

# SMPS Capacitors

## SK Style – Commercial Radial Range



### PRODUCT OFFERING – C0G, N1500 AND X7R

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

C0G: A Temperature Coefficient –  $0 \pm 30$  ppm/°C, -55° to +125°C

N1500: 4 Temperature Coefficient –  $-1500 \pm 250$  ppm/°C

X7R: C Temperature Coefficient –  $\pm 15\%$ , -55° to +125°C

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

C0G, N1500: 25°C,  $1.0 \pm 0.2$  Vrms (open circuit voltage) at 1KHz

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

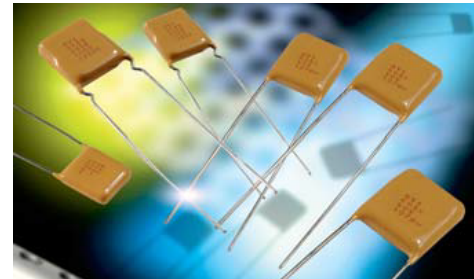
#### Dissipation Factor 25°C

C0G, N1500: 0.15% Max @ 25°C,  $1.0 \pm 0.2$  Vrms (open circuit voltage) at 1KHz

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

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

C0G, N1500, X7R: 100K MΩ or 1000 MΩ-μF, whichever is less.



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

C0G, N1500, X7R: 10K MΩ or 100 MΩ-μF, whichever is less.

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

C0G, N1500, X7R: 250% rated voltage for 5 seconds with 50 mA max charging current. (500 Volt units @ 750 VDC)

#### Life Test (1000 hrs)

C0G, N1500, X7R: 200% rated voltage at +125°C. (500 Volt units @ 600 VDC)

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

C0G, 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 C0G = 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 C0G, N1500: J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$ X7R: K = $\pm 10\%$ M = $\pm 20\%$ Z = $\pm 80, -20\%$	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 KYOCERA 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.

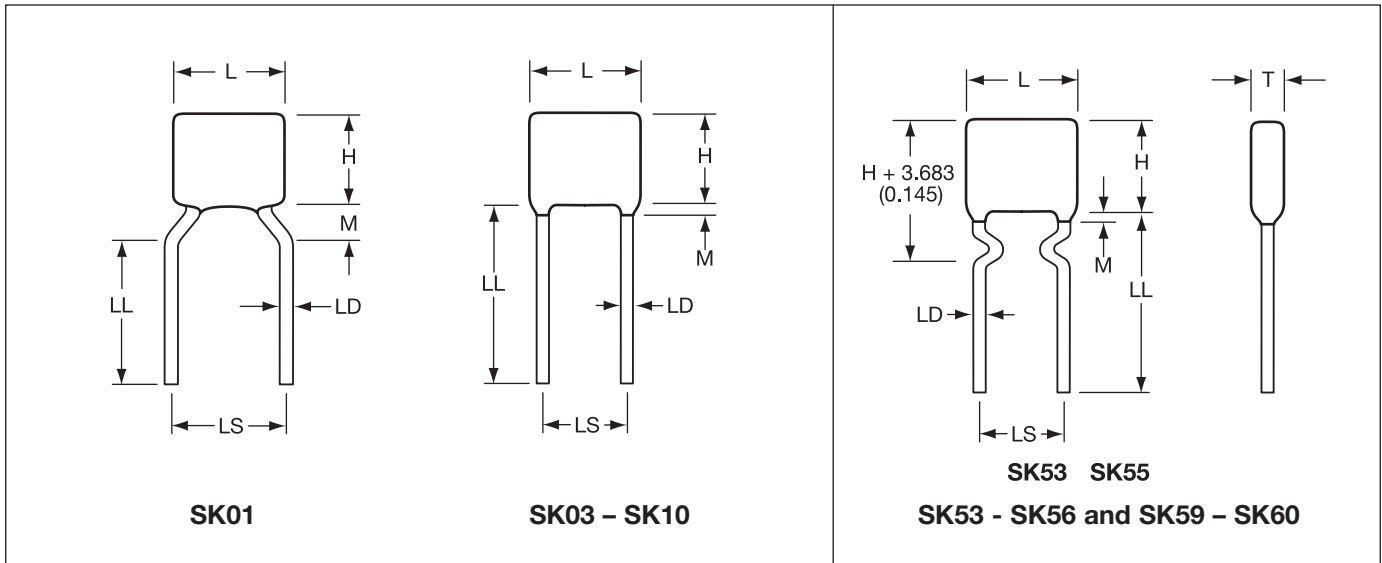
Performance of SMPS capacitors can be simulated by downloading SpiCalci software program -  
<https://www.kyocera-avx.com/download/software/SpiCalci-V10.zip>  
Custom values, ratings and configurations are also available.



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at [www.kyocera-avx.com/disclaimer/](http://www.kyocera-avx.com/disclaimer/) by reference and should be reviewed in full before placing any order.

# 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)	