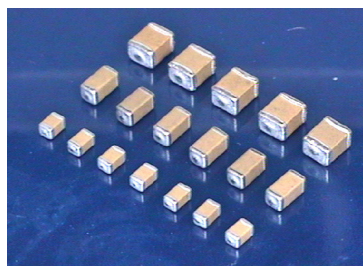


Multilayer Ceramic Chip Capacitors [Trigger Capacitors for Strobe]

TCX Series



TCX series are specifically designed with a proprietary material for discharge applications such as strobe circuit applications. The unique properties of the X7E material, and the design of TCX, makes them suitable for any discharge application which requires the capacitor to have a good damping characteristic.

TCX series are also suitable for applications in which a minimum change in capacitance over temperature(T/C) is desired. TCX series is offered in 0805, 1206 and 1210 sizes at 350 and 630 voltages.

◆ Features

- Excellent Trigger Characteristics
- Low ESR & Low Tan δ
- Excellent DC Bias
- Provide Good Damping Characteristics
Results in More Light.
- RoHS compliant

◆ Applications

- Suitable for strobe trigger circuit in digital and electric cameras.

◆ Summary of Specification

Operation Temperature	-55~+125 °C
Rated Voltage	350Vdc and 630Vdc
Temperature Coefficient	X7E : $\leq \pm 4.7\%$, -55~+125 °C (EIA Class II)
Capacitance Range	1.0nF to 100nF
Dissipation Factor :	1.0% max. at 1KHz 25°C
Insulation Resistance	10G Ω or 500/C Ω whichever is smaller (C in Farad)
Dielectric Strength	250V \leq V < 500V : 200% Rated Voltage
	500V \leq V < 1000V : 150% Rated Voltage
Capacitance Tolerance	$\pm 5\%$, $\pm 10\%$, $\pm 20\%$
Aging	1.0% per decade hr, Typical

◆ How To Order

TCX

1206

C

223

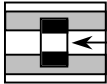
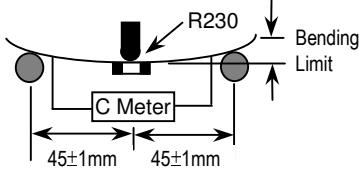
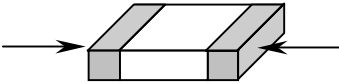
K

631

T

Product Code	Chip Size	Dielectric	Capacitance Unit : pF	Tolerance	Rated Voltage	Packaging
TCX: Trigger Capacitor	Ex.: 0805 : 2.0×1.25 mm 1206 : 3.2×1.6 mm 1210 : 3.2×2.5 mm	C: X7E	Ex.: 102:10×10 ² 473:47×10 ³	Ex.: J : +/- 5% K: +/- 10% M: +/- 20%	Ex.: 351:350Vdc 631:630Vdc	T: Taping & Reel B: Bulk

TCX Series Specification & Test Condition

Item	Specification	Test Condition												
Operation Temperature	-55 to +125°C													
Visual	No Abnormal Exterior Appearance	Visual Inspection												
Capacitance	Within The Specified Tolerance	Frequency	Voltage											
Dissipation Factor	Maximum 1.0% (0.01)	1KHz±10%	1.0±0.2Vrms											
Insulation Resistance	10,000MΩ or 500/C Ω whichever is smaller. (C in Farad)	V ≤ 500V, Rated Voltage V > 500V, Applied 500Vdc Charge Time : 60sec. Current is limited to less than 50mA.												
Dielectric Strength	No dielectric breakdown or mechanical breakdown	250V ≤ V < 500V : 200% Rated Voltage 500V ≤ V < 1000V: 150% Rated Voltage for 1~5 sec. Current is limited to less than 50mA.												
Temperature Capacitance Coefficient	<table border="1"> <thead> <tr> <th>Temperature Range</th> <th>Cap. Change</th> </tr> </thead> <tbody> <tr> <td>-55°C ~ +125°C</td> <td>± 4.7%</td> </tr> </tbody> </table>	Temperature Range	Cap. Change	-55°C ~ +125°C	± 4.7%	(C2-C1)/C1 × 100% C1:Capacitance at standard temperature(25°C) C2:Capacitance at test temperature								
Temperature Range	Cap. Change													
-55°C ~ +125°C	± 4.7%													
Adhesive Strength of Termination	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.											
Resistance to Flexure of Substrate	No mechanical damage or change C more than the following table. Capacitance Change : ≤ ±12.5% of initial value	The board shall be bent 1.0mm with a rate of 1.0 mm/sec. 												
Solderability	More than 90% of the terminal surface is to be soldered newly, so metal part does not come out or dissolve . 	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.												
Resistance To Soldering Heat	<table border="1"> <tbody> <tr> <td>Appearance</td> <td>No mechanical damage shall occur</td> <td rowspan="5"> 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 temperature after cooling for 48 ± 4 Hours </td> </tr> <tr> <td>Capacitance</td> <td>Cap. change within ±7.5% of initial value</td> </tr> <tr> <td>Tanδ(D.F.)</td> <td>To satisfy the specified initial value</td> </tr> <tr> <td>Insulation Resistance</td> <td>To satisfy the specified initial value</td> </tr> <tr> <td>Dielectric Strength</td> <td>To satisfy the specified initial value</td> </tr> </tbody> </table>	Appearance	No mechanical damage shall occur	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 temperature after cooling for 48 ± 4 Hours	Capacitance	Cap. change within ±7.5% of initial value	Tanδ(D.F.)	To satisfy the specified initial value	Insulation Resistance	To satisfy the specified initial value	Dielectric Strength	To satisfy the specified initial value		
Appearance	No mechanical damage shall occur	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 temperature after cooling for 48 ± 4 Hours												
Capacitance	Cap. change within ±7.5% of initial value													
Tanδ(D.F.)	To satisfy the specified initial value													
Insulation Resistance	To satisfy the specified initial value													
Dielectric Strength	To satisfy the specified initial value													

TCX Series Specification & Test Condition

Item	Specification	Test Condition															
Temperature Cycle	Appearance	Capacitor shall be set for 48±4 hours at room temperature after one hour heat treatment at 150 +0/-10 °C before initial measure. Capacitor shall be subjected to five cycles of the temperature cycle as following:															
	Capacitance																
	Tanδ(D.F.)																
	Insulation Resistance																
		<table border="1"> <thead> <tr> <th>Step</th> <th>Temp.(°C)</th> <th>Time(min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Min Rated Temp.(-55)+0/-3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25</td> <td>3</td> </tr> <tr> <td>3</td> <td>Max Rated Temp.(+125)+3/-0</td> <td>30</td> </tr> <tr> <td>4</td> <td>25</td> <td>3</td> </tr> </tbody> </table>	Step	Temp.(°C)	Time(min)	1	Min Rated Temp.(-55)+0/-3	30	2	25	3	3	Max Rated Temp.(+125)+3/-0	30	4	25	3
Step	Temp.(°C)	Time(min)															
1	Min Rated Temp.(-55)+0/-3	30															
2	25	3															
3	Max Rated Temp.(+125)+3/-0	30															
4	25	3															
		Measure at room temperature after cooling for 48 ±4 Hours															
Humidity	Appearance	Capacitor shall be set for 48±4 hours at room temperature after one hour heat treatment at 150 +0/-10 °C before initial measure.															
	Capacitance																
	Tanδ(D.F.)																
	Insulation Resistance																
		Temperature : 40± 2 °C Relative Humidity : 90 ~95%RH Test Time : 500 +12/-0 hr															
		Measure at room temperature after cooling for 48 ± 4 Hours															
High Temperature Load (Life Test)	Appearance	Capacitors applied DC voltage of 120% the rated voltage is applied for one hour at maximum operation temperature±3°C then shall be set for 48±4 hours at room temperature and the initial measurement shall be conducted.															
	Capacitance																
	Tanδ(D.F.)																
	Insulation Resistance																
		Applied Voltage :120% of rated voltage Temperature : max. operation temperature (125°C) Test Time : 1000 +12/-0Hr Current Applied : current is limited to less than 50mA.															
		Measure at room temperature after cooling for 48 ± 4 Hours															
Vibration	Appearance	Solder the capacitor on P.C. board.															
	Capacitance																
	Tanδ (D.F.)																
		Vibrate the capacitor with amplitude of 1.5mm P-P changing the frequencies from 10Hz to 55Hz and back to 10Hz in about 1 min. repeat this for 2 hours each in 3 perpendicular directions.															