# SMPS Stacked MLC Capacitors

## (SM 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

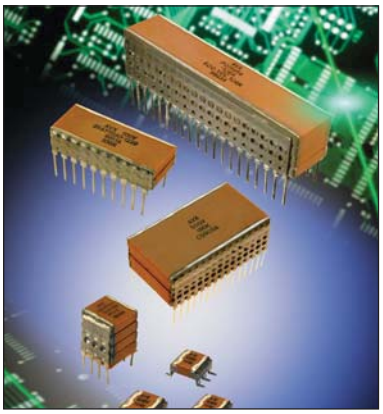
**Moisture Resistance** (MIL-STD-202 Method 106)
C0G, X7R, Z5U: Ten cycles with no voltage applied.

**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)

**Not RoHS Compliant**



### 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 |
|---|---|---|---|---|---|---|---|---|
| **AVX Style**<br>SM0 = Uncoated<br>SM5 = Epoxy Coated | **Size**<br>See Dimensions chart | **Voltage**<br>50V = 5<br>100V = 1<br>200V = 2<br>500V = 7 | **Temperature Coefficient**<br>C0G = A<br>X7R = C<br>Z5U = E | **Capacitance Code**<br>(2 significant digits + number of zeros)<br>10 pF = 100<br>100 pF = 101<br>1,000 pF = 102<br>22,000 pF = 223<br>220,000 pF = 224<br>1µF = 105<br>10 µF = 106<br>100 µF = 107 | **Capacitance Tolerance**<br>C0G:<br>J = ±5%<br>K = ±10%<br>M = ±20%<br>X7R:<br>K = ±10%<br>M = ±20%<br>Z = +80%, -20%<br>Z5U:<br>M = ±20%<br>Z = +80%, -20%<br>P = GMV (+100, -0%) | **Test Level**<br>A = Standard<br>B = Hi-Rel*<br>5 = Standard/MIL**<br>6 = Hi-Rel/MIL*** | **Termination**<br>N = Straight Lead<br>J = Leads formed in<br>L = Leads formed out<br>P = P Style Leads<br>Z = Z Style Leads | **Height**<br>Max Dimension "A"<br>120 = 0.120"<br>240 = 0.240"<br>360 = 0.360"<br>480 = 0.480"<br>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.

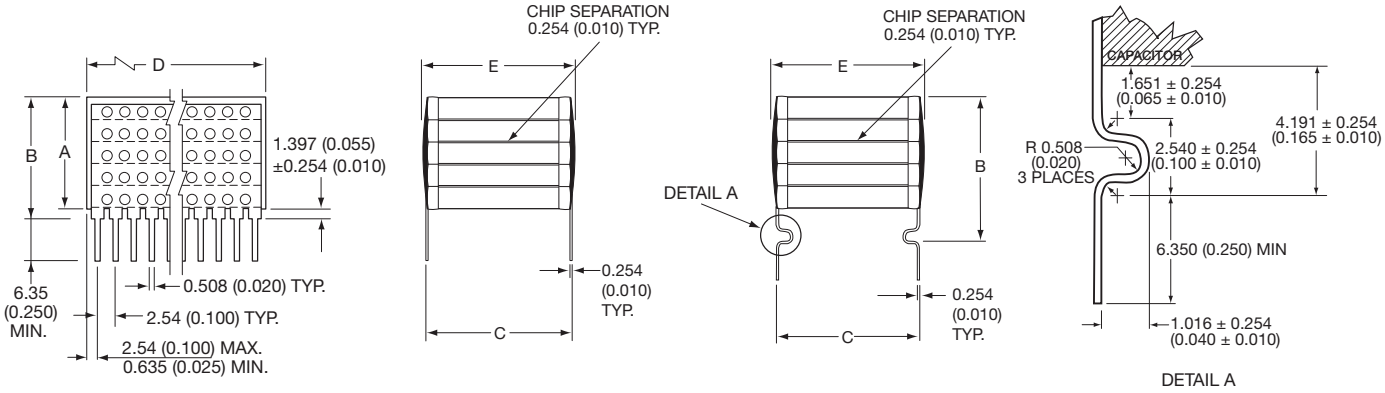
** Form, fit & function equivalent to MIL-PRF-49470 part. Applies to 50V rated parts only. No screening.

*** Form, fit & function equivalent to MIL-PRF-49470 part. Applies to 50V rated parts only. Hi-Rel screening the same as option B.

Performance of SMPS capacitors can be simulated by downloading SpiCalci software program - http://www.avx.com/SpiApps/default.asp#spicalci
Custom values, ratings and configurations are also available.

# SMPS Stacked MLC Capacitors

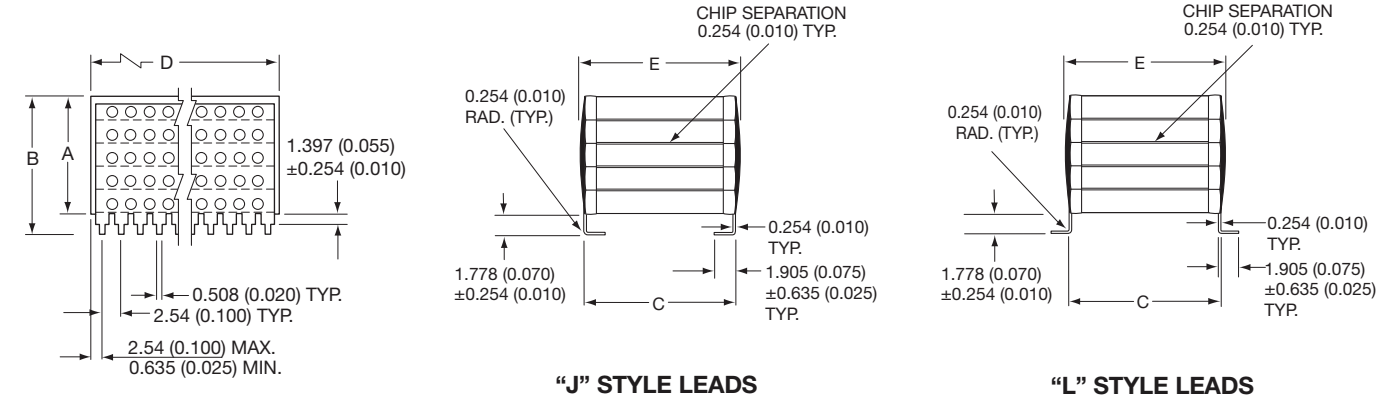
## (SM Style) Surface Mount and Thru-Hole Styles (SM0, SM5)




**"N" STYLE LEADS**

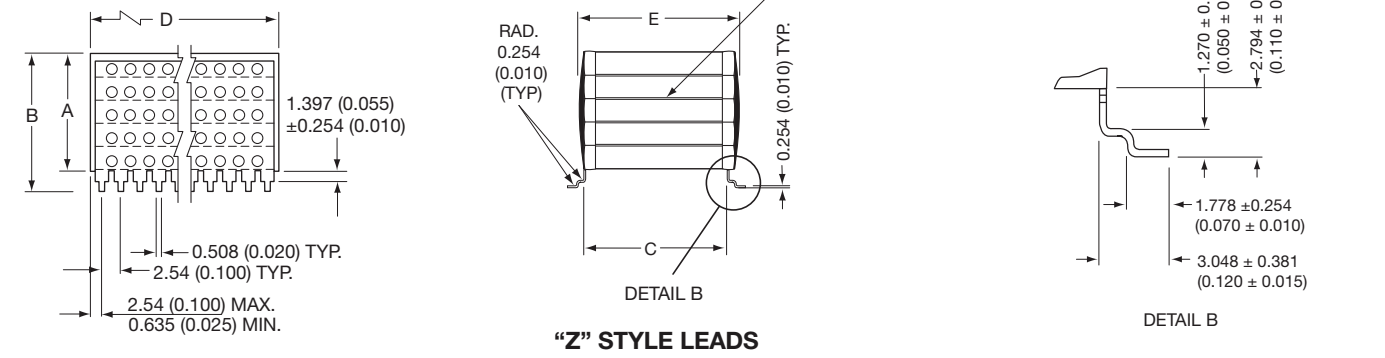
**"P" STYLE LEADS**

DETAIL A




**"J" STYLE LEADS**

**"L" STYLE LEADS**




**"Z" STYLE LEADS**

DETAIL B

## 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)<br>For "J" & "L" Style Leads: "A" Dimension Plus 2.032 (0.080)<br>For "P" Style Leads: "A" Dimension Plus 4.445 (0.175)<br>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 |
| 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 |
| 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 |
| 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

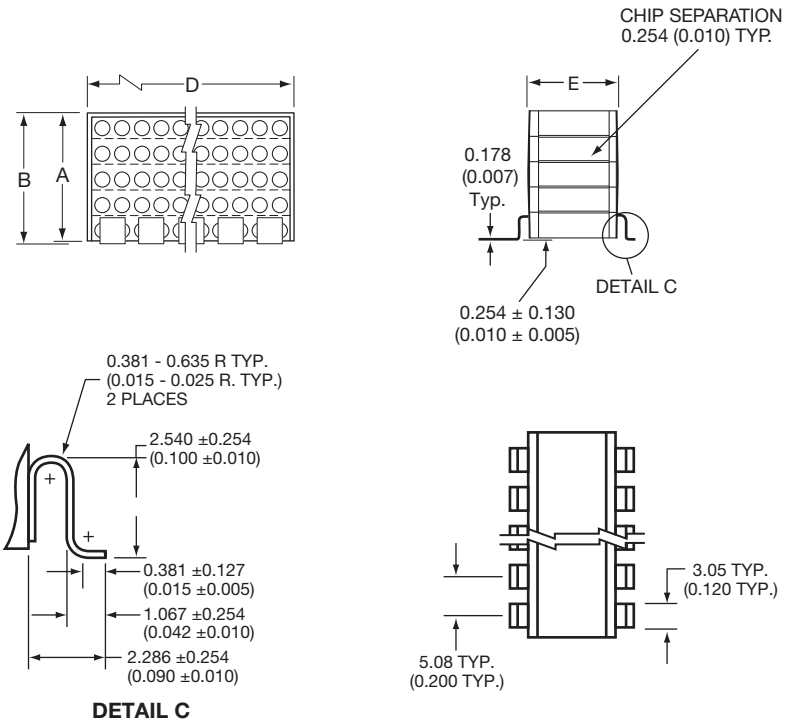
| AVX STYLE | SM01 _ _ _ _ _ _ AN480 | | | | SM02 _ _ _ _ _ _ AN480 | | | | SM03 _ _ _ _ _ _ AN480 | | | | SM04 _ _ _ _ _ _ AN480 | | | | SM05 _ _ _ _ _ _ AN480 | | | | SM06 _ _ _ _ _ _ AN480 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 50V | 100V | 200V | 500V | 50V | 100V | 200V | 500V | 50V | 100V | 200V | 500V | 50V | 100V | 200V | 500V | 50V | 100V | 200V | 500V | 50V | 100V | 200V | 500V |
| 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 |
| 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 "S" Style Leads (SM0, SM5)




**DETAIL C**

**"S" STYLE LEADS**

## DIMENSIONS

**millimeters (inches)**

| Style | A (max.) | B (max.) | D ±.635 (±0.025) | E (max.) | No. of Leads per side |
|---|---|---|---|---|---|
| **SM-3** | See page 10 for maximum "A" Dimension | For "S" Style Leads: "A" Dimension Plus 0.381 (0.015) | 26.7 (1.050) | 12.7 (0.500) | 5 |
| **SM-4** | | | 10.2 (0.400) | 11.2 (0.440) | 2 |
| **SM-5** | | | 6.35 (0.250) | 7.62 (0.300) | 1 |

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

# 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 DLA WEBSITE**
http://www.landandmaritime.dla.mil/programs/milspec/DocSearch.aspx for details on testing, electrical, mechanical and part number options.

**PLEASE CONTACT THE DLA WEBSITE**
http://www.landandmaritime.dla.mil/Programs/QmlQpl/ for the latest QPL (Qualified Products List).

**Not RoHS Compliant**

## HOW TO ORDER

| M49470 | R | 01 | 474 | K | C | N |
|---|---|---|---|---|---|---|
| **Performance specification indicating MIL-PRF-49470** | **Characteristic**<br>P = BP<br>Q = BQ<br>R = BR<br>X = BX | **Performance specification sheet number**<br>**01 – indicating MIL-PRF-49470/1**<br>**02 – indicating MIL-PRF-49470/2** | **Capacitance** | **Capacitance Tolerance**<br>K = 10%<br>M = 20% | **Rated Voltage**<br>Z = 25V<br>A = 50V<br>B = 100V<br>C = 200V<br>E = 500V | **Configuration (Lead Style)**<br>See chart for Lead configurations |

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.

"T" level for 25V under qualification. Availability and updates upon request.

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

## LEAD CONFIGURATION

**millimeters (inches)**

| Symbol (Last digit of military PN, 12th digit of AVX PN) | Lead Style | Height Profile (Dimension A) | Formed lead length, L |
|---|---|---|---|
| N | N (straight) | Standard | N/A |
| L | L (formed) | Standard | 1.78 ± 0.25 (0.070 ± 0.010) |
| M | L (formed) | Standard | 1.14 ± 0.25 (0.045 ± 0.010) |
| J | J (formed) | Standard | 1.78 ± 0.25 (0.070 ± 0.010) |
| K | J (formed) | Standard | 1.14 ± 0.25 (0.045 ± 0.010) |
| A | N (straight) | Low | N/A |
| B | L (formed) | Low | 1.78 ± 0.25 (0.070 ± 0.010) |
| D | L (formed) | Low | 1.14 ± 0.25 (0.045 ± 0.010) |
| C | J (formed) | Low | 1.78 ± 0.25 (0.070 ± 0.010) |
| F | J (formed) | Low | 1.14 ± 0.25 (0.045 ± 0.010) |

Note: Lead options available marked with a "-" as a place holder. See lead configuration column for available lead options to replace the "-".

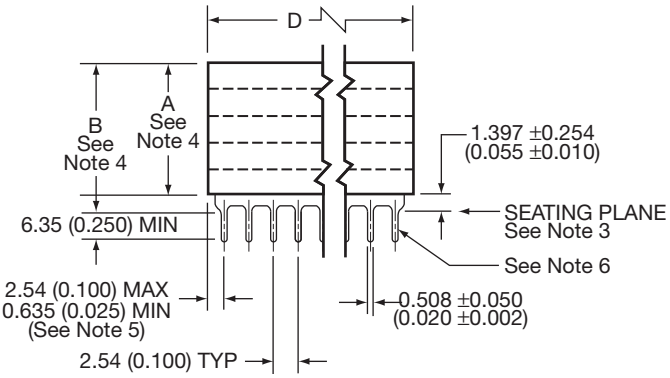
Performance of SMPS capacitors can be simulated by downloading SpiCalci software program - http://www.avx.com/SpiApps/default.asp#spicalci

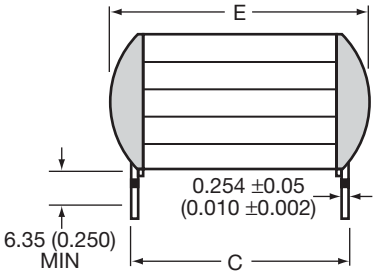
# SMPS Stacked MLC Capacitors

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

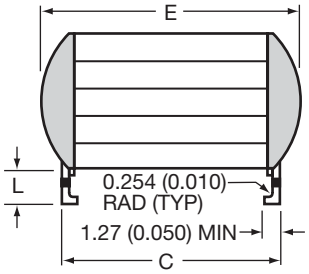
### MIL-PRF-49470/1

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.

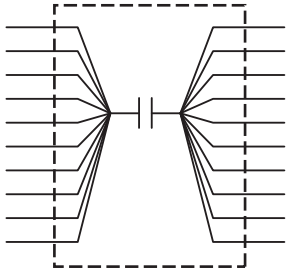


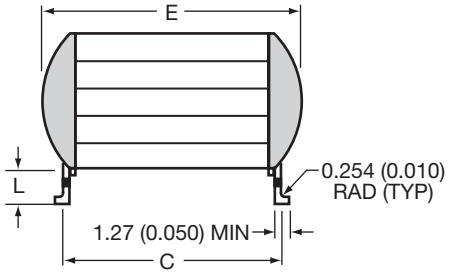

**LEAD STYLE N AND A**




**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 |

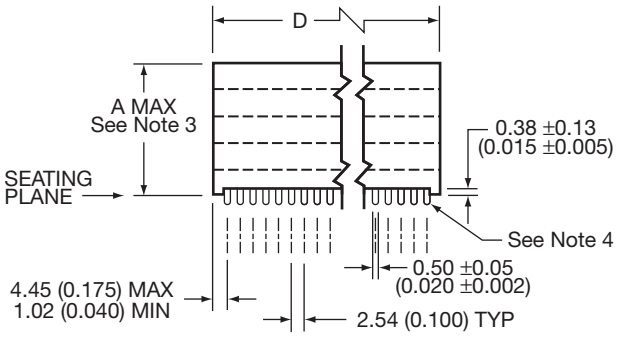
NOTES:
1. Dimensions are in millimeters (inches)
2. Unless otherwise specified, tolerances are 0.254 (±0.010).
3. Lead frame configuration is shown as typical above the seating plane.
4. See table I of MIL-PRF-49470/1 for specific maximum A dimension. For maximum B dimension, add 1.65 (0.065) to the 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).

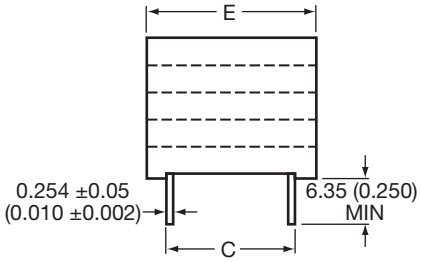
# SMPS Stacked MLC Capacitors

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

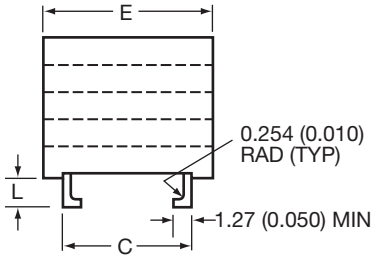
### MIL-PRF-49470/2

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.

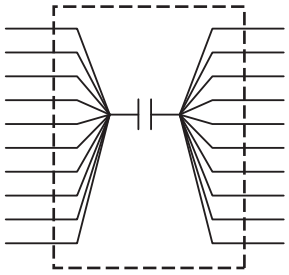


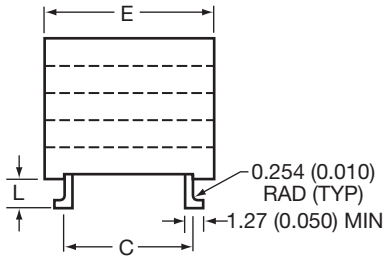

**LEAD STYLE N AND A**




**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

| MIL-PRF-49470 PIN 1/ | AVX PART NUMBER (for reference only) 2/ | Capacitance µF | Tolerance | Characteristic | Case Code | Lead Configuration |
|---|---|---|---|---|---|---|
| | | **25V** | | | | |
| -49470X0-155-Z- | SM-53C155-H-270 | 1.5 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-185-Z- | SM-53C185-H-270 | 1.8 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-225-Z- | SM-53C225-H-270 | 2.2 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-275-Z- | SM-53C275-H-390 | 2.7 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-335-Z- | SM-53C335-H-390 | 3.3 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-395-Z- | SM-53C395-H-390 | 3.9 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-475-Z- | SM-53C475-H-390 | 4.7 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-565-Z- | SM-53C565-H-530 | 5.6 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-685-Z- | SM-53C685-H-530 | 6.8 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-685-Z- | SM-43C685-H-270 | 6.8 | K, M | BX | 4 | A, B, D, C, F |
| -49470X0-825-Z- | SM-53C825-H-660 | 8.2 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-825-Z- | SM-43C825-H-390 | 8.2 | K, M | BX | 4 | A, B, D, C, F |
| -49470X0-106-Z- | SM-53C106-H-800 | 10 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-106-Z- | SM-43C106-H-390 | 10 | K, M | BX | 4 | A, B, D, C, F |
| -49470X0-126-Z- | SM-43C126-H-390 | 12 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-156-Z- | SM-43C156-H-530 | 15 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-156-Z- | SM-33C156-H-270 | 15 | K, M | BX | 3 | A, B, D, C, F |
| -49470X0-186-Z- | SM-43C186-H-530 | 18 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-186-Z- | SM-33C186-H-270 | 18 | K, M | BX | 3 | A, B, D, C, F |
| -49470X0-226-Z- | SM-43C226-H-660 | 22 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-226-Z- | SM-33C226-H-390 | 22 | K, M | BX | 3 | A, B, D, C, F |
| -49470X0-276-Z- | SM-43C276-H-660 | 27 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-276-Z- | SM-33C276-H-390 | 27 | K, M | BX | 3 | A, B, D, C, F |
| -49470X0-336-Z- | SM-43C336-H-800 | 33 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-336-Z- | SM-33C336-H-390 | 33 | K, M | BX | 3 | A, B, D, C, F |
| -49470X0-396-Z- | SM-33C396-H-530 | 39 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-396-Z- | SM-13C396-H-390 | 39 | K, M | BX | 1 | A, B, D, C, F |
| -49470X0-476-Z- | SM-33C476-H-660 | 47 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-476-Z- | SM-13C476-H-530 | 47 | K, M | BX | 1 | A, B, D, C, F |
| -49470X0-566-Z- | SM-33C566-H-660 | 56 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-566-Z- | SM-13C566-H-530 | 56 | K, M | BX | 1 | A, B, D, C, F |
| -49470X0-686-Z- | SM-33C686-H-660 | 68 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-686-Z- | SM-13C686-H-530 | 68 | K, M | BX | 1 | A, B, D, C, F |
| -49470X0-826-Z- | SM-33C826-H-800 | 82 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-826-Z- | SM-13C826-H-530 | 82 | K, M | BX | 1 | A, B, D, C, F |
| -49470X0-107-Z- | SM-13C107-H-660 | 100 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-107-Z- | SM-23C107-H-530 | 100 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-127-Z- | SM-13C127-H-800 | 120 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-127-Z- | SM-23C127-H-530 | 120 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-157-Z- | SM-23C157-H-660 | 150 | K, M | BX | 2 | N, L, M, J, K |
| -49470X0-157-Z- | SM-63C157-H-390 | 150 | K, M | BX | 6 | A, B, D, C, F |
| -49470X0-187-Z- | SM-23C187-H-800 | 180 | K, M | BX | 2 | N, L, M, J, K |
| -49470X0-187-Z- | SM-63C187-H-530 | 180 | K, M | BX | 6 | A, B, D, C, F |
| -49470X0-227-Z- | SM-63C227-H-530 | 220 | K, M | BX | 6 | N, L, M, J, K |
| -49470X0-277-Z- | SM-63C277-H-660 | 270 | K, M | BX | 6 | N, L, M, J, K |
| -49470X0-337-Z- | SM-63C337-H-800 | 330 | K, M | BX | 6 | N, L, M, J, K |
| -49470X0-397-Z- | SM-63C397-H-800 | 390 | K, M | BX | 6 | N, L, M, J, K |
| | | **50V** | | | | |
| -49470X0-105-A- | SM-55C105-H-120 | 1 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-125-A- | SM-55C125-H-120 | 1.2 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-155-A- | SM-55C155-H-240 | 1.5 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-185-A- | SM-55C185-H-240 | 1.8 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-225-A- | SM-55C225-H-240 | 2.2 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-275-A- | SM-55C275-H-360 | 2.7 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-335-A- | SM-55C335-H-360 | 3.3 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-395-A- | SM-55C395-H-480 | 3.9 | K, M | BX | 5 | N, L, M, J, K |

1/ Complete PIN shall include additional symbols replacing dashes (from left to right): product level (M for B level, or T for T level), part style (1 for unencapsulated, 2 for encapsulated), capacitance tolerance, lead configuration

2/ Complete AVX Part Number (provided for reference only) shall include additional symbols replacing dashes (from left to right): part style (0 for unencapsulated and 9 for encapsulated), capacitance tolerance, lead configuration

# SMPS Stacked MLC Capacitors

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

| MIL-PRF-49470 PIN 1/ | AVX PART NUMBER (for reference only) 2/ | Capacitance µF | Tolerance | Characteristic | Case Code | Lead Configuration |
|---|---|---|---|---|---|---|
| -49470X0-475-A- | SM-55C475-H-480 | 4.7 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-475-A- | SM-45C475-H-240 | 4.7 | K, M | BX | 4 | A, B, D, C, F |
| -49470X0-565-A- | SM-55C565-H-650 | 5.6 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-565-A- | SM-45C565-H-240 | 5.6 | K, M | BX | 4 | A, B, D, C, F |
| -49470X0-685-A- | SM-45C685-H-360 | 6.8 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-825-A- | SM-45C825-H-360 | 8.2 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-106-A- | SM-45C106-H-480 | 10 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-126-A- | SM-45C126-H-480 | 12 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-156-A- | SM-45C156-H-650 | 15 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-156-A- | SM-35C156-H-240 | 15 | K, M | BX | 3 | A, B, D, C, F |
| -49470X0-186-A- | SM-35C186-H-240 | 18 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-226-A- | SM-35C226-H-360 | 22 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-276-A- | SM-35C276-H-360 | 27 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-336-A- | SM-35C336-H-360 | 33 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-396-A- | SM-35C396-H-480 | 39 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-476-A- | SM-35C476-H-650 | 47 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-476-A- | SM-25C476-H-240 | 47 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-566-A- | SM-15C566-H-360 | 56 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-566-A- | SM-25C566-H-240 | 56 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-686-A- | SM-15C686-H-480 | 68 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-686-A- | SM-25C686-H-360 | 68 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-826-A- | SM-15C826-H-480 | 82 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-826-A- | SM-25C826-H-360 | 82 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-107-A- | SM-15C107-H-650 | 100 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-107-A- | SM-25C107-H-480 | 100 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-127-A- | SM-25C127-H-480 | 120 | K, M | BX | 2 | N, L, M, J, K |
| -49470X0-157-A- | SM-25C157-H-650 | 150 | K, M | BX | 2 | N, L, M, J, K |
| -49470X0-187-A- | SM-65C187-H-480 | 180 | K, M | BX | 6 | N, L, M, J, K |
| -49470X0-227-A- | SM-65C227-H-480 | 220 | K, M | BX | 6 | N, L, M, J, K |
| -49470X0-277-A- | SM-65C277-H-650 | 270 | K, M | BX | 6 | N, L, M, J, K |
| | | **100V** | | | | |
| -49470X0-684-B- | SM-51C684-H-120 | 0.68 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-824-B- | SM-51C824-H-240 | 0.82 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-105-B- | SM-51C105-H-240 | 1 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-125-B- | SM-51C125-H-240 | 1.2 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-155-B- | SM-51C155-H-360 | 1.5 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-185-B- | SM-51C185-H-360 | 1.8 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-225-B- | SM-51C225-H-480 | 2.2 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-225-B- | SM-41C225-H-240 | 2.2 | K, M | BX | 4 | A, B, D, C, F |
| -49470X0-275-B- | SM-51C275-H-480 | 2.7 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-335-B- | SM-51C335-H-650 | 3.3 | K, M | BX | 5 | N, L, M, J, K |
| -49470X0-335-B- | SM-41C335-H-240 | 3.3 | K, M | BX | 4 | A, B, D, C, F |
| -49470X0-395-B- | SM-41C395-H-360 | 3.9 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-475-B- | SM-41C475-H-360 | 4.7 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-565-B- | SM-41C565-H-480 | 5.6 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-685-B- | SM-41C685-H-480 | 6.8 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-825-B- | SM-41C825-H-650 | 8.2 | K, M | BX | 4 | N, L, M, J, K |
| -49470X0-825-B- | SM-31C825-H-240 | 8.2 | K, M | BX | 3 | A, B, D, C, F |
| -49470X0-106-B- | SM-31C106-H-240 | 10 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-126-B- | SM-31C126-H-240 | 12 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-156-B- | SM-31C156-H-360 | 15 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-186-B- | SM-31C186-H-360 | 18 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-226-B- | SM-31C226-H-480 | 22 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-276-B- | SM-31C276-H-650 | 27 | K, M | BX | 3 | N, L, M, J, K |
| -49470X0-276-B- | SM-21C276-H-240 | 27 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-336-B- | SM-11C336-H-360 | 33 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-336-B- | SM-21C336-H-240 | 33 | K, M | BX | 2 | A, B, D, C, F |

1/ Complete PIN shall include additional symbols replacing dashes (from left to right): product level (M for B level, or T for T level), part style (1 for unencapsulated, 2 for encapsulated), capacitance tolerance, lead configuration

2/ Complete AVX Part Number (provided for reference only) shall include additional symbols replacing dashes (from left to right): part style (0 for unencapsulated and 9 for encapsulated), capacitance tolerance, lead configuration

# SMPS Stacked MLC Capacitors

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

| MIL-PRF-49470 PIN 1/ | AVX PART NUMBER (for reference only) 2/ | Capacitance µF | Tolerance | Characteristic | Case Code | Lead Configuration |
|---|---|---|---|---|---|---|
| -49470X0-396-B- | SM-11C396-H-480 | 39 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-396-B- | SM-21C396-H-360 | 39 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-476-B- | SM-11C476-H-480 | 47 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-476-B- | SM-21C476-H-360 | 47 | K, M | BX | 2 | A, B, D, C, F |
| -49470X0-566-B- | SM-11C566-H-650 | 56 | K, M | BX | 1 | N, L, M, J, K |
| -49470X0-686-B- | SM-21C686-H-480 | 68 | K, M | BX | 2 | N, L, M, J, K |
| -49470X0-826-B- | SM-21C826-H-650 | 82 | K, M | BX | 2 | N, L, M, J, K |
| -49470X0-107-B- | SM-21C107-H-360 | 100 | K, M | BX | 6 | N, L, M, J, K |
| -49470X0-127-B- | SM-21C127-H-360 | 120 | K, M | BX | 6 | N, L, M, J, K |
| -49470X0-157-B- | SM-21C157-H-480 | 150 | K, M | BX | 6 | N, L, M, J, K |
| -49470X0-187-B- | SM-21C187-H-540 | 180 | K, M | BX | 6 | N, L, M, J, K |
| | | **200V** | | | | |
| -49470R0-474-C- | SM-52C474-H-240 | 0.47 | K, M | BR | 5 | N, L, M, J, K |
| -49470R0-564-C- | SM-52C564-H-240 | 0.56 | K, M | BR | 5 | N, L, M, J, K |
| -49470R0-684-C- | SM-52C684-H-360 | 0.68 | K, M | BR | 5 | N, L, M, J, K |
| -49470R0-824-C- | SM-52C824-H-360 | 0.82 | K, M | BR | 5 | N, L, M, J, K |
| -49470R0-105-C- | SM-52C105-H-480 | 1 | K, M | BR | 5 | N, L, M, J, K |
| -49470R0-105-C- | SM-42C105-H-120 | 1 | K, M | BR | 4 | A, B, D, C, F |
| -49470R0-125-C- | SM-52C125-H-480 | 1.2 | K, M | BR | 5 | N, L, M, J, K |
| -49470R0-125-C- | SM-42C125-H-240 | 1.2 | K, M | BR | 4 | A, B, D, C, F |
| -49470R0-155-C- | SM-52C155-H-650 | 1.5 | K, M | BR | 5 | N, L, M, J, K |
| -49470R0-155-C- | SM-42C155-H-240 | 1.5 | K, M | BR | 4 | A, B, D, C, F |
| -49470R0-185-C- | SM-42C185-H-360 | 1.8 | K, M | BR | 4 | N, L, M, J, K |
| -49470R0-225-C- | SM-42C225-H-360 | 2.2 | K, M | BR | 4 | N, L, M, J, K |
| -49470R0-275-C- | SM-42C275-H-480 | 2.7 | K, M | BR | 4 | N, L, M, J, K |
| -49470R0-335-C- | SM-42C335-H-480 | 3.3 | K, M | BR | 4 | N, L, M, J, K |
| -49470R0-395-C- | SM-42C395-H-650 | 3.9 | K, M | BR | 4 | N, L, M, J, K |
| -49470R0-395-C- | SM-32C395-H-240 | 3.9 | K, M | BR | 3 | A, B, D, C, F |
| -49470R0-475-C- | SM-32C475-H-240 | 4.7 | K, M | BR | 3 | N, L, M, J, K |
| -49470R0-565-C- | SM-32C565-H-240 | 5.6 | K, M | BR | 3 | N, L, M, J, K |
| -49470R0-685-C- | SM-32C685-H-360 | 6.8 | K, M | BR | 3 | N, L, M, J, K |
| -49470R0-825-C- | SM-32C825-H-360 | 8.2 | K, M | BR | 3 | N, L, M, J, K |
| -49470R0-106-C- | SM-32C106-H-480 | 10 | K, M | BR | 3 | N, L, M, J, K |
| -49470R0-126-C- | SM-32C126-H-650 | 12 | K, M | BR | 3 | N, L, M, J, K |
| -49470R0-126-C- | SM-22C126-H-240 | 12 | K, M | BR | 2 | A, B, D, C, F |
| -49470R0-156-C- | SM-12C156-H-360 | 15 | K, M | BR | 1 | N, L, M, J, K |
| -49470R0-156-C- | SM-22C156-H-240 | 15 | K, M | BR | 2 | A, B, D, C, F |
| -49470R0-186-C- | SM-12C186-H-480 | 18 | K, M | BR | 1 | N, L, M, J, K |
| -49470R0-186-C- | SM-22C186-H-360 | 18 | K, M | BR | 2 | A, B, D, C, F |
| -49470R0-226-C- | SM-12C226-H-650 | 22 | K, M | BR | 1 | N, L, M, J, K |
| -49470R0-226-C- | SM-22C226-H-360 | 22 | K, M | BR | 2 | A, B, D, C, F |
| -49470R0-276-C- | SM-12C276-H-650 | 27 | K, M | BR | 1 | N, L, M, J, K |
| -49470R0-276-C- | SM-22C276-H-480 | 27 | K, M | BR | 2 | A, B, D, C, F |
| -49470R0-336-C- | SM-22C336-H-480 | 33 | K, M | BR | 2 | N, L, M, J, K |
| -49470R0-396-C- | SM-22C396-H-650 | 39 | K, M | BR | 2 | N, L, M, J, K |
| -49470R0-476-C- | SM-62C476-H-240 | 47 | K, M | BR | 6 | N, L, M, J, K |
| -49470R0-566-C- | SM-62C566-H-360 | 56 | K, M | BR | 6 | N, L, M, J, K |
| -49470R0-686-C- | SM-62C686-H-360 | 68 | K, M | BR | 6 | N, L, M, J, K |
| -49470R0-826-C- | SM-62C826-H-480 | 82 | K, M | BR | 6 | N, L, M, J, K |
| -49470R0-107-C- | SM-62C107-H-650 | 100 | K, M | BR | 6 | N, L, M, J, K |
| -49470R0-127-C- | SM-62C127-H-650 | 120 | K, M | BR | 6 | N, L, M, J, K |
| | | **500V** | | | | |
| -49470Q0-154-E- | SM-57C154-H-120 | 0.15 | K, M | BQ | 5 | N, L, M, J, K |
| -49470Q0-184-E- | SM-57C184-H-240 | 0.18 | K, M | BQ | 5 | N, L, M, J, K |
| -49470Q0-224-E- | SM-57C224-H-240 | 0.22 | K, M | BQ | 5 | N, L, M, J, K |
| -49470Q0-274-E- | SM-57C274-H-240 | 0.27 | K, M | BQ | 5 | N, L, M, J, K |
| -49470Q0-334-E- | SM-57C334-H-360 | 0.33 | K, M | BQ | 5 | N, L, M, J, K |

1/ Complete PIN shall include additional symbols replacing dashes (from left to right): product level (M for B level, or T for T level), part style (1 for unencapsulated, 2 for encapsulated), capacitance tolerance, lead configuration

2/ Complete AVX Part Number (provided for reference only) shall include additional symbols replacing dashes (from left to right): part style (0 for unencapsulated and 9 for encapsulated), capacitance tolerance, lead configuration

# SMPS Stacked MLC Capacitors

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

| MIL-PRF-49470 PIN 1/ | AVX PART NUMBER (for reference only) 2/ | Capacitance µF | Tolerance | Characteristic | Case Code | Lead Configuration |
|---|---|---|---|---|---|---|
| -49470Q0-394-E- | SM-57C394-H-360 | 0.39 | K, M | BQ | 5 | N, L, M, J, K |
| -49470Q0-474-E- | SM-57C474-H-360 | 0.47 | K, M | BQ | 5 | N, L, M, J, K |
| -49470Q0-564-E- | SM-57C564-H-480 | 0.56 | K, M | BQ | 5 | N, L, M, J, K |
| -49470Q0-564-E- | SM-47C564-H-240 | 0.56 | K, M | BQ | 4 | A, B, D, C, F |
| -49470Q0-684-E- | SM-57C684-H-650 | 0.68 | K, M | BQ | 5 | N, L, M, J, K |
| -49470Q0-684-E- | SM-47C684-H-240 | 0.68 | K, M | BQ | 4 | A, B, D, C, F |
| -49470Q0-824-E- | SM-47C824-H-360 | 0.82 | K, M | BQ | 4 | N, L, M, J, K |
| -49470Q0-105-E- | SM-47C105-H-360 | 1 | K, M | BQ | 4 | N, L, M, J, K |
| -49470Q0-125-E- | SM-47C125-H-360 | 1.2 | K, M | BQ | 4 | N, L, M, J, K |
| -49470Q0-155-E- | SM-47C155-H-480 | 1.5 | K, M | BQ | 4 | N, L, M, J, K |
| -49470Q0-185-E- | SM-47C185-H-650 | 1.8 | K, M | BQ | 4 | N, L, M, J, K |
| -49470Q0-185-E- | SM-37C185-H-240 | 1.8 | K, M | BQ | 3 | A, B, D, C, F |
| -49470Q0-225-E- | SM-37C225-H-240 | 2.2 | K, M | BQ | 3 | N, L, M, J, K |
| -49470Q0-275-E- | SM-37C275-H-360 | 2.7 | K, M | BQ | 3 | N, L, M, J, K |
| -49470Q0-335-E- | SM-37C335-H-360 | 3.3 | K, M | BQ | 3 | N, L, M, J, K |
| -49470Q0-395-E- | SM-37C395-H-360 | 3.9 | K, M | BQ | 3 | N, L, M, J, K |
| -49470Q0-475-E- | SM-37C475-H-480 | 4.7 | K, M | BQ | 3 | N, L, M, J, K |
| -49470Q0-565-E- | SM-37C565-H-650 | 5.6 | K, M | BQ | 3 | N, L, M, J, K |
| -49470Q0-565-E- | SM-27C565-H-240 | 5.6 | K, M | BQ | 2 | A, B, D, C, F |
| -49470Q0-685-E- | SM-17C685-H-480 | 6.8 | K, M | BQ | 1 | N, L, M, J, K |
| -49470Q0-685-E- | SM-27C685-H-240 | 6.8 | K, M | BQ | 2 | A, B, D, C, F |
| -49470Q0-825-E- | SM-17C825-H-480 | 8.2 | K, M | BQ | 1 | N, L, M, J, K |
| -49470Q0-825-E- | SM-27C825-H-360 | 8.2 | K, M | BQ | 2 | A, B, D, C, F |
| -49470Q0-106-E- | SM-17C106-H-480 | 10 | K, M | BQ | 1 | N, L, M, J, K |
| -49470Q0-106-E- | SM-27C106-H-360 | 10 | K, M | BQ | 2 | A, B, D, C, F |
| -49470Q0-126-E- | SM-17C126-H-650 | 12 | K, M | BQ | 1 | N, L, M, J, K |
| -49470Q0-126-E- | SM-27C126-H-480 | 12 | K, M | BQ | 2 | A, B, D, C, F |
| -49470Q0-156-E- | SM-27C156-H-650 | 15 | K, M | BQ | 2 | N, L, M, J, K |
| -49470Q0-186-E- | SM-27C186-H-650 | 18 | K, M | BQ | 2 | N, L, M, J, K |
| -49470Q0-226-E- | SM-67C226-H-360 | 22 | K, M | BQ | 6 | N, L, M, J, K |
| -49470Q0-276-E- | SM-67C276-H-360 | 27 | K, M | BQ | 6 | N, L, M, J, K |
| -49470Q0-336-E- | SM-67C336-H-480 | 33 | K, M | BQ | 6 | N, L, M, J, K |
| -49470Q0-396-E- | SM-67C396-H-650 | 39 | K, M | BQ | 6 | N, L, M, J, K |
| -49470P0-103-E- | SM-57A103-H-120 | 0.01 | J, K | BP | 5 | N, L, M, J, K |
| -49470P0-123-E- | SM-57A123-H-240 | 0.012 | J, K | BP | 5 | N, L, M, J, K |
| -49470P0-153-E- | SM-57A153-H-240 | 0.015 | J, K | BP | 5 | N, L, M, J, K |
| -49470P0-183-E- | SM-57A183-H-240 | 0.018 | J, K | BP | 5 | N, L, M, J, K |
| -49470P0-223-E- | SM-57A223-H-360 | 0.022 | J, K | BP | 5 | N, L, M, J, K |
| -49470P0-273-E- | SM-57A273-H-360 | 0.027 | J, K | BP | 5 | N, L, M, J, K |
| -49470P0-333-E- | SM-57A333-H-480 | 0.033 | J, K | BP | 5 | N, L, M, J, K |
| -49470P0-333-E- | SM-57A333-H-240 | 0.033 | J, K | BP | 4 | A, B, C, D, F |
| -49470P0-393-E- | SM-47A393-H-480 | 0.039 | J, K | BP | 5 | N, L, M, J, K |
| -49470P0-393-E- | SM-57A393-H-240 | 0.039 | J, K | BP | 4 | A, B, C, D, F |
| -49470P0-473-E- | SM-47A473-H-650 | 0.047 | J, K | BP | 5 | N, L, M, J, K |
| -49470P0-473-E- | SM-47A473-H-360 | 0.047 | J, K | BP | 4 | A, B, C, D, F |
| -49470P0-563-E- | SM-47A563-H-360 | 0.056 | J, K | BP | 4 | N, L, M, J, K |
| -49470P0-683-E- | SM-47A683-H-360 | 0.068 | J, K | BP | 4 | N, L, M, J, K |
| -49470P0-823-E- | SM-47A823-H-480 | 0.082 | J, K | BP | 4 | N, L, M, J, K |
| -49470P0-104-E- | SM-47A104-H-480 | 0.1 | J, K | BP | 4 | N, L, M, J, K |
| -49470P0-124-E- | SM-37A124-H-650 | 0.12 | J, K | BP | 4 | N, L, M, J, K |
| -49470P0-124-E- | SM-37A124-H-240 | 0.12 | J, K | BP | 3 | A, B, C, D, F |
| -49470P0-154-E- | SM-37A154-H-240 | 0.15 | J, K | BP | 3 | N, L, M, J, K |
| -49470P0-184-E- | SM-37A184-H-240 | 0.18 | J, K | BP | 3 | N, L, M, J, K |
| -49470P0-224-E- | SM-37A224-H-360 | 0.22 | J, K | BP | 3 | N, L, M, J, K |
| -49470P0-274-E- | SM-37A274-H-360 | 0.27 | J, K | BP | 3 | N, L, M, J, K |
| -49470P0-334-E- | SM-37A334-H-480 | 0.33 | J, K | BP | 3 | N, L, M, J, K |
| -49470P0-394-E- | SM-27A394-H-650 | 0.39 | J, K | BP | 3 | N, L, M, J, K |

1/ Complete PIN shall include additional symbols replacing dashes (from left to right): product level (M for B level, or T for T level), part style (1 for unencapsulated, 2 for encapsulated), capacitance tolerance, lead configuration

2/ Complete AVX Part Number (provided for reference only) shall include additional symbols replacing dashes (from left to right): part style (0 for unencapsulated and 9 for encapsulated), capacitance tolerance, lead configuration

# SMPS Stacked MLC Capacitors

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

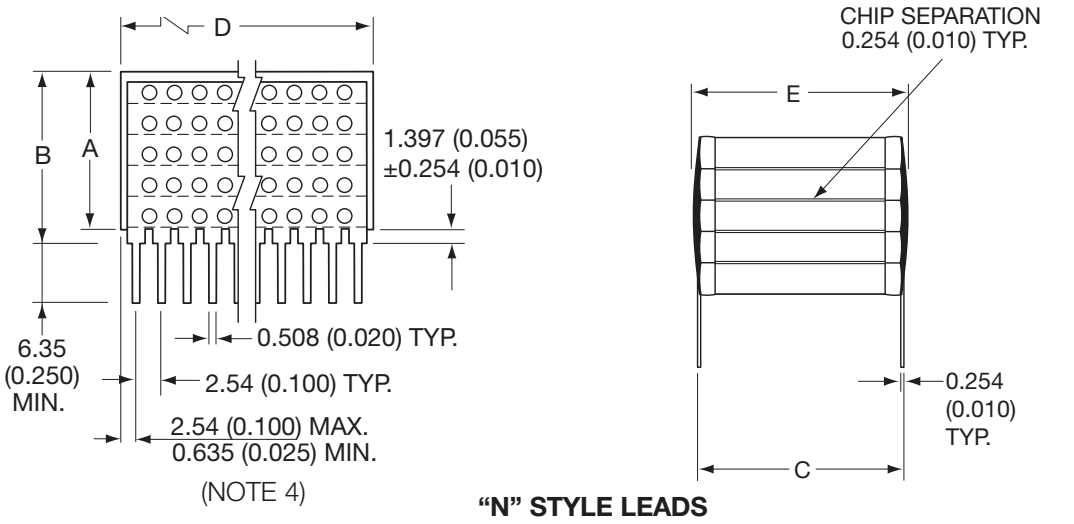
| MIL-PRF-49470 PIN 1/ | AVX PART NUMBER (for reference only) 2/ | Capacitance µF | Tolerance | Characteristic | Case Code | Lead Configuration |
|---|---|---|---|---|---|---|
| -49470P0-394-E- | SM-17A394-H-240 | 0.39 | J, K | BP | 2 | A, B, C, D, F |
| -49470P0-474-E- | SM-27A474-H-360 | 0.47 | J, K | BP | 1 | N, L, M, J, K |
| -49470P0-474-E- | SM-17A474-H-240 | 0.47 | J, K | BP | 2 | A, B, C, D, F |
| -49470P0-564-E- | SM-27A564-H-480 | 0.56 | J, K | BP | 1 | N, L, M, J, K |
| -49470P0-564-E- | SM-17A564-H-360 | 0.56 | J, K | BP | 2 | A, B, C, D, F |
| -49470P0-684-E- | SM-27A684-H-480 | 0.68 | J, K | BP | 1 | N, L, M, J, K |
| -49470P0-684-E- | SM-17A684-H-360 | 0.68 | J, K | BP | 2 | A, B, C, D, F |
| -49470P0-824-E- | SM-27A824-H-650 | 0.82 | J, K | BP | 1 | N, L, M, J, K |
| -49470P0-824-E- | SM-27A824-H-480 | 0.82 | J, K | BP | 2 | A, B, C, D, F |
| -49470P0-105-E- | SM-27A105-H-480 | 1 | J, K | BP | 2 | N, L, M, J, K |
| -49470P0-125-E- | SM-67A125-H-650 | 1.2 | J, K | BP | 2 | N, L, M, J, K |
| -49470P0-155-E- | SM-67A155-H-360 | 1.5 | J, K | BP | 6 | N, L, M, J, K |
| -49470P0-185-E- | SM-67A185-H-480 | 1.8 | J, K | BP | 6 | N, L, M, J, K |
| -49470P0-225-E- | SM-67A225-H-650 | 2.2 | J, K | BP | 6 | N, L, M, J, K |

1/ Complete PIN shall include additional symbols replacing dashes (from left to right): product level (M for B level, or T for T level), part style (1 for unencapsulated, 2 for encapsulated), capacitance tolerance, lead configuration

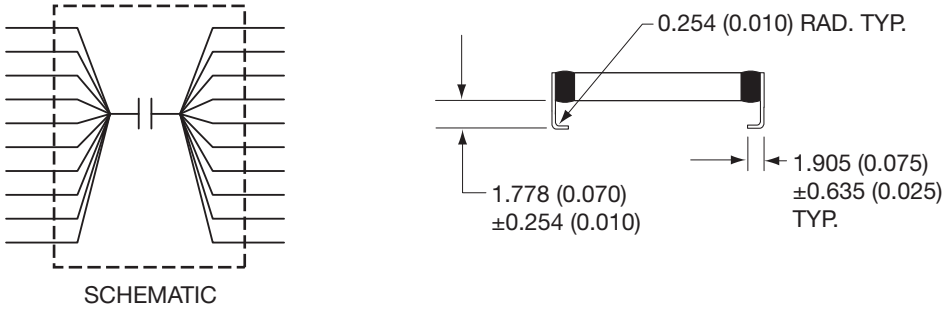
2/ Complete AVX Part Number (provided for reference only) shall include additional symbols replacing dashes (from left to right): part style (0 for unencapsulated and 9 for encapsulated), capacitance tolerance, lead configuration

# SMPS Stacked MLC Capacitors

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




**"N" STYLE LEADS**




**"J" STYLE LEADS**

## 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 23 thru 26 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) SM Military Styles DSCC Dwg. #87106 & #88011

## Ordering Information

**Part Number:** The complete part number shall be as follows:

| X7R: | 87106 | XXX |
|---|---|---|
| | Drawing number | Dash number (see list) |

**Ordering Data.** The contract or purchase order should specify the following:

a. Complete part number.

b. Requirements for delivery of one copy of the quality conformance inspection data with each shipment of parts by the manufacturer.

c. Whether the manufacturer performs the group B tests, or provides certification of compliance with group B requirements.

d. Requirements for notification of change of products to acquiring activity, if applicable.

e. Requirements for packaging and packing.

**Source of Supply.**

| Vendor CAGE number | Vendor name and address |
|---|---|
| 96095 | Olean Advanced Products<br>A Division of AVX Corporation<br>1695 Seneca Avenue<br>Olean, NY 14760 |

## Performance Characteristics

**Operating Temperature Range.** The operating temperature range shall be -55°C to +125°C.

**Electrical Characteristics.**

Rated Voltage. See tables on pages 23, 24, 25 & 26.

**Capacitance.** Measured in accordance with method 305 of MIL-STD-202 (1KHz at 1.0Vrms, open circuit voltage, at +25°C).

**Dissipation Factor (+25°C).** X7R: Dissipation factor shall be 2.5 percent maximum (measured under the same conditions as capacitance.) C0G: Dissipation factor shall be 0.15 percent maximum.

**Temperature Coefficient.**

| DSCC Dwg. | | Bias = 0 volt | Bias = rated voltage |
|---|---|---|---|
| 88011 | All Voltages | 0±30 ppm/°C | 0±30 ppm/°C |
| 87106 | 50 WVDC and 100 WVDC | ±15% | +15, -25% |
| 87106 | 200 WVDC | ±15% | +15, -40% |
| 87106 | 500 WVDC | ±15% | +15, -50% |

**Insulation Resistance.**

At +25°C, rated voltage: 100K MΩ or 1,000 MΩ-µF, whichever is less.

At +125°C, rated voltage: 10K MΩ or 100 MΩ-µF, whichever is less.

**Dielectric Withstanding Voltage.** Dielectric withstanding voltage shall be 250 percent of rated voltage except 500V rated parts at 150 percent of rated voltage.

**Capacitance Tolerance.** J = ±5 percent, K = ±10 percent, M = ±20 percent.

**Solderability of Terminals.** In accordance with MIL-PRF-49470.

**Resistance to Soldering Heat.** In accordance with MIL-STD-202, method 210, condition B, for 20 seconds.

**Shock.** In accordance with MIL-PRF-49470.

**Immersion Cycling.** In accordance with MIL-PRF-49470.

**Moisture Resistance.** In accordance with MIL-PRF-49470.

**Life.** Life shall be 200 percent of rated voltage except 500V rated parts at 120 percent of rated voltage applied at +125°C for 1,000 hours.

**Thermal Shock.** MIL-STD-202, method 107, test condition A, except high temperature is +125°C.

**Voltage Conditioning.** In accordance with MIL-PRF-49470, except 500V rated parts at 120 percent of rated voltage at +125°C.

**Terminal Strength.** MIL-STD-202, method 211, condition B, except that each lead shall be bent away from the body 90 degrees from the original position and back, two bends.

**Marking.** Marking shall be in accordance with MIL-STD-1285, except the part number shall be as specified in paragraph 1.2 of 87106, or 88011 with the manufacturer's name or code and date code minimum, except case sizes 4 and 5 shall be marked with coded cap and tolerance minimum. Full marking shall be included on the package.

### Table II. Group A inspection.

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

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 2/ | |
|---|---|---|---|---|---|
| **Subgroup 1** 3/ | | | | | |
| Temperature coefficient | 4/ | 4/ | | | |
| Resistance to solvents 5/ 6/ | 3.23 | 4.8.20 | | | |
| Immersion | 3.18 | 4.8.15 | 12 | 1 | |
| Terminal strength 5/ | 3.24 | 4.8.10 | | | |
| **Subgroup 2** | | | | | |
| Resistance to soldering heat | 3.20 | 4.8.17 | 12 | 1 | 6/ 1 |
| Moisture resistance | 3.21 | 4.8.18 | | | |
| **Subgroup 3** | | | | | |
| Marking legibility (laser marking only) | 3.28.1 | 4.8.4.1 | 6 | 1 | |
| **Subgroup 4** | | | | | |
| Solderability | 3.15 | 4.8.12 | 3 | 0 | |
| **Subgroup 5** | | | | | |
| 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) |
|---|---|---|---|---|---|
| **50V** | | | | | |
| 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) |
|---|---|---|---|---|---|
| **50V** | | | | | |
| 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) |
|---|---|---|---|---|---|
| **100V** | | | | | |
| 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) |
|---|---|---|---|---|---|
| **100V** | | | | | |
| 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) |
|---|---|---|---|---|---|
| **200V** | | | | | |
| 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) |
|---|---|---|---|---|---|
| **200V** | | | | | |
| 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) |
|---|---|---|---|---|---|
| 500V | | | | | |
| 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) |
|---|---|---|---|---|---|
| 500V | | | | | |
| 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) |