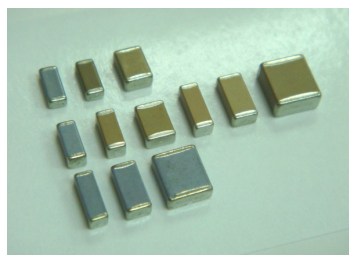


## Multilayer Ceramic Chip Capacitors [ Safety Capacitor – X2Y3 & X1Y2 ]

### SCC Series



The SCC series **X2**, **X2/Y3** & **X1/Y2** safety capacitors are designed specifically for use in modem, facsimile, telephone and other electronic equipment.

These parts are compliant to EN132400, IEC60384-14 and UL60950 standards. These capacitors are available in C0G(NPO) and X7R dielectrics.

#### ◆ Features

- Small size & high capacitance
- Suitable for reflow soldering
- Surface mount
- Safety standard approval by EN 132400+A4:01 and UL 60950
- Certified to: TUV R50005234 & UL E229738
- RoHS compliant

#### ◆ Application

- The **X2**, **X2/Y3** & **X1/Y2** specially designed for use in Modem, Facsimile, Telephone and other telecommunication equipment, electronic equipment for lightning and surge protection, EMI filtering and Isolation.

#### ◆ Safety Detail of Specification

EN132400: 1994 A2: 1998 +A3: 1998 +A4: 2001	Meets The Electrical Requirements and certification for Equipment requiring Class X1/Y2 and X2/Y3 devices.
IEC 60950 : 2000	Component Certified for Equipment requiring IEC 60950 compliance
IEC 384-14: 1993 A1: 1995	Component Certified for Equipment requiring IEC-384 compliance
UL 60950 : 2002 Third Edition	TNV/SELV Isolation Capacitors Certified To UL 60950

#### ◆ How To Order

SCC

1808

X

102

K

502

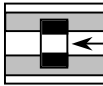
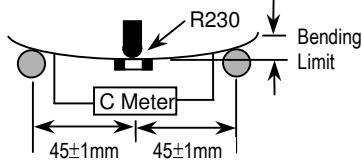
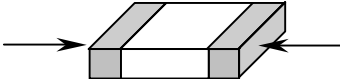
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S

Product Code	Chip Size	Dielectric	Capacitance Unit : pF	Tolerance	Class	Packaging	Special Requirement
SCC: Safety Approved of MLCC Product	Ex.: 1808 : 4.6×2.0mm 1812 : 4.6×3.2mm 2208 : 5.7×2.0mm 2211 : 5.7×2.8mm 2220 : 5.7×5.0mm 2825 : 6.8×6.3mm	Ex.: N: NPO X: X7R	Ex.: 100:10×10 <sup>0</sup> 471:47×10 <sup>1</sup> 182:18×10 <sup>2</sup>	Ex.: J :+/- 5% K :+/-10% M:+/-20%	Ex.: 202: X2 302: X2/Y3 502: X1/Y2 602: X1/Y2 for SCC2208N, SCC2211N, SCC2220N	T: Taping &Reel B: Bulk	Ex.: S: Arc Prevention Coating X: Cushion Termination (Super Term)



## SCC Series Specification & Test Condition

Item	Specification	Test Condition
<b>Operation Temperature</b>	-55 to +125°C	
<b>Visual</b>	No Abnormalities	Visual Inspection
<b>Capacitance</b>	Within The Specified Tolerance	Char.      Frequency      Voltage
<b>Quality and Dissipation Factor</b>	Class I (NPO): More Than 30pF : $Q \geq 1000$ 30pF & Below: $Q \geq 400 + 20C$ (C:Cap., pF)	NPO C≤100pF    1MHz±10%    1.0±0.2Vrms C>100pF    1KHz±10%
	Class II (X7R): Maximum 2.5% (0.025)	X7R      1KHz±10%      1.0±0.2Vrms Perform a heat treatment at 150±5°C for 30min. then place at room temp. for 24±2hr.
<b>Insulation Resistance</b>	Minimum 10,000MΩ	Applied Voltage: Applied Voltage:500V Charge Time : 60sec.
<b>Voltage Proof</b>	No dielectric breakdown or mechanical breakdown	Applied Voltage: X Capacitor :Applied Voltage 1075Vdc(4.3Ur) Y Capacitor :Applied Voltage 1500Vac For 1min. Current is limited to less than 50mA.
<b>Adhesive Strength of Termination</b>	No indication of peeling shall occur on the terminal electrode.	 A 5N.f (≈ 0.5Kg.f) pull force shall be applied for 10±1 sec.
<b>Resistance to Flexure of Substrate</b>	No mechanical damage or change C more than the following table. Capacitance Change : Class I (NPO)    ≤ ± 5% of initial value Class II (X7R)    ≤ ±12.5% of initial value	The board shall be bent 1.0mm with a rate of 1.0 mm/sec. 
<b>Solderability</b>	A minimum of 90% the termination surface shall be wetted with no sign of termination leaching. 	Solder Temperature : 245±5°C Dip Time : 5 ± 0.5 sec. Immersing Speed : 25±10% mm/s Solder : H63A Flux :Rosin Preheat : At 80~120 °C For 10~30sec.
<b>Resistance To Soldering Heat</b>	Appearance    No mechanical damage shall occur Capacitance    Cap. Change Class I (NPO)    ≤ ±10% of initial value Class II (X7R)    ≤ ±20% of initial value Insulation Resistance    More than 1,000MΩ Voltage Proof    To satisfy the specified initial value	Preheat : at 150±10°C for 60~120sec. Dip : solder temperature of 260±5°C Dip Time : 10 ± 1sec. Immersing Speed : 25±10% mm/s Solder : H63A Flux :Rosin Measure at room temp. after cooling for: Class I : 24 ± 2 Hours Class II : 48 ± 4 Hours

**SCC Series Specification & Test Condition**

Item	Specification	Test Condition	
<b>Damp Heat / Steady State</b>	Appearance	No mechanical damage shall occur	
	Capacitance	Cap. Change	
		NPO	$\leq \pm 15\%$ of initial value
		X7R	$\leq \pm 20\%$ of initial value
	Q (NPO) Class I	More Than 30pF: $Q \geq 350$ 30pF & Below: $Q \geq 275 + 2.5C$	
	Tan $\delta$ (X7R) Class II	Maximum 5% (0.05)	
	Insulation Resistance	More than 1,000M $\Omega$	
Voltage Proof	To satisfy the specified initial value		
<b>Endurance</b>	Appearance	No mechanical damage shall occur	
	Capacitance	Cap. Change	
		NPO	$\leq \pm 20\%$ of initial value
		X7R	$\leq \pm 25\%$ of initial value
	Q Class I	More Than 30pF: $Q \geq 350$ 30pF & Below: $Q \geq 275 + 2.5C$	
	Tan $\delta$ Class II	Maximum 5% (0.05)	
	Insulation Resistance	More than 1,000M $\Omega$	
Voltage Proof	To satisfy the specified initial value		
<b>Passive Flammability</b>	Capacitor shall not ignite or burn	Volume Sample : 21.56mm <sup>3</sup> Flame exposure time : 5 sec.Max.	
	<b>Active Flammability</b>	Cheese cloth shall not ignite	The capacitors of class X2/Y3 & X1/Y2 each test capacitors applied $U_r$ (250Vac).  Then each sample shall be subjected to 20 discharges from a tank capacitor, charge to a voltage that, when discharged, places $U_i$ (Y3:2.5KV, Y2:5KV) across the capacitor under test. The interval between successive discharges shall be 5s.

Class II capacitor shall be set for 48±4 hours at room temperature after one hour deage treatment at 150 +0/-10°C before initial measure.

Test Condition :

Temperature : 40 ± 2(°C)  
Relative Humidity : 90 ~95%RH  
Test Time : 500 +12/-0 hr (21days)

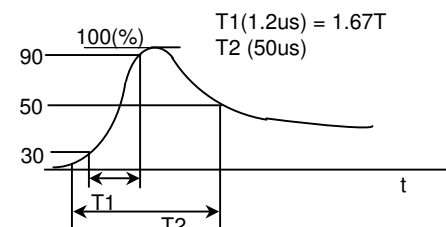
The capacitors with rated voltage(250Vac) applied.

Measure at room temp. after cooling for:  
Class I : 24 ± 2 Hours  
Class II : 48 ± 4 Hours

**Impulse Voltage**

Each individual capacitor shall be subjected to a 2.5KV(X2) and 5.0KV(X1/Y2) impulse for three times. Then the capacitors are applied to life test.

Additional impulse 2.5KV of Y3 compliant to EN60950 standard.



Temperature : 125°C  
Test Time : 1000hrs  
Applied Voltage :  
Class X Capacitors : 1.25Ur (312.5Vac)  
Class Y Capacitors : 1.70Ur (425Vac)  
Except that once every hour the voltage shall be increased to 1000Vrms for 0.1s.