

# 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)

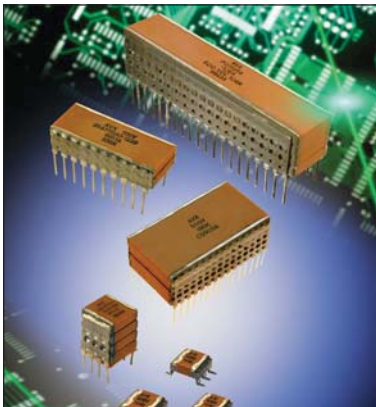
C0G, X7R, Z5U: Ten cycles with no voltage applied.

#### 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<br>100μF/50V | Low ESR Solid Tantalum<br>100μF/10V | Solid Aluminum Electrolytic<br>100μF/16V | MLCC SMPS<br>100μF/50V | MLCC SMPS<br>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                            | Size                 | Voltage                                     | Temperature Coefficient       | Capacitance Code   | Capacitance Tolerance  | Test Level   | Termination  | Height  |
| SM0 = Uncoated<br>SM5 = Epoxy Coated | See Dimensions chart | 50V = 5<br>100V = 1<br>200V = 2<br>500V = 7 | C0G = A<br>X7R = C<br>Z5U = E | (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 | C0G:<br>J = ±5%<br>K = ±10%<br>M = ±20%<br><br>X7R:<br>K = ±10%<br>M = ±20%<br>Z = +80%, -20%<br><br>Z5U:<br>M = ±20%<br>Z = +80%, -20%<br>P = GMV (+100, -0%) | A = Standard<br>B = Hi-Rel*<br>5 = Standard/MIL**<br>6 = Hi-Rel/MIL*** | N = Straight Lead<br>J = Leads formed in<br>L = Leads formed out<br>P = P Style Leads<br>Z = Z Style Leads | 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>

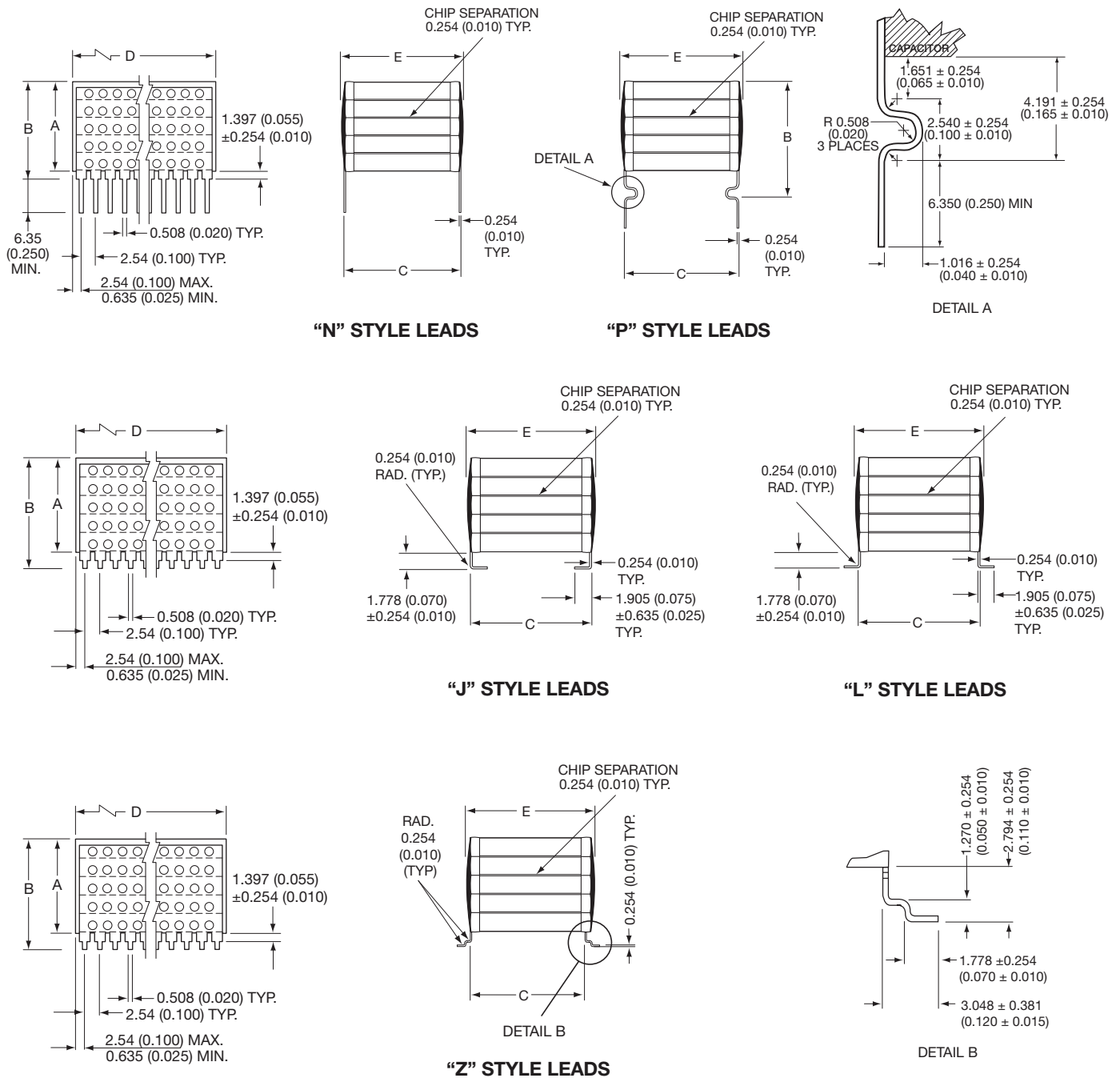
Custom values, ratings and configurations are also available.



# SMPS Stacked MLC Capacitors



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



## 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 | 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  | --   |     |      |      |      |

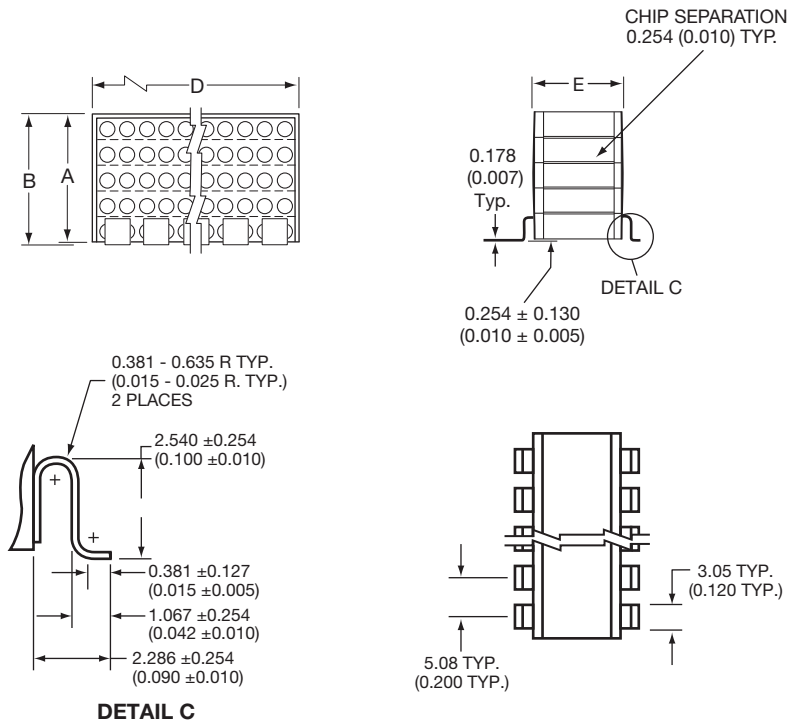
## Max Capacitance (μF) Available Versus Style with Height (A) of 0.650" - 16.5mm

| 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 "S" Style Leads (SM0, SM5)



### "S" STYLE LEADS

## DIMENSIONS

millimeters (inches)

| Style | A (max.)                    | B (max.)  | D ± 0.635 (±0.025) | E (max.)     | No. of Leads per side |
|-------|-----------------------------|---|--------------------|--------------|-----------------------|
| SM-3  | See page 10 for maximum "A" | For "S" Style Leads: "A" Dimension Plus 0.381 (0.015) Dimension | 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

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



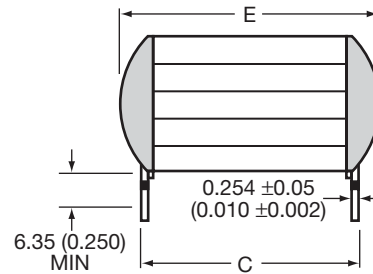
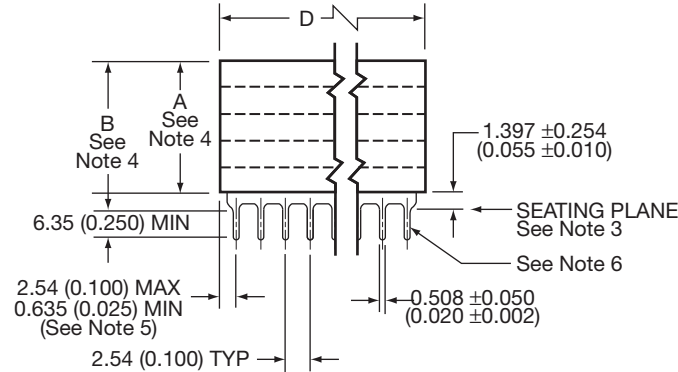
# SMPS Stacked MLC Capacitors



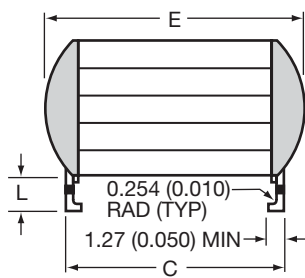
## (SM Style) SM Military Styles MIL-PRF-49470/1

### MIL-PRF-49470/1

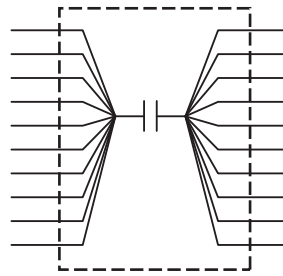
MIL-PRF-49470/1 - capacitor, fixed, ceramic dielectric, switch mode power supply (general purpose and temperature stable), standard reliability and high reliability unencapsulated, Style PS01.



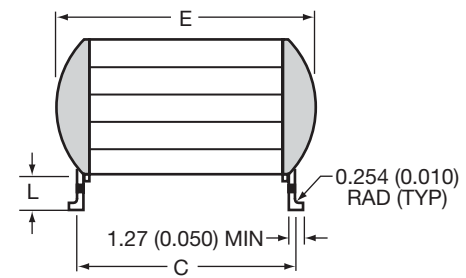
**LEAD STYLE N AND A**



**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:

- Dimensions are in millimeters (inches)
- Unless otherwise specified, tolerances are 0.254 (±0.010).
- Lead frame configuration is shown as typical above the seating plane.
- 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.
- For case code 5, dimensions shall be 2.54 (0.100) maximum and 0.305 (0.012) minimum.
- Lead alignment within pin rows shall be within ±0.10 (0.005).



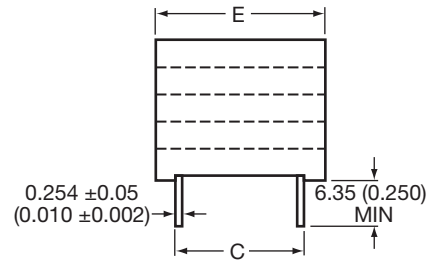
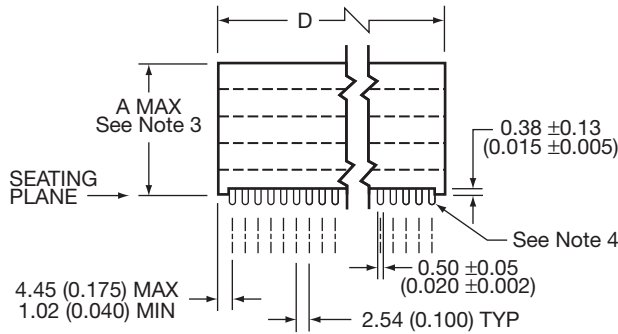
# SMPS Stacked MLC Capacitors



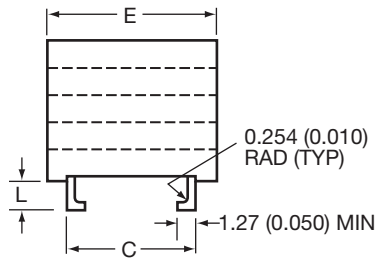
## (SM Style) SM Military Styles MIL-PRF-49470/2

### MIL-PRF-49470/2

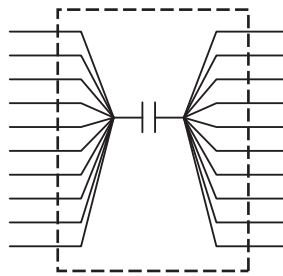
MIL-PRF-49470/2 - capacitor, fixed, ceramic dielectric, switch mode power supply (general purpose and temperature stable), standard reliability and high reliability encapsulated, Style PS02.



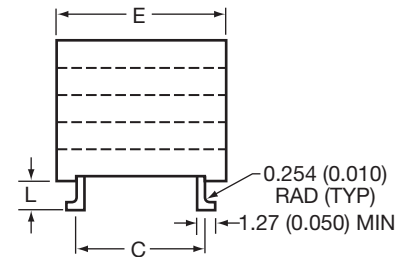
**LEAD STYLE N AND A**



**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<br>PIN 1/ | AVX PART NUMBER<br>(for reference only)<br>2/ | Capacitance<br>µF | Tolerance | Characteristic | Case<br>Code | Lead<br>Configuration |
|-------------------------|---|-------------------|-----------|----------------|--------------|-----------------------|
| <b>25V</b>              |   |                   |           |                |              |                       |
| -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         |
| <b>50V</b>              |   |                   |           |                |              |                       |
| -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<br>PIN 1/ | AVX PART NUMBER<br>(for reference only)<br>2/ | Capacitance<br>µF | Tolerance | Characteristic | Case<br>Code | Lead<br>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         |
| <b>100V</b>             |   |                   |           |                |              |                       |
| -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<br>PIN 1/ | AVX PART NUMBER<br>(for reference only)<br>2/ | Capacitance<br>µF | Tolerance | Characteristic | Case<br>Code | Lead<br>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         |
| <b>200V</b>             |   |                   |           |                |              |                       |
| -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         |
| <b>500V</b>             |   |                   |           |                |              |                       |
| -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<br>PIN 1/ | AVX PART NUMBER<br>(for reference only)<br>2/ | Capacitance<br>µF | Tolerance | Characteristic | Case<br>Code | Lead<br>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<br>PIN 1/ | AVX PART NUMBER<br>(for reference only)<br>2/ | Capacitance<br>μF | Tolerance | Characteristic | Case<br>Code | Lead<br>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         |

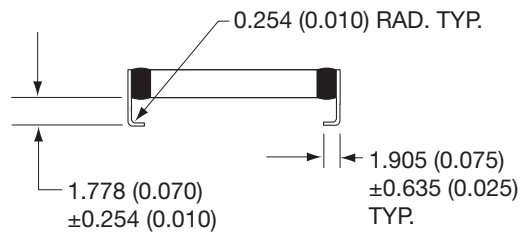
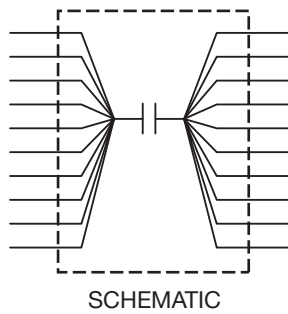
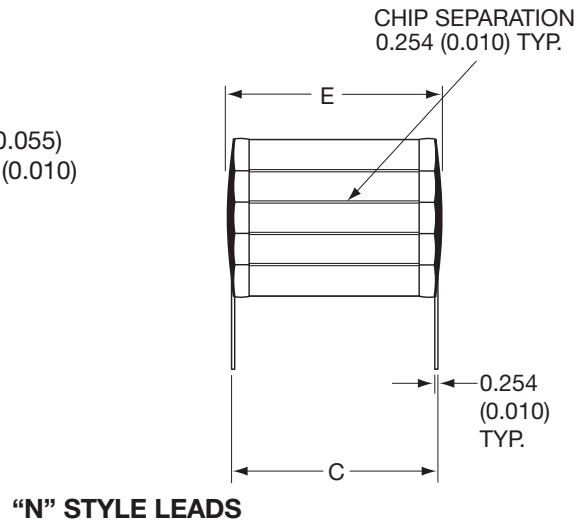
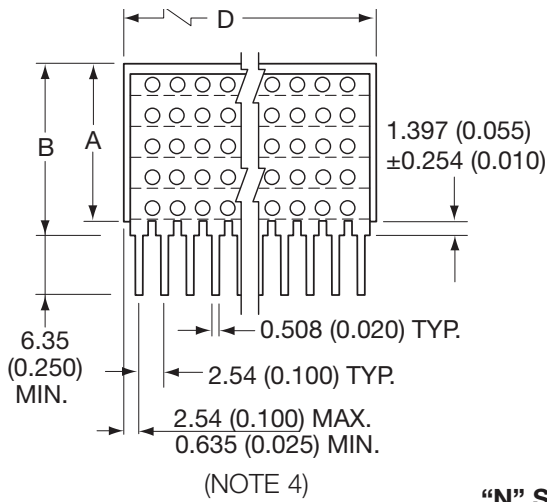
1/ Complete PIN shall include additional symbols replacing dashes (from left to right): product level (M for B level, or T for T level), part style (1 for unencapsulated, 2 for encapsulated), capacitance tolerance, lead configuration

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



## DIMENSIONS

millimeters (inches)

| Case Code | A (max.)<br>(See Note 2) | B (max.)<br>(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) 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><br>Thermal shock and voltage conditioning <u>1/</u>  | 3.9   | 4.8.5                                  | 100% inspection          |
| <b>Subgroup 2</b><br>Visual and mechanical examination:<br>Material<br>Physical dimensions<br>Interface requirements<br>(other than physical dimensions)<br>Marking <u>2/</u><br>Workmanship | 3.4<br>3.1<br>3.5 and 3.5.1<br>3.28<br>3.30 | 4.8.4                                  | 13 samples<br>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><br>Temperature coefficient<br>Resistance to solvents <u>5/</u> <u>6/</u><br>Immersion<br>Terminal strength <u>5/</u> | <u>4/</u><br>3.23<br>3.18<br>3.24      | <u>4/</u><br>4.8.20<br>4.8.15<br>4.8.10 | 12                                     | 1  | <u>6/</u> 1 |
| <b>Subgroup 2</b><br>Resistance to soldering heat<br>Moisture resistance   | 3.20<br>3.21                           | 4.8.17<br>4.8.18                        | 12                                     | 1  |             |
| <b>Subgroup 3</b><br>Marking legibility<br>(laser marking only)  | 3.28.1                                 | 4.8.4.1                                 | 6                                      | 1  |             |
| <b>Subgroup 4</b><br>Solderability   | 3.15                                   | 4.8.12                                  | 3                                      | 0  |             |
| <b>Subgroup 5</b><br>Life  | 3.26                                   | 4.8.22                                  | 5 minimum<br>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)                 |

