



**THE DATASHEET OF  
SK551E685ZAR**



# 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

|              |                                |  |   |   |   |  |   |                                  |
|--------------|--------------------------------|--|---|---|---|--|---|----------------------------------|
| <b>SK</b>    | <b>01</b>                      | <b>3</b>   | <b>C</b>  | <b>394</b>  | <b>Z</b>  | <b>A</b>   | <b>A</b>  | <b>*</b>                         |
| <b>Style</b> | <b>Size</b><br>See chart below | <b>Voltage</b><br>25V = 3<br>50V = 5<br>100V = 1<br>200V = 2<br>500V = 7 | <b>Temperature Coefficient</b><br>COG = A<br>N1500 = 4<br>X7R = C | <b>Capacitance Code</b><br>(2 significant digits + no. of zeros)<br>22 nF = 223<br>220 nF = 224<br>1 μF = 105<br>100 μF = 107 | <b>Capacitance Tolerance</b><br>COG, N1500: J = ±5%<br>K = ±10%<br>M = ±20%<br>X7R: K = ±10%<br>M = ±20%<br>Z = +80, -20% | <b>Test Level</b><br>A = Standard<br>B = Hi-Rel* | <b>Leads</b><br>A = Tin/Lead<br>R = RoHS Compliant* | <b>Packaging</b><br>(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<br>min./max. | 50 WVDC<br>min./max. | 100 WVDC<br>min./max. | 200 WVDC<br>min./max. | 500 WVDC<br>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<br>min./max. | 50 WVDC<br>min./max. | 100 WVDC<br>min./max. | 200 WVDC<br>min./max. | 500 WVDC<br>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<br>min./max. | 100 WVDC<br>min./max. | 200 WVDC<br>min./max. | 500 WVDC<br>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<br>H = Height | T = Thickness<br>M = Meniscus 1.52 (0.060) max. |              | LS = Lead Spacing Nominal ±.787 (0.031)<br>LL = Lead Length 50.8 (2.000) max./25.4 (1.000) min.<br>LD = Lead Diameter Nominal ±.050 (0.002) |              |               |

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View SK551E685ZAR on WIN SOURCE](#)

 [AVX Corp/Kyocera Corp](#) Information

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management