

SMPS Capacitors

SK Style – Commercial Radial Range

PRODUCT OFFERING – COG, N1500 AND X7R

AVX SK styles are conformally coated MLC capacitors for input or output filtering in switch mode power supplies. They are specially processed to handle high currents and are low enough in cost for commercial SMPS application.



ELECTRICAL SPECIFICATIONS

Temperature Coefficient

COG: A Temperature Coefficient – 0 ±30 ppm/°C, -55° to +125°C

N1500: 4 Temperature Coefficient – -1500 ±250 ppm/°C

X7R: C Temperature Coefficient – ±15%, -55° to +125°C

Capacitance Test (MIL-STD-202 Method 305)

COG, N1500: 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

Dissipation Factor 25°C

COG, N1500: 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

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

COG, N1500, X7R: 100K MΩ or 1000 MΩ-μF, whichever is less.

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

COG, N1500, X7R: 10K MΩ or 100 MΩ-μF, whichever is less.

Dielectric Withstanding Voltage 25°C (Flash Test)

COG, N1500, X7R: 250% rated voltage for 5 seconds with 50 mA max charging current. (500 Volt units @ 750 VDC)

Life Test (1000 hrs)

COG, N1500, X7R: 200% rated voltage at +125°C. (500 Volt units @ 600 VDC)

Moisture Resistance (MIL-STD-202 Method 106)

COG, N1500, 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)

HOW TO ORDER

| | | | | | | | | |
|--------------|--------------------------------|--|---|---|---|--|---|----------------------------------|
| SK | 01 | 3 | C | 394 | Z | A | A | * |
| Style | Size See chart below | Voltage 25V = 3 50V = 5 100V = 1 200V = 2 500V = 7 | Temperature Coefficient COG = A N1500 = 4 X7R = C | Capacitance Code (2 significant digits + no. of zeros) 22 nF = 223 220 nF = 224 1 μF = 105 100 μF = 107 | Capacitance Tolerance COG, N1500: J = ±5% K = ±10% M = ±20% X7R: K = ±10% M = ±20% Z = +80, -20% | Test Level A = Standard B = Hi-Rel* | Leads A = Tin/Lead R = RoHS Compliant* | Packaging (See Note 1) |

Note 1: No suffix signifies bulk packaging, which is AVX standard packaging. SK01, SK*3, SK*4, SK*5, SK*6, SK*9 & SK*0 are available taped and reel per EIA-468. Use suffix "TR1" if tape & reel is required.

Note 2: Capacitors with X7R dielectric are not intended for applications across AC supply mains or AC line filtering with polarity reversal. Contact plant for recommendations.

*Hi-Rel screening consists of 100% Group A (B Level), Subgroup 1 per MIL-PRF-49470.

| TAPE & REEL QUANTITY | |
|----------------------|--------|
| Part | Pieces |
| SK01 | 2000 |
| SK03/SK53 | 1000 |
| SK04/SK54 | 1000 |
| SK05/SK55 | 500 |
| SK06/SK56 | 500 |
| SK07 | N/A |
| SK08 | N/A |
| SK09/SK59 | 500 |
| SK10/SK60 | 400 |

| RoHS | |
|-----------|-----------|
| Part | Available |
| SK01 | Yes |
| SK03/SK53 | Yes |
| SK04/SK54 | Yes |
| SK05/SK55 | Yes |
| SK06/SK56 | Yes |
| SK07 | Yes |
| SK08 | Yes |
| SK09/SK59 | Yes |
| SK10/SK60 | Yes |

Not RoHS Compliant



For RoHS compliant products, please select correct termination style.

Performance of SMPS capacitors can be simulated by downloading SpiCalci software program - <http://www.avx.com/download/software/SpiCalci-AVX.zip>
Custom values, ratings and configurations are also available.

SMPS Capacitors

SK Style – Product Offering – COG, N1500, X7R



COG Capacitance Range (µF)

| Style | 25 WVDC min./max. | 50 WVDC min./max. | 100 WVDC min./max. | 200 WVDC min./max. | 500 WVDC min./max. |
|-----------|-------------------|-------------------|--------------------|--------------------|--------------------|
| SK01 | .001/0.015 | .001/0.012 | .001/0.010 | .0010/0.0056 | .0010/0.0018 |
| SK03/SK53 | .01/0.056 | .01/0.047 | .01/0.039 | .001/0.022 | .001/0.0068 |
| SK04/SK54 | .01/0.12 | .01/0.10 | .01/0.082 | .01/0.047 | .001/0.015 |
| SK05/SK55 | .01/0.18 | .01/0.15 | .01/0.12 | .01/0.068 | .001/0.022 |
| SK06/SK56 | .10/0.56 | .01/0.47 | .01/0.39 | .01/0.22 | .01/0.068 |
| SK07 | .10/0.68 | .01/0.56 | .01/0.47 | .01/0.27 | .01/0.082 |
| SK08 | .82/1.20 | .68/1.10 | .56/0.82 | .33/0.47 | .10/0.15 |
| SK09/SK59 | .10/0.27 | .01/0.22 | .01/0.18 | .01/0.10 | .001/0.039 |
| SK10/SK60 | .10/0.68 | .01/0.56 | .01/0.47 | .01/0.27 | .01/0.082 |

X7R Capacitance Range (µF)

| Style | 25 WVDC min./max. | 50 WVDC min./max. | 100 WVDC min./max. | 200 WVDC min./max. | 500 WVDC min./max. |
|-----------|-------------------|-------------------|--------------------|--------------------|--------------------|
| SK01 | .01/0.39 | .01/0.33 | .01/0.27 | .01/0.12 | .001/0.047 |
| SK03/SK53 | .10/2.2 | .10/1.8 | .01/1.5 | .01/0.68 | .01/0.27 |
| SK04/SK54 | .10/4.7 | .10/3.3 | .10/2.7 | .01/1.0 | .01/0.47 |
| SK05/SK55 | .10/6.8 | .10/6.8 | .10/3.9 | .10/1.8 | .01/0.68 |
| SK06/SK56 | 1.0/15 | 1.0/10 | .10/5.6 | .10/3.9 | .10/1.5 |
| SK07 | 1.0/18 | 1.0/14 | 1.0/8.2 | .10/4.7 | .10/2.2 |
| SK08 | 22/33 | 15/22 | 10/15 | 5.6/8.2 | 2.2/3.9 |
| SK09/SK59 | .10/8.2 | .10/5.6 | .10/3.3 | .10/2.2 | .10/1.2 |
| SK10/SK60 | 1.0/18 | 1.0/12 | .10/6.8 | .10/4.7 | .10/2.2 |

N1500 Capacitance Range (µF)

| Style | 50 WVDC min./max. | 100 WVDC min./max. | 200 WVDC min./max. | 500 WVDC min./max. |
|-----------|-------------------|--------------------|--------------------|--------------------|
| SK01 | .001/0.022 | .001/0.018 | .001/0.012 | .001/0.0027 |
| SK03/SK53 | .01/0.10 | .01/0.082 | .01/0.056 | .001/0.012 |
| SK04/SK54 | .01/0.22 | .01/0.15 | .01/0.12 | .001/0.027 |
| SK05/SK55 | .01/0.27 | .01/0.22 | .01/0.18 | .001/0.039 |
| SK06/SK56 | .01/0.82 | .01/0.68 | .01/0.47 | .01/0.12 |
| SK07 | .01/1.00 | .01/0.82 | .01/0.56 | .01/0.15 |
| SK08 | .68/2.00 | .88/1.60 | .62/1.20 | .21/0.30 |
| SK09/SK59 | .01/0.56 | .01/0.39 | .01/0.27 | .01/0.068 |
| SK10/SK60 | .01/1.00 | .01/0.82 | .01/0.68 | .01/0.15 |

DIMENSIONS

millimeters (inches)

| Style | L (max.) | H (max.) | T (max.) | LS (nom.) | LD (nom.) |
|-----------|--------------|--------------|--------------|--------------|---------------|
| SK01 | 5.08 (0.200) | 5.08 (0.200) | 5.08 (0.200) | 5.08 (0.200) | 0.508 (0.020) |
| SK03/SK53 | 7.62 (0.300) | 7.62 (0.300) | 5.08 (0.200) | 5.08 (0.200) | 0.508 (0.020) |
| SK04/SK54 | 10.2 (0.400) | 10.2 (0.400) | 5.08 (0.200) | 5.08 (0.200) | 0.508 (0.020) |
| SK05/SK55 | 12.7 (0.500) | 12.7 (0.500) | 5.08 (0.200) | 10.2 (0.400) | 0.635 (0.025) |
| SK06/SK56 | 22.1 (0.870) | 15.2 (0.600) | 5.08 (0.200) | 20.1 (0.790) | 0.813 (0.032) |
| SK07 | 27.9 (1.100) | 15.2 (0.600) | 5.08 (0.200) | 24.9 (0.980) | 0.813 (0.032) |
| SK08 | 27.9 (1.100) | 15.2 (0.600) | 8.89 (0.350) | 24.9 (0.980) | 0.813 (0.032) |
| SK09/SK59 | 17.0 (0.670) | 13.7 (0.540) | 5.08 (0.200) | 14.6 (0.575) | 0.635 (0.025) |
| SK10/SK60 | 23.6 (0.930) | 18.3 (0.720) | 6.35 (0.250) | 20.3 (0.800) | 0.813 (0.032) |

L = Length
H = Height

T = Thickness
M = Meniscus 1.52 (0.060) max.

LS = Lead Spacing Nominal ±.787 (0.031)
LL = Lead Length 50.8 (2.000) max./25.4 (1.000) min.
LD = Lead Diameter Nominal ±.050 (0.002)

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