C276MHJ240	27	±20%	2	100
341	M49470X01336KBJ	SM011C336KHJ360	33	±10%	1	100
342	M49470X01336MBJ	SM011C336MHJ360	33	±20%	1	100
	M49470X01336KBC	SM021C336KHJ240	33	±10%	2	100
	M49470X01336MBC	SM021C336MHJ240	33	±20%	2	100
343	M49470X01396KBJ	SM011C396KHJ480	39	±10%	1	100
344	M49470X01396MBJ	SM011C396MHJ480	39	±20%	1	100

87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
	M49470X01396KBC	SM021C396KHJ360	39	±10%	2	100
	M49470X01396MBC	SM021C396MHJ360	39	±20%	2	100
345	M49470X01476KBJ	SM011C476KHJ480	47	±10%	1	100
346	M49470X01476MBJ	SM011C476MHJ480	47	±20%	1	100
	M49470X01476KBC	SM021C476KHJ360	47	±10%	2	100
	M49470X01476MBC	SM021C476MHJ360	47	±20%	2	100
347	M49470X01566KBJ	SM011C566KHJ650	56	±10%	1	100
348	M49470X01566MBJ	SM011C566MHJ650	56	±20%	1	100
349	M49470X01686KBJ	SM021C686KHJ480	68	±10%	2	100
350	M49470X01686MBJ	SM021C686MHJ480	68	±20%	2	100
351	M49470X01826KBJ	SM021C826KHJ650	82	±10%	2	100
352	M49470X01826MBJ	SM021C826MHJ650	82	±20%	2	100
353	M49470X01107KBJ	SM061C107KHJ360	100	±10%	6	100
354	M49470X01107MBJ	SM061C107MHJ360	100	±20%	6	100
355	M49470X01127KBJ	SM061C127KHJ360	120	±10%	6	100
356	M49470X01127MBJ	SM061C127MHJ360	120	±20%	6	100
357	M49470X01157KBJ	SM061C157KHJ480	150	±10%	6	100
358	M49470X01157MBJ	SM061C157MHJ480	150	±20%	6	100
359	M49470X01187KBJ	SM061C187KHJ650	180	±10%	6	100
360	M49470X01187MBJ	SM061C187MHJ650	180	±20%	6	100
361	M49470R01474KCJ	SM052C474KHJ240	0.47	±10%	5	200
362	M49470R01474MCJ	SM052C474MHJ240	0.47	±20%	5	200
363	M49470R01564KCJ	SM052C564KHJ240	0.56	±10%	5	200
364	M49470R01564MCJ	SM052C564MHJ240	0.56	±20%	5	200
365	M49470R01684KCJ	SM052C684KHJ360	0.68	±10%	5	200
366	M49470R01684MCJ	SM052C684MHJ360	0.68	±20%	5	200
367	M49470R01824KCJ	SM052C824KHJ360	0.82	±10%	5	200
368	M49470R01824MCJ	SM052C824MHJ360	0.82	±20%	5	200
369	M49470R01105KCJ	SM052C105KHJ480	1.0	±10%	5	200
370	M49470R01105MCJ	SM052C105MHJ480	1.0	±20%	5	200
	M49470R01105KCC	SM042C105KHJ120	1.0	±10%	4	200
	M49470R01105MCC	SM042C105MHJ120	1.0	±20%	4	200
371	M49470R01125KCJ	SM052C125KHJ480	1.2	±10%	5	200
372	M49470R01125MCJ	SM052C125MHJ480	1.2	±20%	5	200
	M49470R01125KCC	SM042C125KHJ240	1.2	±10%	4	200
	M49470R01125MCC	SM042C125MHJ240	1.2	±20%	4	200
373	M49470R01155KCJ	SM052C155KHJ650	1.5	±10%	5	200
374	M49470R01155MCJ	SM052C155MHJ650	1.5	±20%	5	200
	M49470R01155KCC	SM042C155KHJ230	1.5	±10%	4	200
	M49470R01155MCC	SM042C155MHJ230	1.5	±20%	4	200
375	M49470R01185KCJ	SM042C185KHJ360	1.8	±10%	4	200
376	M49470R01185MCJ	SM042C185MHJ360	1.8	±20%	4	200
377	M49470R01225KCJ	SM042C225KHJ360	2.2	±10%	4	200
378	M49470R01225MCJ	SM042C225MHJ360	2.2	±20%	4	200
379	M49470R01275KCJ	SM042C275KHJ480	2.7	±10%	4	200
380	M49470R01275MCJ	SM042C275MHJ480	2.7	±20%	4	200
381	M49470R01335KCJ	SM042C335KHJ480	3.3	±10%	4	200
382	M49470R01335MCJ	SM042C335MHJ480	3.3	±20%	4	200
383	M49470R01395KCJ	SM042C395KHJ650	3.9	±10%	4	200
384	M49470R01395MCJ	SM042C395MHJ650	3.9	±20%	4	200
	M49470R01395KCC	SM032C395KHJ240	3.9	±10%	3	200
	M49470R01395MCC	SM032C395MHJ240	3.9	±20%	3	200
385	M49470R01475KCJ	SM032C475KHJ240	4.7	±10%	3	200
386	M49470R01475MCJ	SM032C475MHJ240	4.7	±20%	3	200
387	M49470R01565KCJ	SM032C565KHJ240	5.6	±10%	3	200
388	M49470R01565MCJ	SM032C565MHJ240	5.6	±20%	3	200
389	M49470R01685KCJ	SM032C685KHJ360	6.8	±10%	3	200
390	M49470R01685MCJ	SM032C685MHJ360	6.8	±20%	3	200
391	M49470R01825KCJ	SM032C825KHJ360	8.2	±10%	3	200
392	M49470R01825MCJ	SM032C825MHJ360	8.2	±20%	3	200
393	M49470R01106KCJ	SM032C106KHJ480	10	±10%	3	200
394	M49470R01106MCJ	SM032C106MHJ480	10	±20%	3	200



# SMPS Stacked MLC Capacitors



## (SM Style) SM Military Styles MIL-PRF-49470

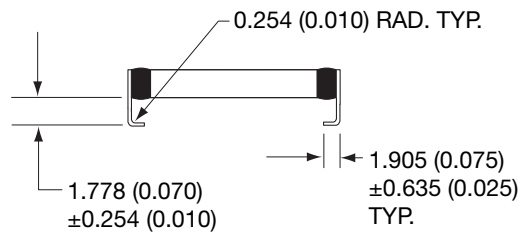
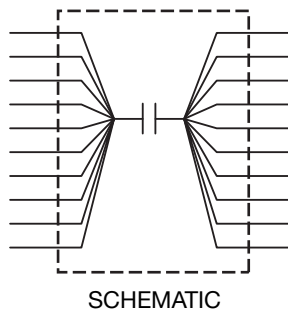
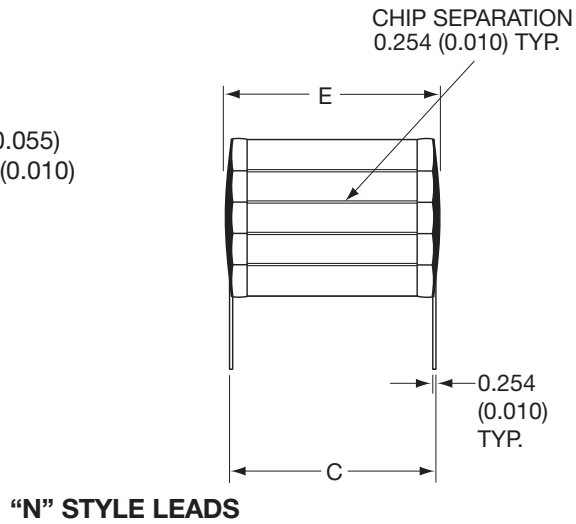
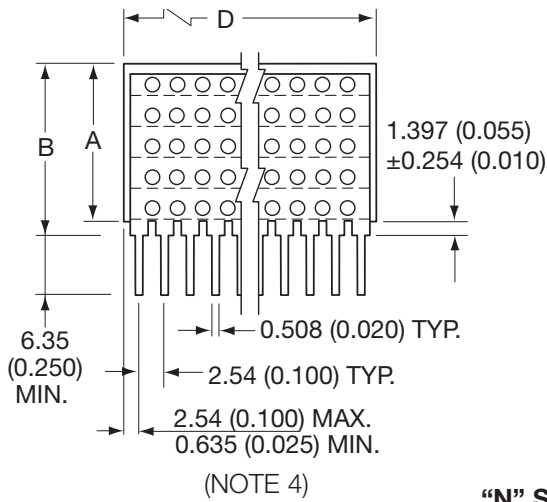
87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
395	M49470R01126KCJ	SM032C126KHJ650	12	±10%	3	200
396	M49470R01126MCJ	SM032C126MHJ650	12	±20%	3	200
	M49470R01126KCC	SM022C126KHJ240	12	±10%	2	200
	M49470R01126MCC	SM022C126MHJ240	12	±20%	2	200
397	M49470R01156KCJ	SM012C156KHJ360	15	±10%	1	200
398	M49470R01156MCJ	SM012C156MHJ360	15	±20%	1	200
	M49470R01156KCC	SM022C156KHJ240	15	±10%	2	200
	M49470R01156MCC	SM022C156MHJ240	15	±20%	2	200
399	M49470R01186KCJ	SM012C186KHJ480	18	±10%	1	200
400	M49470R01186MCJ	SM012C186MHJ480	18	±20%	1	200
	M49470R01186KCC	SM022C186KHJ360	18	±10%	2	200
	M49470R01186MCC	SM022C186MHJ360	18	±20%	2	200
401	M49470R01226KCJ	SM012C226KHJ650	22	±10%	1	200
402	M49470R01226MCJ	SM012C226MHJ650	22	±20%	1	200
	M49470R01226KCC	SM022C226KHJ360	22	±10%	2	200
	M49470R01226MCC	SM022C226MHJ360	22	±20%	2	200
403	M49470R01276KCJ	SM012C276KHJ650	27	±10%	1	200
404	M49470R01276MCJ	SM012C276MHJ650	27	±20%	1	200
	M49470R01276KCC	SM022C276KHJ480	27	±10%	2	200
	M49470R01276MCC	SM022C276MHJ480	27	±20%	2	200
405	M49470R01336KCJ	SM022C336KHJ480	33	±10%	2	200
406	M49470R01336MCJ	SM022C336MHJ480	33	±20%	2	200
407	M49470R01396KCJ	SM022C396KHJ650	39	±10%	2	200
408	M49470R01396MCJ	SM022C396MHJ650	39	±20%	2	200
409	M49470R01476KCJ	SM062C476KHJ240	47	±10%	6	200
410	M49470R01476MCJ	SM062C476MHJ240	47	±20%	6	200
411	M49470R01566KCJ	SM062C566KHJ360	56	±10%	6	200
412	M49470R01566MCJ	SM062C566MHJ360	56	±20%	6	200
413	M49470R01686KCJ	SM062C686KHJ360	68	±10%	6	200
414	M49470R01686MCJ	SM062C686MHJ360	68	±20%	6	200
415	M49470R01826KCJ	SM062C826KHJ480	82	±10%	6	200
416	M49470R01826MCJ	SM062C826MHJ480	82	±20%	6	200
417	M49470R01107KCJ	SM062C107KHJ650	100	±10%	6	200
418	M49470R01107MCJ	SM062C107MHJ650	100	±20%	6	200
419	M49470R01127KCJ	SM062C127KHJ650	120	±10%	6	200
420	M49470R01127MCJ	SM062C127MHJ650	120	±20%	6	200
421	M49470Q01154KEJ	SM057C154KHJ120	0.15	±10%	5	500
422	M49470Q01154MEJ	SM057C154MHJ120	0.15	±20%	5	500
423	M49470Q01184KEJ	SM057C184KHJ240	0.18	±10%	5	500
424	M49470Q01184MEJ	SM057C184MHJ240	0.18	±20%	5	500
425	M49470Q01224KEJ	SM057C224KHJ240	0.22	±10%	5	500
426	M49470Q01224MEJ	SM057C224MHJ240	0.22	±20%	5	500
427	M49470Q01274KEJ	SM057C274KHJ240	0.27	±10%	5	500
428	M49470Q01274MEJ	SM057C274MHJ240	0.27	±20%	5	500
429	M49470Q01334KEJ	SM057C334KHJ360	0.33	±10%	5	500
430	M49470Q01334MEJ	SM057C334MHJ360	0.33	±20%	5	500
431	M49470Q01394KEJ	SM057C394KHJ360	0.39	±10%	5	500
432	M49470Q01394MEJ	SM057C394MHJ360	0.39	±20%	5	500
433	M49470Q01474KEJ	SM057C474KHJ360	0.47	±10%	5	500
434	M49470Q01474MEJ	SM057C474MHJ360	0.47	±20%	5	500
435	M49470Q01564KEJ	SM057C564KHJ480	0.56	±10%	5	500
436	M49470Q01564MEJ	SM057C564MHJ480	0.56	±20%	5	500
	M49470Q01564KEC	SM047C564KHJ240	0.56	±10%	4	500
	M49470Q01564MEC	SM047C564MHJ240	0.56	±20%	4	500
437	M49470Q01684KEJ	SM057C684KHJ650	0.68	±10%	5	500
438	M49470Q01684MEJ	SM057C684MHJ650	0.68	±20%	5	500
	M49470Q01684KEC	SM047C684KHJ240	0.68	±10%	4	500
	M49470Q01684MEC	SM047C684MHJ240	0.68	±20%	4	500
439	M49470Q01824KEJ	SM047C824KHJ360	0.82	±10%	4	500
440	M49470Q01824MEJ	SM047C824MHJ360	0.82	±20%	4	500
441	M49470Q01105KEJ	SM047C105KHJ360	1.0	±10%	4	500
442	M49470Q01105MEJ	SM047C105MHJ360	1.0	±20%	4	500

87106-	MIL-PRF-49470 PIN	AVX PART NUMBER	CAP (µF)	TOL	CASE CODE	VOLT (VDC)
443	M49470Q01125KEJ	SM047C125KHJ360	1.2	±10%	4	500
444	M49470Q01125MEJ	SM047C125MHJ360	1.2	±20%	4	500
445	M49470Q01155KEJ	SM047C155KHJ480	1.5	±10%	4	500
446	M49470Q01155MEJ	SM047C155MHJ480	1.5	±20%	4	500
447	M49470Q01185KEJ	SM047C185KHJ650	1.8	±10%	4	500
448	M49470Q01185MEJ	SM047C185MHJ650	1.8	±20%	4	500
	M49470Q01185KEC	SM037C185KHJ240	1.8	±10%	3	500
	M49470Q01185MEC	SM037C185MHJ240	1.8	±20%	3	500
449	M49470Q01225KEJ	SM037C225KHJ240	2.2	±10%	3	500
450	M49470Q01225MEJ	SM037C225MHJ240	2.2	±20%	3	500
451	M49470Q01275KEJ	SM037C275KHJ360	2.7	±10%	3	500
452	M49470Q01275MEJ	SM037C275MHJ360	2.7	±20%	3	500
453	M49470Q01335KEJ	SM037C335KHJ360	3.3	±10%	3	500
454	M49470Q01335MEJ	SM037C335MHJ360	3.3	±20%	3	500
455	M49470Q01395KEJ	SM037C395KHJ360	3.9	±10%	3	500
456	M49470Q01395MEJ	SM037C395MHJ360	3.9	±20%	3	500
457	M49470Q01475KEJ	SM037C475KHJ480	4.7	±10%	3	500
458	M49470Q01475MEJ	SM037C475MHJ480	4.7	±20%	3	500
459	M49470Q01565KEJ	SM037C565KHJ650	5.6	±10%	3	500
460	M49470Q01565MEJ	SM037C565MHJ650	5.6	±20%	3	500
	M49470Q01565KEC	SM027C565KHJ240	5.6	±10%	2	500
	M49470Q01565MEC	SM027C565MHJ240	5.6	±20%	2	500
461	M49470Q01685KEJ	SM017C685KHJ480	6.8	±10%	1	500
462	M49470Q01685MEJ	SM017C685MHJ480	6.8	±20%	1	500
	M49470Q01685KEC	SM027C685KHJ240	6.8	±10%	2	500
	M49470Q01685MEC	SM027C685MHJ240	6.8	±20%	2	500
463	M49470Q01825KEJ	SM017C825KHJ480	8.2	±10%	1	500
464	M49470Q01825MEJ	SM017C825MHJ480	8.2	±20%	1	500
	M49470Q01825KEC	SM027C825KHJ360	8.2	±10%	2	500
	M49470Q01825MEC	SM027C825MHJ360	8.2	±20%	2	500
465	M49470Q01106KEJ	SM017C106KHJ480	10	±10%	1	500
466	M49470Q01106MEJ	SM017C106MHJ480	10	±20%	1	500
	M49470Q01106KEC	SM027C106KHJ360	10	±10%	2	500
	M49470Q01106MEC	SM027C106MHJ360	10	±20%	2	500
467	M49470Q01126KEJ	SM017C126KHJ650	12	±10%	1	500
468	M49470Q01126MEJ	SM017C126MHJ650	12	±20%	1	500
	M49470Q01126MEC	SM027C126MHJ480	12	±20%	2	500
	M49470Q01126MEC	SM027C126MHJ480	12	±20%	2	500
469	M49470Q01156KEJ	SM027C156KHJ650	15	±10%	2	500
470	M49470Q01156MEJ	SM027C156MHJ650	15	±20%	2	500
471	M49470Q01186KEJ	SM027C186KHJ650	18	±10%	2	500
472	M49470Q01186MEJ	SM027C186MHJ650	18	±20%	2	500
473	M49470Q01226KEJ	SM067C226KHJ360	22	±10%	6	500
474	M49470Q01226MEJ	SM067C226MHJ360	22	±20%	6	500
475	M49470Q01276KEJ	SM067C276KHJ360	27	±10%	6	500
476	M49470Q01276MEJ	SM067C276MHJ360	27	±20%	6	500
477	M49470Q01336KEJ	SM067C336KHJ480	33	±10%	6	500
478	M49470Q01336MEJ	SM067C336MHJ480	33	±20%	6	500
479	M49470Q01396KEJ	SM067C396KHJ650	39	±10%	6	500
480	M49470Q01396MEJ	SM067C396MHJ650	39	±20%	6	500

# SMPS Stacked MLC Capacitors



(SM Style) SM Military Styles DSCC Dwg. #87106 & #88011



## DIMENSIONS

millimeters (inches)

Case Code	A (max.) (See Note 2)	B (max.) (See Note 2)	C ±.635 (±0.025)	D ±.635 (±0.025)	E (max.)	No. of Leads per side
1	16.5 (0.650)	18.2 (0.715)	11.4 (0.450)	52.1 (2.050)	12.7 (0.500)	20
2	16.5 (0.650)	18.2 (0.715)	20.3 (0.800)	38.4 (1.510)	22.1 (0.870)	15
3	16.5 (0.650)	18.2 (0.715)	11.4 (0.450)	26.7 (1.050)	12.7 (0.500)	10
4	16.5 (0.650)	18.2 (0.715)	10.2 (0.400)	10.2 (0.400)	11.2 (0.440)	4
5	16.5 (0.650)	18.2 (0.715)	6.35 (0.250)	6.35 (0.250)	7.62 (0.300)	3
6	16.5 (0.650)	18.2 (0.715)	31.8 (1.250)	52.1 (2.050)	34.3 (1.350)	20

### NOTES:

1. Unless otherwise specified, tolerances 0.254 (±0.010).
2. “A” dimensions are maximum (see tables on pages 22 thru 25 for specific part number dimensions).
3. “N” straight leads; “J” leads formed in.
4. For case code 5, dimensions shall be 2.54 (0.100) maximum, 0.305 (0.012) minimum.





# SMPS Stacked MLC Capacitors



## (SM Style) DSCC #87106 and #88011

**Table II. Group A inspection.**

Inspection	Requirement paragraph of MIL-PRF-49470	Test method paragraph of MIL-PRF-49470	Sampling procedure
<b>Subgroup 1</b> Thermal shock and voltage conditioning <u>1/</u>	3.9	4.8.5	100% inspection
<b>Subgroup 2</b> Visual and mechanical examination: Material Physical dimensions Interface requirements (other than physical dimensions) Marking <u>2/</u> Workmanship	3.4 3.1 3.5 and 3.5.1 3.28 3.30	4.8.4	13 samples 0 failures

1/ Post checks are required (see paragraph 3.9 of MIL-PRF-49470).

2/ Marking defects are based on visual examination only. Any subsequent electrical defects shall not be used as a basis for determining marking defects.

**Table III. Group B inspection. 1/**

Inspection	Requirement paragraph of MIL-PRF-49470	Test method paragraph of MIL-PRF-49470	Number of sample units to be inspected	Number of defectives permitted <u>2/</u>	
<b>Subgroup 1 <u>3/</u></b> Temperature coefficient Resistance to solvents <u>5/</u> <u>6/</u> Immersion Terminal strength <u>5/</u>	<u>4/</u> 3.23 3.18 3.24	<u>4/</u> 4.8.20 4.8.15 4.8.10	12	1	<u>6/</u> 1
<b>Subgroup 2</b> Resistance to soldering heat Moisture resistance	3.20 3.21	4.8.17 4.8.18	12	1	
<b>Subgroup 3</b> Marking legibility (laser marking only)	3.28.1	4.8.4.1	6	1	
<b>Subgroup 4</b> Solderability	3.15	4.8.12	3	0	
<b>Subgroup 5</b> Life	3.26	4.8.22	5 minimum per case code	0	

1/ Unless otherwise specified herein, when necessary, mounting of group B samples shall be at the discretion of the manufacturer.

2/ A sample unit having one or more defects shall be charged as a single defective.

3/ Order of tests is at discretion of manufacturer.

4/ See 3.2.3 of DSCC 87106.

5/ Sample size shall be 3 pieces with zero defectives permitted.

6/ Total of one defect allowed for combination of subgroup 1, subgroup 2, and subgroup 3 inspections.



# SMPS Stacked MLC Capacitors



(SM Style) SM Military Styles DSCC Dwg. #87106 (X7R)

## Electrical characteristics

DSCC Dwg. 87106-	Cap. Value (µF)	Cap. Tol.	Case Code	Lead Style	Max. A Dimension mm (inches)
<b>50V</b>					
001	1.0	K	5	N	3.05 (0.120)
002	1.0	M	5	N	3.05 (0.120)
241	1.0	K	5	J	3.05 (0.120)
242	1.0	M	5	J	3.05 (0.120)
003	1.2	K	5	N	3.05 (0.120)
004	1.2	M	5	N	3.05 (0.120)
243	1.2	K	5	J	3.05 (0.120)
244	1.2	M	5	J	3.05 (0.120)
005	1.5	K	5	N	6.10 (0.240)
006	1.5	M	5	N	6.10 (0.240)
245	1.5	K	5	J	6.10 (0.240)
246	1.5	M	5	J	6.10 (0.240)
007	1.8	K	5	N	6.10 (0.240)
008	1.8	M	5	N	6.10 (0.240)
247	1.8	K	5	J	6.10 (0.240)
248	1.8	M	5	J	6.10 (0.240)
009	2.2	K	5	N	6.10 (0.240)
010	2.2	M	5	N	6.10 (0.240)
249	2.2	K	5	J	6.10 (0.240)
250	2.2	M	5	J	6.10 (0.240)
011	2.7	K	5	N	9.14 (0.360)
012	2.7	M	5	N	9.14 (0.360)
251	2.7	K	5	J	9.14 (0.360)
252	2.7	M	5	J	9.14 (0.360)
013	3.3	K	5	N	9.14 (0.360)
014	3.3	M	5	N	9.14 (0.360)
253	3.3	K	5	J	9.14 (0.360)
254	3.3	M	5	J	9.14 (0.360)
015	3.9	K	5	N	12.2 (0.480)
016	3.9	M	5	N	12.2 (0.480)
255	3.9	K	5	J	12.2 (0.480)
256	3.9	M	5	J	12.2 (0.480)
017	4.7	K	5	N	12.2 (0.480)
018	4.7	M	5	N	12.2 (0.480)
257	4.7	K	5	J	12.2 (0.480)
258	4.7	M	5	J	12.2 (0.480)
019	5.6	K	5	N	16.5 (0.650)
020	5.6	M	5	N	16.5 (0.650)
259	5.6	K	5	J	16.5 (0.650)
260	5.6	M	5	J	16.5 (0.650)
223	6.8	K	4	N	9.14 (0.360)
224	6.8	M	4	N	9.14 (0.360)
261	6.8	K	4	J	9.14 (0.360)
262	6.8	M	4	J	9.14 (0.360)
021	8.2	K	4	N	9.14 (0.360)
022	8.2	M	4	N	9.14 (0.360)
263	8.2	K	4	J	9.14 (0.360)
264	8.2	M	4	J	9.14 (0.360)
023	10	K	4	N	12.2 (0.480)
024	10	M	4	N	12.2 (0.480)
265	10	K	4	J	12.2 (0.480)
266	10	M	4	J	12.2 (0.480)
025	12	K	4	N	12.2 (0.480)
026	12	M	4	N	12.2 (0.480)
267	12	K	4	J	12.2 (0.480)
268	12	M	4	J	12.2 (0.480)
027	15	K	4	N	16.5 (0.650)
028	15	M	4	N	16.5 (0.650)
269	15	K	4	J	16.5 (0.650)
270	15	M	4	J	16.5 (0.650)
029	18	K	3	N	6.10 (0.240)
030	18	M	3	N	6.10 (0.240)
271	18	K	3	J	6.10 (0.240)

DSCC Dwg. 87106-	Cap. Value (µF)	Cap. Tol.	Case Code	Lead Style	Max. A Dimension mm (inches)
<b>50V</b>					
272	18	M	3	J	6.10 (0.240)
272	18	M	3	J	6.10 (0.240)
031	22	K	3	N	9.14 (0.360)
032	22	M	3	N	9.14 (0.360)
273	22	K	3	J	9.14 (0.360)
274	22	M	3	J	9.14 (0.360)
033	27	K	3	N	9.14 (0.360)
034	27	M	3	N	9.14 (0.360)
275	27	K	3	J	9.14 (0.360)
276	27	M	3	J	9.14 (0.360)
035	33	K	3	N	9.14 (0.360)
036	33	M	3	N	9.14 (0.360)
277	33	K	3	J	9.14 (0.360)
278	33	M	3	J	9.14 (0.360)
037	39	K	3	N	12.2 (0.480)
038	39	M	3	N	12.2 (0.480)
279	39	K	3	J	12.2 (0.480)
280	39	M	3	J	12.2 (0.480)
039	47	K	3	N	16.5 (0.650)
040	47	M	3	N	16.5 (0.650)
281	47	K	3	J	16.5 (0.650)
282	47	M	3	J	16.5 (0.650)
225	56	K	1	N	9.14 (0.360)
226	56	M	1	N	9.14 (0.360)
283	56	K	1	J	9.14 (0.360)
284	56	M	1	J	9.14 (0.360)
041	68	K	1	N	12.2 (0.480)
042	68	M	1	N	12.2 (0.480)
285	68	K	1	J	12.2 (0.480)
286	68	M	1	J	12.2 (0.480)
043	82	K	1	N	12.2 (0.480)
044	82	M	1	N	12.2 (0.480)
287	82	K	1	J	12.2 (0.480)
288	82	M	1	J	12.2 (0.480)
045	100	K	1	N	16.5 (0.650)
046	100	M	1	N	16.5 (0.650)
289	100	K	1	J	16.5 (0.650)
290	100	M	1	J	16.5 (0.650)
227	120	K	2	N	12.2 (0.480)
228	120	M	2	N	12.2 (0.480)
291	120	K	2	J	12.2 (0.480)
292	120	M	2	J	12.2 (0.480)
047	150	K	2	N	16.5 (0.650)
048	150	M	2	N	16.5 (0.650)
293	150	K	2	J	16.5 (0.650)
294	150	M	2	J	16.5 (0.650)
049	180	K	6	N	12.2 (0.480)
050	180	M	6	N	12.2 (0.480)
295	180	K	6	J	12.2 (0.480)
296	180	M	6	J	12.2 (0.480)
051	220	K	6	N	12.2 (0.480)
052	220	M	6	N	12.2 (0.480)
297	220	K	6	J	12.2 (0.480)
298	220	M	6	J	12.2 (0.480)
053	270	K	6	N	16.5 (0.650)
054	270	M	6	N	16.5 (0.650)
299	270	K	6	J	16.5 (0.650)
300	270	M	6	J	16.5 (0.650)

DSCC Dwg. 87106-	Cap. Value (µF)	Cap. Tol.	Case Code	Lead Style	Max. A Dimension mm (inches)
<b>100V</b>					
055	.68	K	5	N	3.05 (0.120)
056	.68	M	5	N	3.05 (0.120)
301	.68	K	5	J	3.05 (0.120)
302	.68	M	5	J	3.05 (0.120)
057	.82	K	5	N	6.10 (0.240)
058	.82	M	5	N	6.10 (0.240)
303	.82	K	5	J	6.10 (0.240)
304	.82	M	5	J	6.10 (0.240)
059	1.0	K	5	N	6.10 (0.240)
060	1.0	M	5	N	6.10 (0.240)
305	1.0	K	5	J	6.10 (0.240)
306	1.0	M	5	J	6.10 (0.240)
061	1.2	K	5	N	6.10 (0.240)
062	1.2	M	5	N	6.10 (0.240)
307	1.2	K	5	J	6.10 (0.240)
308	1.2	M	5	J	6.10 (0.240)
063	1.5	K	5	N	9.14 (0.360)
064	1.5	M	5	N	9.14 (0.360)
309	1.5	K	5	J	9.14 (0.360)
310	1.5	M	5	J	9.14 (0.360)
065	1.8	K	5	N	9.14 (0.360)
066	1.8	M	5	N	9.14 (0.360)
311	1.8	K	5	J	9.14 (0.360)
312	1.8	M	5	J	9.14 (0.360)
067	2.2	K	5	N	12.2 (0.480)
068	2.2	M	5	N	12.2 (0.480)
313	2.2	K	5	J	12.2 (0.480)
314	2.2	M	5	J	12.2 (0.480)
069	2.7	K	5	N	12.2 (0.480)
070	2.7	M	5	N	12.2 (0.480)
315	2.7	K	5	J	12.2 (0.480)
316	2.7	M	5	J	12.2 (0.480)
071	3.3	K	5	N	16.5 (0.650)
072	3.3	M	5	N	16.5 (0.650)
317	3.3	K	5	J	16.5 (0.650)
318	3.3	M	5	J	16.5 (0.650)
073	3.9	K	4	N	9.14 (0.360)
074	3.9	M	4	N	9.14 (0.360)
319	3.9	K	4	J	9.14 (0.360)
320	3.9	M	4	J	9.14 (0.360)
075	4.7	K	4	N	9.14 (0.360)
076	4.7	M	4	N	9.14 (0.360)
321	4.7	K	4	J	9.14 (0.360)
322	4.7	M	4	J	9.14 (0.360)
077	5.6	K	4	N	12.2 (0.480)
078	5.6	M	4	N	12.2 (0.480)
323	5.6	K	4	J	12.2 (0.480)
324	5.6	M	4	J	12.2 (0.480)
079	6.8	K	4	N	12.2 (0.480)
080	6.8	M	4	N	12.2 (0.480)
325	6.8	K	4	J	12.2 (0.480)
326	6.8	M	4	J	12.2 (0.480)
081	8.2	K	4	N	16.5 (0.650)
082	8.2	M	4	N	16.5 (0.650)
327	8.2	K	4	J	16.5 (0.650)
328	8.2	M	4	J	16.5 (0.650)
229	10	K	3	N	6.10 (0.240)
230	10	M	3	N	6.10 (0.240)
329	10	K	3	J	6.10 (0.240)
330	10	M	3	J	6.10 (0.240)
083	12	K	3	N	6.10 (0.240)
084	12	M	3	N	6.10 (0.240)
331	12	K	3	J	6.10 (0.240)
332	12	M	3	J	6.10 (0.240)



# SMPS Stacked MLC Capacitors



(SM Style) SM Military Styles DSCC Dwg. #87106 (X7R)

## Electrical characteristics

DSCC Dwg. 87106-	Cap. Value (µF)	Cap. Tol.	Case Code	Lead Style	Max. A Dimension mm (inches)
<b>100V</b>					
085	15	K	3	N	9.14 (0.360)
086	15	M	3	N	9.14 (0.360)
333	15	K	3	J	9.14 (0.360)
334	15	M	3	J	9.14 (0.360)
087	18	K	3	N	9.14 (0.360)
088	18	M	3	N	9.14 (0.360)
335	18	K	3	J	9.14 (0.360)
336	18	M	3	J	9.14 (0.360)
089	22	K	3	N	12.2 (0.480)
090	22	M	3	N	12.2 (0.480)
337	22	M	3	K	12.2 (0.480)
338	22	M	3	J	12.2 (0.480)
091	27	K	3	N	16.5 (0.650)
092	27	M	3	N	16.5 (0.650)
339	27	K	3	J	16.5 (0.650)
340	27	M	3	J	16.5 (0.650)
093	33	K	1	N	9.14 (0.360)
094	33	M	1	N	9.14 (0.360)
341	33	K	1	J	9.14 (0.360)
342	33	M	1	J	9.14 (0.360)
095	39	K	1	N	12.2 (0.480)
096	39	M	1	N	12.2 (0.480)
343	39	K	1	J	12.2 (0.480)
344	39	M	1	J	12.2 (0.480)
097	47	K	1	N	12.2 (0.480)
098	47	M	1	N	12.2 (0.480)
345	47	K	1	J	12.2 (0.480)
346	47	M	1	J	12.2 (0.480)
099	56	K	1	N	16.5 (0.650)
100	56	M	1	N	16.5 (0.650)
347	56	K	1	J	16.5 (0.650)
348	56	M	1	J	16.5 (0.650)
101	68	K	2	N	12.2 (0.480)
102	68	M	2	N	12.2 (0.480)
349	68	K	2	J	12.2 (0.480)
350	68	M	2	J	12.2 (0.480)
103	82	K	2	N	16.5 (0.650)
104	82	M	2	N	16.5 (0.650)
351	82	K	2	J	16.5 (0.650)
352	82	M	2	J	16.5 (0.650)
105	100	K	6	N	9.14 (0.360)
106	100	M	6	N	9.14 (0.360)
353	100	K	6	J	9.14 (0.360)
354	100	M	6	J	9.14 (0.360)
107	120	K	6	N	9.14 (0.360)
108	120	M	6	N	9.14 (0.360)
355	120	K	6	J	9.14 (0.360)
356	120	M	6	J	9.14 (0.360)
109	150	K	6	N	12.2 (0.480)
110	150	M	6	N	12.2 (0.480)
357	150	K	6	J	12.2 (0.480)
358	150	M	6	J	12.2 (0.480)
111	180	K	6	N	16.5 (0.650)
112	180	M	6	N	16.5 (0.650)
359	180	K	6	J	16.5 (0.650)
360	180	M	6	J	16.5 (0.650)

DSCC Dwg. 87106-	Cap. Value (µF)	Cap. Tol.	Case Code	Lead Style	Max. A Dimension mm (inches)
<b>200V</b>					
113	.47	K	5	N	6.10 (0.240)
114	.47	M	5	N	6.10 (0.240)
361	.47	K	5	J	6.10 (0.240)
362	.47	M	5	J	6.10 (0.240)
115	.56	K	5	N	6.10 (0.240)
116	.56	M	5	N	6.10 (0.240)
363	.56	K	5	J	6.10 (0.240)
364	.56	M	5	J	6.10 (0.240)
117	.68	K	5	N	9.14 (0.360)
118	.68	M	5	N	9.14 (0.360)
365	.68	K	5	J	9.14 (0.360)
366	.68	M	5	J	9.14 (0.360)
119	.82	K	5	N	9.14 (0.360)
120	.82	M	5	N	9.14 (0.360)
367	.82	M	5	J	9.14 (0.360)
368	.82	M	5	J	9.14 (0.360)
121	1.0	K	5	N	12.2 (0.480)
122	1.0	M	5	N	12.2 (0.480)
369	1.0	K	5	J	12.2 (0.480)
370	1.0	M	5	J	12.2 (0.480)
123	1.2	K	5	N	12.2 (0.480)
124	1.2	M	5	N	12.2 (0.480)
371	1.2	K	5	J	12.2 (0.480)
372	1.2	M	5	J	12.2 (0.480)
125	1.5	K	5	N	16.5 (0.650)
126	1.5	M	5	N	16.5 (0.650)
373	1.5	K	5	J	16.5 (0.650)
374	1.5	M	5	J	16.5 (0.650)
127	1.8	K	4	N	9.14 (0.360)
128	1.8	M	4	N	9.14 (0.360)
375	1.8	K	4	J	9.14 (0.360)
376	1.8	M	4	J	9.14 (0.360)
129	2.2	K	4	N	9.14 (0.360)
130	2.2	M	4	N	9.14 (0.360)
377	2.2	K	4	J	9.14 (0.360)
378	2.2	M	4	J	9.14 (0.360)
131	2.7	K	4	N	12.2 (0.480)
132	2.7	M	4	N	12.2 (0.480)
379	2.7	K	4	J	12.2 (0.480)
380	2.7	M	4	J	12.2 (0.480)
133	3.3	K	4	N	12.2 (0.480)
134	3.3	M	4	N	12.2 (0.480)
381	3.3	K	4	J	12.2 (0.480)
382	3.3	M	4	J	12.2 (0.480)
135	3.9	K	4	N	16.5 (0.650)
136	3.9	M	4	N	16.5 (0.650)
383	3.9	K	4	J	16.5 (0.650)
384	3.9	M	4	J	16.5 (0.650)
137	4.7	K	3	N	6.10 (0.240)
138	4.7	M	3	N	6.10 (0.240)
385	4.7	K	3	J	6.10 (0.240)
386	4.7	M	3	J	6.10 (0.240)
139	5.6	K	3	N	6.10 (0.240)
140	5.6	M	3	N	6.10 (0.240)
387	5.6	K	3	J	6.10 (0.240)
388	5.6	M	3	J	6.10 (0.240)
141	6.8	K	3	N	9.14 (0.360)
142	6.8	M	3	N	9.14 (0.360)
389	6.8	K	3	J	9.14 (0.360)
390	6.8	M	3	J	9.14 (0.360)
143	8.2	K	3	N	9.14 (0.360)
144	8.2	M	3	N	9.14 (0.360)
391	8.2	K	3	J	9.14 (0.360)
392	8.2	M	3	J	9.14 (0.360)

DSCC Dwg. 87106-	Cap. Value (µF)	Cap. Tol.	Case Code	Lead Style	Max. A Dimension mm (inches)
<b>200V</b>					
145	10	K	3	N	12.2 (0.480)
146	10	M	3	N	12.2 (0.480)
393	10	K	3	J	12.2 (0.480)
394	10	M	3	J	12.2 (0.480)
147	12	K	3	N	16.5 (0.650)
148	12	M	3	N	16.5 (0.650)
395	12	K	3	J	16.5 (0.650)
396	12	M	3	J	16.5 (0.650)
149	15	K	1	N	9.14 (0.360)
150	15	M	1	N	9.14 (0.360)
397	15	K	1	J	9.14 (0.360)
398	15	M	1	J	9.14 (0.360)
151	18	K	1	N	12.2 (0.480)
152	18	M	1	N	12.2 (0.480)
399	18	K	1	J	12.2 (0.480)
400	18	M	1	J	12.2 (0.480)
153	22	K	1	N	16.5 (0.650)
154	22	M	1	N	16.5 (0.650)
401	22	K	1	J	16.5 (0.650)
402	22	M	1	J	16.5 (0.650)
155	27	K	1	N	16.5 (0.650)
156	27	M	1	N	16.5 (0.650)
403	27	K	1	J	16.5 (0.650)
404	27	M	1	J	16.5 (0.650)
157	33	K	2	N	12.2 (0.480)
158	33	M	2	N	12.2 (0.480)
405	33	K	2	J	12.2 (0.480)
406	33	M	2	J	12.2 (0.480)
159	39	K	2	N	16.5 (0.650)
160	39	M	2	N	16.5 (0.650)
407	39	K	2	J	16.5 (0.650)
408	39	M	2	J	16.5 (0.650)
161	47	K	6	N	6.10 (0.240)
162	47	M	6	N	6.10 (0.240)
409	47	K	6	J	6.10 (0.240)
410	47	M	6	J	6.10 (0.240)
163	56	K	6	N	9.14 (0.360)
164	56	M	6	N	9.14 (0.360)
411	56	K	6	J	9.14 (0.360)
412	56	M	6	J	9.14 (0.360)
165	68	K	6	N	9.14 (0.360)
166	68	M	6	N	9.14 (0.360)
413	68	K	6	J	9.14 (0.360)
414	68	M	6	J	9.14 (0.360)
167	82	K	6	N	12.2 (0.480)
168	82	M	6	N	12.2 (0.480)
415	82	K	6	J	12.2 (0.480)
416	82	M	6	J	12.2 (0.480)
169	100	K	6	N	16.5 (0.650)
170	100	M	6	N	16.5 (0.650)
417	100	K	6	J	16.5 (0.650)
418	100	M	6	J	16.5 (0.650)
171	120	K	6	N	16.5 (0.650)
172	120	M	6	N	16.5 (0.650)
419	120	K	6	J	16.5 (0.650)
420	120	M	6	J	16.5 (0.650)



# SMPS Stacked MLC Capacitors



(SM Style) SM Military Styles DSCC Dwg. #87106 (X7R)

## Electrical characteristics

DSCC Dwg. 87106-	Cap. Value (µF)	Cap. Tol.	Case Code	Lead Style	Max. A Dimension mm (inches)
<b>500V</b>					
173	.15	K	5	N	3.05 (0.120)
174	.15	M	5	N	3.05 (0.120)
421	.15	K	5	J	3.05 (0.120)
422	.15	M	5	J	3.05 (0.120)
175	.18	K	5	N	6.10 (0.240)
176	.18	M	5	N	6.10 (0.240)
423	.18	K	5	J	6.10 (0.240)
424	.18	M	5	J	6.10 (0.240)
177	.22	K	5	N	6.10 (0.240)
178	.22	M	5	N	6.10 (0.240)
425	.22	K	5	J	6.10 (0.240)
426	.22	M	5	J	6.10 (0.240)
179	.27	K	5	N	6.10 (0.240)
180	.27	M	5	N	6.10 (0.240)
427	.27	K	5	J	6.10 (0.240)
428	.27	M	5	J	6.10 (0.240)
181	.33	K	5	N	9.14 (0.360)
182	.33	M	5	N	9.14 (0.360)
429	.33	K	5	J	9.14 (0.360)
430	.33	M	5	J	9.14 (0.360)
183	.39	K	5	N	9.14 (0.360)
184	.39	M	5	N	9.14 (0.360)
431	.39	K	5	J	9.14 (0.360)
432	.39	M	5	J	9.14 (0.360)
185	.47	K	5	N	9.14 (0.360)
186	.47	M	5	N	9.14 (0.360)
433	.47	K	5	J	9.14 (0.360)
434	.47	M	5	J	9.14 (0.360)
187	.56	K	5	N	12.2 (0.480)
188	.56	M	5	N	12.2 (0.480)
435	.56	K	5	J	12.2 (0.480)
436	.56	M	5	J	12.2 (0.480)
189	.68	K	5	N	16.5 (0.650)
190	.68	M	5	N	16.5 (0.650)
437	.68	K	5	J	16.5 (0.650)
438	.68	M	5	J	16.5 (0.650)
231	.82	K	4	N	9.14 (0.360)
232	.82	M	4	N	9.14 (0.360)
439	.82	K	4	J	9.14 (0.360)
440	.82	M	4	J	9.14 (0.360)
191	1.0	K	4	N	9.14 (0.360)
192	1.0	M	4	N	9.14 (0.360)
441	1.0	K	4	J	9.14 (0.360)
442	1.0	M	4	J	9.14 (0.360)
193	1.2	K	4	N	9.14 (0.360)
194	1.2	M	4	N	9.14 (0.360)
443	1.2	K	4	J	9.14 (0.360)
444	1.2	M	4	J	9.14 (0.360)
195	1.5	K	4	N	12.2 (0.480)
196	1.5	M	4	N	12.2 (0.480)
445	1.5	K	4	J	12.2 (0.480)
446	1.5	M	4	J	12.2 (0.480)
197	1.8	K	4	N	16.5 (0.650)
198	1.8	M	4	N	16.5 (0.650)
447	1.8	K	4	J	16.5 (0.650)
448	1.8	M	4	J	16.5 (0.650)
233	2.2	K	3	N	6.10 (0.240)
234	2.2	M	3	N	6.10 (0.240)
449	2.2	K	3	J	6.10 (0.240)
450	2.2	M	3	J	6.10 (0.240)
199	2.7	K	3	N	9.14 (0.360)
200	2.7	M	3	N	9.14 (0.360)
451	2.7	K	3	J	9.14 (0.360)
452	2.7	M	3	J	9.14 (0.360)

DSCC Dwg. 87106-	Cap. Value (µF)	Cap. Tol.	Case Code	Lead Style	Max. A Dimension mm (inches)
<b>500V</b>					
201	3.3	K	3	N	9.14 (0.360)
202	3.3	M	3	N	9.14 (0.360)
453	3.3	K	3	J	9.14 (0.360)
454	3.3	M	3	J	9.14 (0.360)
203	3.9	K	3	N	9.14 (0.360)
204	3.9	M	3	N	9.14 (0.360)
455	3.9	K	3	J	9.14 (0.360)
456	3.9	M	3	J	9.14 (0.360)
205	4.7	K	3	N	12.2 (0.480)
206	4.7	M	3	N	12.2 (0.480)
457	4.7	K	3	J	12.2 (0.480)
458	4.7	M	3	J	12.2 (0.480)
207	5.6	K	3	N	16.5 (0.650)
208	5.6	M	3	N	16.5 (0.650)
459	5.6	K	3	J	16.5 (0.650)
460	5.6	M	3	J	16.5 (0.650)
235	6.8	K	1	N	12.2 (0.480)
236	6.8	M	1	N	12.2 (0.480)
461	6.8	K	1	J	12.2 (0.480)
462	6.8	M	1	J	12.2 (0.480)
209	8.2	K	1	N	12.2 (0.480)
210	8.2	M	1	N	12.2 (0.480)
463	8.2	K	1	J	12.2 (0.480)
464	8.2	M	1	J	12.2 (0.480)
211	10	K	1	N	12.2 (0.480)
212	10	M	1	N	12.2 (0.480)
465	10	K	1	J	12.2 (0.480)
466	10	M	1	J	12.2 (0.480)
213	12	K	1	N	16.5 (0.650)
214	12	M	1	N	16.5 (0.650)
467	12	K	1	J	16.5 (0.650)
468	12	M	1	J	16.5 (0.650)
237	15	K	2	N	16.5 (0.650)
238	15	M	2	N	16.5 (0.650)
469	15	K	2	J	16.5 (0.650)
470	15	M	2	J	16.5 (0.650)
215	18	K	2	N	16.5 (0.650)
216	18	M	2	N	16.5 (0.650)
471	18	K	2	J	16.5 (0.650)
472	18	M	2	J	16.5 (0.650)
239	22	K	6	N	9.14 (0.360)
240	22	M	6	N	9.14 (0.360)
473	22	K	6	J	9.14 (0.360)
474	22	M	6	J	9.14 (0.360)
217	27	K	6	N	9.14 (0.360)
218	27	M	6	N	9.14 (0.360)
475	27	K	6	J	9.14 (0.360)
476	27	M	6	J	9.14 (0.360)
219	33	K	6	N	12.2 (0.480)
220	33	M	6	N	12.2 (0.480)
477	33	K	6	J	12.2 (0.480)
478	33	M	6	J	12.2 (0.480)
221	39	K	6	N	16.5 (0.650)
222	39	M	6	N	16.5 (0.650)
479	39	K	6	J	16.5 (0.650)
480	39	M	6	J	16.5 (0.650)



# SMPS Stacked MLC Capacitors



## (SM9 Style) Technical Information on SMPS Capacitors

### ELECTRICAL SPECIFICATIONS

#### Temperature Coefficient

C0G: A Temperature Coefficient - 0 ±30 ppm/°C, -55° to +125°C  
 X7R: C Temperature Coefficient - ±15%, -55° to +125°C  
 Z5U: E Temperature Coefficient - +22, -56%, +10° to +85°C

#### Capacitance Test (MIL-STD-202 Method 305)

C0G: 25°C, 1.0±0.2 Vrms (open circuit voltage) at 1KHz  
 X7R: 25°C, 1.0±0.2 Vrms (open circuit voltage) at 1KHz  
 Z5U: 25°C, 0.5 Vrms max (open circuit voltage) at 1KHz

#### Dissipation Factor 25°C

C0G: 0.15% Max @ 25°C, 1.0±0.2 Vrms (open circuit voltage) at 1KHz  
 X7R: 2.5% Max @ 25°C, 1.0±0.2 Vrms (open circuit voltage) at 1KHz  
 Z5U: 3.0% Max @ 25°C, 0.5 Vrms max (open circuit voltage) at 1KHz

#### Insulation Resistance 25°C (MIL-STD-202 Method 302)

C0G and X7R: 100K MΩ or 1000 MΩ-μF, whichever is less.  
 Z5U: 10K MΩ or 1000 MΩ-μF, whichever is less.

#### Insulation Resistance 125°C (MIL-STD-202 Method 302)

C0G and X7R: 10K MΩ or 100 MΩ-μF, whichever is less.  
 Z5U: 1K MΩ or 100 MΩ-μF, whichever is less.

#### Dielectric Withstanding Voltage 25°C (Flash Test)

C0G and X7R: 250% rated voltage for 5 seconds with 50 mA max charging current. (500 Volt units @ 750 VDC)  
 Z5U: 200% rated voltage for 5 seconds with 50 mA max charging current.

#### Life Test (1000 hrs)

C0G and X7R: 200% rated voltage at +125°C. (500 Volt units @ 600 VDC)  
 Z5U: 150% rated voltage at +85°C

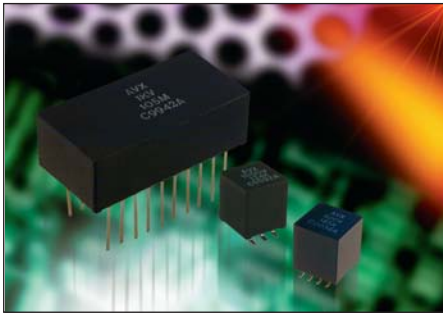
#### Moisture Resistance (MIL-STD-202 Method 106)

C0G, X7R, Z5U: Ten cycles with no voltage applied.

#### Thermal Shock (MIL-STD-202 Method 107, Condition A)

#### Immersion Cycling (MIL-STD-202 Method 104, Condition B)

#### Resistance To Solder Heat (MIL-STD-202, Method 210, Condition B, for 20 seconds)



### Typical ESR Performance (mΩ)

	Aluminum Electrolytic 100μF/50V	Low ESR Solid Tantalum 100μF/10V	Solid Aluminum Electrolytic 100μF/16V	MLCC SMPS 100μF/50V	MLCC SMPS 4.7μF/50V
ESR @ 10KHz	300	72	29	3	66
ESR @ 50KHz	285	67	22	2	23
ESR @ 100KHz	280	62	20	2.5	15
ESR @ 500KHz	265	56	18	4	8
ESR @ 1MHz	265	56	17	7	7.5
ESR @ 5MHz	335	72	17	12.5	8
ESR @ 10MHz	560	91	22	20	14

### HOW TO ORDER

### AVX Styles: SM91, SM92, SM93, SM94, SM95, SM96

SM9	1	7	C	106	M	A	N	660
<b>AVX Style Size</b>	<b>Size</b>	<b>Voltage</b>	<b>Temperature Coefficient</b>	<b>Capacitance Code</b>	<b>Capacitance Tolerance</b>	<b>Test Level</b>	<b>Termination</b>	<b>Height</b>
SM9 = Plastic Case	See dimensions chart	50V = 5 100V = 1 200V = 2 500V = 7	C0G = A X7R = C Z5U = E	(2 significant digits + no. of zeros) 10 pF = 100 100 pF = 101 1,000 pF = 102 22,000 pF = 223 220,000 pF = 224 1 μF = 105 10 μF = 106 100 μF = 107	C0G: J = ±5% K = ±10% M = ±20% X7R: K = ±10% M = ±20% Z = +80, -20% Z5U: Z = +80, -20% P = GMV (+100, -0%)	A = Standard B = Hi-Rel*	N = Straight Lead J = Leads formed in L = Leads formed out	See table on page 28 for max cap. per height

Note: Capacitors with X7R and Z5U dielectrics are not intended for applications across AC supply mains or AC line filtering with polarity reversal. Contact plant for recommendations.

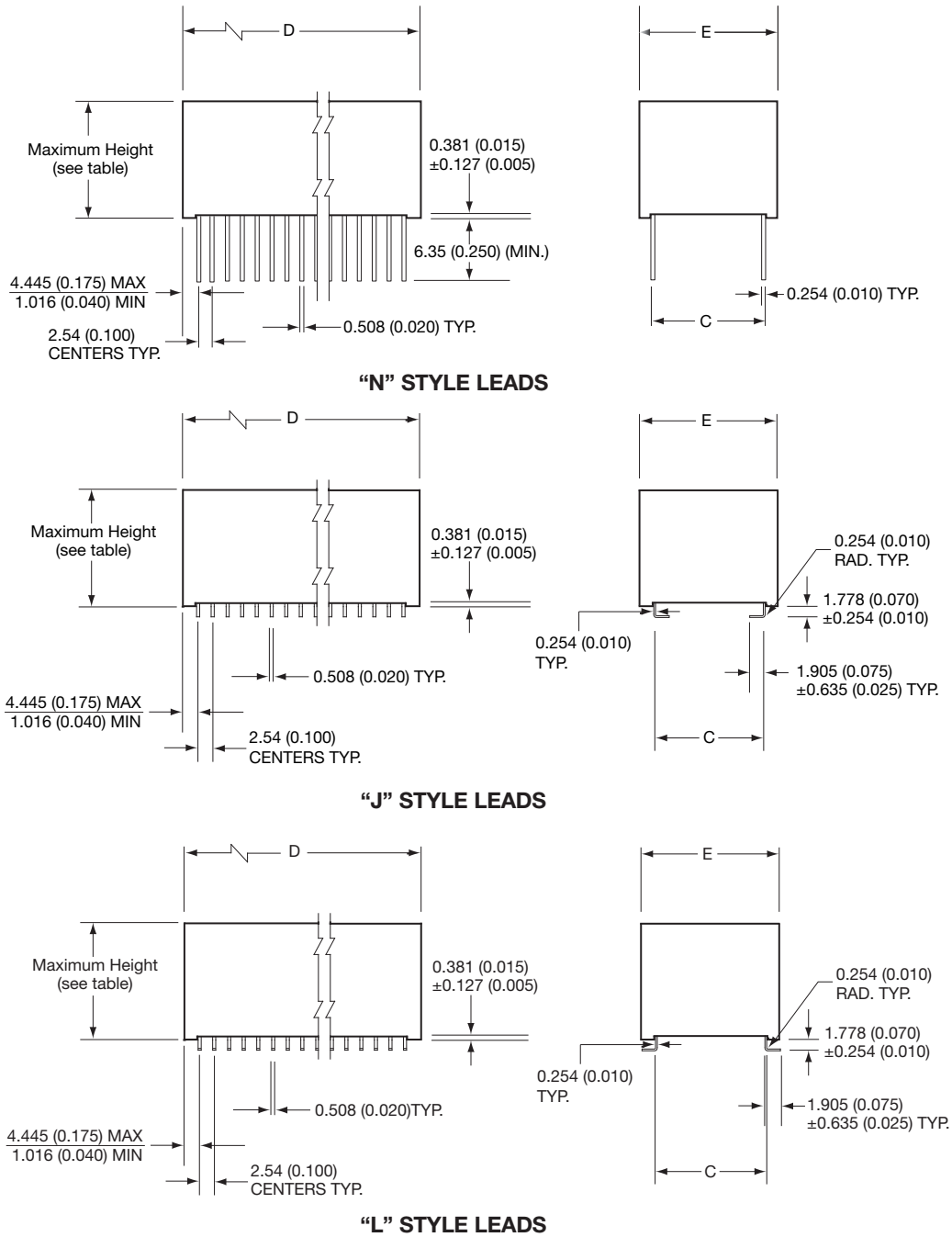
\*Hi-Rel screening for C0G and X7R only. Screening consists of 100% Group A (B Level), Subgroup 1 per MIL-PRF-49470.





# SMPS Stacked MLC Capacitors

## Encapsulated in DAP (Diallyl Phthalate) Case (SM9 Style)



### DIMENSIONS

millimeters (inches)

Case Code	$\pm 0.635$ (0.025) C	$\pm 0.254$ (0.010) D	+0.000 (0.000) -0.254 (0.010) E	No. of Leads per side*
SM91	11.4 (0.450)	54.7 (2.155)	14.7 (0.580)	20
SM92	20.3 (0.800)	41.0 (1.615)	24.1 (0.950)	15
SM93	11.4 (0.450)	29.3 (1.155)	14.7 (0.580)	10
SM94	10.2 (0.400)	12.3 (0.485)	12.3 (0.485)	4
SM95	6.35 (0.250)	9.02 (0.355)	9.02 (0.355)	3
SM96	31.8 (1.250)	54.7 (2.155)	36.3 (1.430)	20

\*Leads styles N, J or L available





# SMPS Stacked MLC Capacitors

## Encapsulated in DAP (Diallyl Phthalate) Case (SM9 Style)



### Max Capacitance ( $\mu\text{F}$ ) Available Versus Style with Height of 0.270" - 6.86mm

AVX STYLE	SM91 _____ AN270				SM92 _____ AN270				SM93 _____ AN270				SM94 _____ AN270				SM95 _____ AN270				SM96 _____ AN270			
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	1.0	.70	.40	.18	1.2	1.0	.60	.26	.47	.40	.20	.09	.16	.13	.07	.02	.05	.04	.02	.01	3.2	2.4	1.3	.50
X7R	27	12	7.0	2.6	41	18	11	4.0	18	6.0	3.6	1.3	7.5	1.8	1.1	.40	2.8	.68	.40	.16	80	40	24	9.4
Z5U	84	32	12	--	110	46	34	--	40	15	6.0	--	12	4.6	3.0	--	4.6	1.8	.72	--	260	140	92	--

### Max Capacitance ( $\mu\text{F}$ ) Available Versus Style with Height of 0.390" - 9.91mm

AVX STYLE	SM91 _____ AN390				SM92 _____ AN390				SM93 _____ AN390				SM94 _____ AN390				SM95 _____ AN390				SM96 _____ AN390			
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	2.0	1.4	.80	.36	2.4	2.0	1.2	.52	1.0	.80	.40	.18	.32	.26	.14	.05	.10	.08	.05	.02	6.4	4.8	2.6	1.0
X7R	54	24	14	5.2	82	36	22	8.0	36	12	7.2	2.6	15	3.6	2.2	.80	5.6	1.3	.80	.32	160	80	48	18
Z5U	160	64	24	--	230	92	68	--	80	30	12	--	24	9.2	6.0	--	9.2	3.6	1.4	--	520	280	180	--

### Max Capacitance ( $\mu\text{F}$ ) Available Versus Style with Height of 0.530" - 13.46mm

AVX STYLE	SM91 _____ AN530				SM92 _____ AN530				SM93 _____ AN530				SM94 _____ AN530				SM95 _____ AN530				SM96 _____ AN530			
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	3.0	2.1	1.2	.54	3.6	3.0	1.8	.78	1.5	1.2	.60	.27	.48	.39	.21	.07	.15	.12	.07	.03	9.6	7.2	3.9	1.5
X7R	82	36	21	7.8	120	54	33	12	54	18	10	3.9	22	5.4	3.3	1.2	8.2	2.0	1.2	.48	240	120	72	28
Z5U	250	96	36	--	350	130	100	--	120	45	18	--	36	13	9.0	--	13	5.4	2.1	--	780	430	270	--

### Max Capacitance ( $\mu\text{F}$ ) Available Versus Style with Height of 0.660" - 16.76mm

AVX STYLE	SM91 _____ AN660				SM92 _____ AN660				SM93 _____ AN660				SM94 _____ AN660				SM95 _____ AN660				SM96 _____ AN660			
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	4.0	2.8	1.6	.72	4.8	4.0	2.4	1.0	2.0	1.6	.80	.36	.64	.52	.28	.10	.20	.16	.10	.04	12	9.6	5.2	2.0
X7R	110	48	28	10	160	72	44	16	72	24	14	5.2	30	7.2	4.4	1.6	10	2.7	1.6	.64	320	160	96	37
Z5U	330	120	48	--	470	180	130	--	160	60	24	--	48	18	12	--	18	7.2	2.8	--	1000	570	360	--

### Max Capacitance ( $\mu\text{F}$ ) Available Versus Style with Height of 0.800" - 20.3mm

AVX STYLE	SM91 _____ AN800				SM92 _____ AN800				SM93 _____ AN800				SM94 _____ AN800				SM95 _____ AN800				SM96 _____ AN800			
	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V	50V	100V	200V	500V
C0G	5.0	3.5	2.0	.90	6.0	5.0	3.0	1.3	2.5	2.0	1.0	.47	.80	.65	.35	.12	.25	.20	.12	.05	16	12	6.5	2.5
X7R	130	60	35	13	200	90	55	20	90	30	18	6.5	36	9.0	5.5	2.0	12	3.4	2.0	.80	400	200	120	47
Z5U	420	160	60	--	590	230	170	--	200	75	30	--	60	23	15	--	23	9.0	3.6	--	1300	720	460	--

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