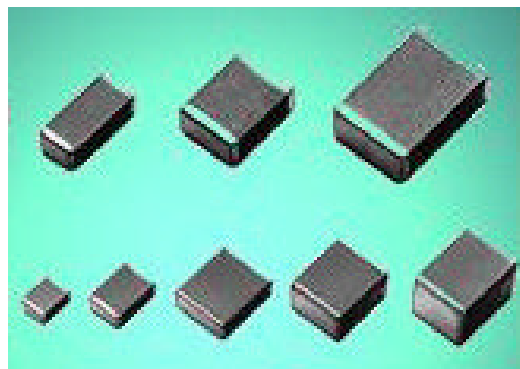


FEATURES

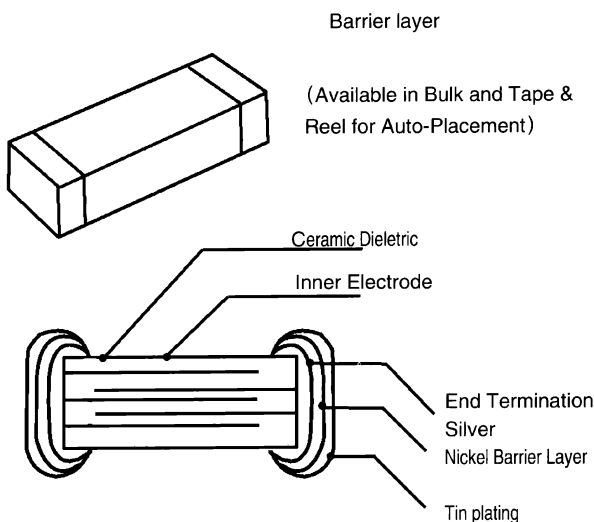
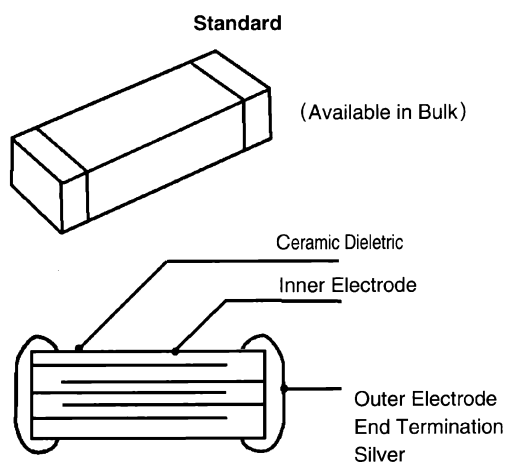
- Miniature size
- Wide capacitance, TC, voltage and tolerance range
- Industry standard sizes
- 8 mm and 12mm Tape & Reel for auto-placement
- Available for wave, reflow or vapor phase order



HOW TO ORDER

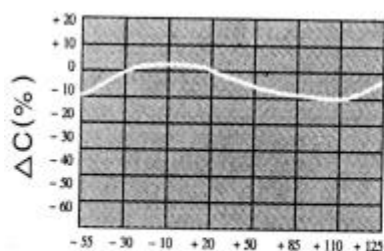
0805	B	4	102	K	500	N	T
Size code inches	Dielectric	Total Ch.	Nominal (PF) Capacitance	Tolerance	Rated Voltage	Termination	Packaging Style
0402 0.04 x 0.02	B X7R	No. of Total Character (102 = 1000 = 4)	102 10 x 10 ²	K ±10%	160 16 x 10 ⁰	S Silver	No Mark Bulk
0603 0.06 x 0.03			103 10 x 10 ³	M ±20%	250 25 x 10 ⁰	N Nickel Barrier	T Tape & Reel
0805 0.08 x 0.05				S +50 -20%	500 50 x 10 ⁰		B Bulk Cartridge
1206 0.12 x 0.06					630 63 x 10 ⁰		
1210 0.12 x 0.10					101 10 x 10 ¹		
1812 0.18 x 0.12					201 20 x 10 ¹		
2225 0.22 x 0.25					501 50 x 10 ¹		
3035 0.30 x 0.35					102 10 x 10 ²		
					202 20 x 10 ²		

TERMINATION DIAGRAMS

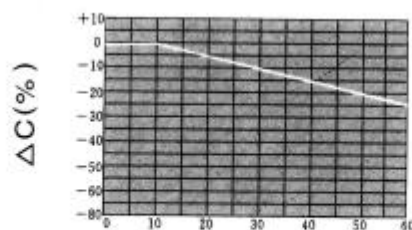


NOTE: Other Termination Available Upon Request (Contact Factory)

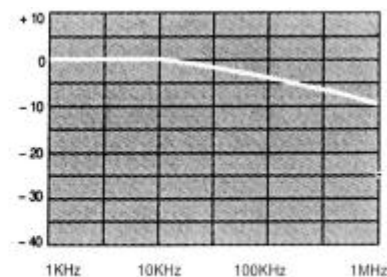
TYPICAL CHARACTERISTICS



Temperature (°C)



D. C. Volts



Frequency

X7R (B) Dielectric Characteristic Introduction & Test Method

ITEM	SPECIFICATION		TEST METHOD		
CAPACITANCE	(100PF ~ 2.2uF)		1KHz $\pm$ 10% , 1.0 $\pm$ 0.2Vrms		
Capacitance Tolerance	K = $\pm$ 10% M = $\pm$ 20% S = +50 – 20%				
Rated Voltage	16, 25, 50, 63, 100, 200, 500VDC				
Dissipation Factor (DF)	1000 , 2000 VDC DF : < 2.5 % (100V) < 3.0 % (50V, 25V) <3.5 % (16V)				
Insulation Resistance (IR)	C <= 25nF : R > 4000M Ω : C > 25nF : R x C > 100S		Test Voltage: rating voltage , Charging time: 1min. Temperature : 18 ~ 25°C , Humidity: < 80°C		
Dielectric Withstanding Voltage	There shall be no evidence of damage or flash over during the test.		Apply 2.5 x rating voltage to both Terminations for 5 seconds. Charge and discharge current are less than 50mA.		
Termination Adhesion	There shall be no evidence of damage during the test		Test Condition : 5N; 10 $\pm$ 1s		
Bending Strength During the test	There shall be no evidence of damage during the test, Capacitance tolerance shall be not more than 10%		After soldering capacitor on the PCB, 1mm of bending shall be applied for 1 second as shown by Drawing		
Solderability	Termination area shall be at least 80% covered with a new solder coating. There shall be no crack and ceramic exposure of terminated surface by melting		The capacitors are completely immersed during 2 in the molten rosin, Then immersed 10MM during 2 $\pm$ 1s in the molten solder with a temperature of 235 $\pm$ 5°C. Pick up The capacitors-and cleaned with solvent, and put in on the >10 times microscope		
Resistance to Soldering Heat	Type	X7R (B)			
	Temp.	265 $\pm$ 5°C			
	Time	5 $\pm$ 1s			
	Cover %	>=75%			
	Δ C/C	-5 ~ +10%			
Temperature Cycling	Type	X7R	Condition	X7R (B)	
	Δ C/C	<=1%	Temp. 0a	-55 $\pm$ 3°C	
			Temp. 0b	+125 $\pm$ 3°C	
	There shall be no evidence of damage during the test		Cycle times	5 times 30min / time	
	Resume time		24 hours		
	Changing times		2 ~ 3min.		
Humidity Moisture Resistance	Type	X7R (B)	Permanent moisture: T = 40 $\pm$ 20°C t = 21d Relative humidity : 93 + 2% - 3% Resume time : 1 ~ 2 hours		
	Δ C/C	<= 10%			
	D , F	0.05			
	I , R	R x C > 25s			
	There shall be no evidence of damage during the test.				
T.C. Characteristics	Dielectric	Δ C/C	Dielectric	T.C.	
	X7R (B) (CG)	$\pm$ 15%	X7R (B)	+20°C to 55°C +20°C to +125°C	
Operating Temperature Range	-55°C to +125°C				
Vibration	There shall be no evidence of damage during the test		Vibration frequency: f = 10 ~ 500Hz Vibration range: 0.75mm/s2 In 3 direction: 2 hours / direction		
Bump	Type	X7R (B)	4000 times Adder speed: 390m / s2 Pulse duration: 6ms		
	Δ C/C	<=2%			
	There shall be no evidence of damage during the test				
Life test	Type	X7R (B)	Conditions	X7R (B)	
	Δ C/C	<=20%	Temperature	+125°C	
	D , F	0.05	Time	T = 100 ^h	
	I , R	R x C >= 25s	Voltage	V = 1.5Vr	
	There shall be no evidence of damage during the test		Resume time	24 $\pm$ 1 hour	
6 grade failure test	Type	X7R (B)	Conditions	X7R (B)	
	Δ C/C	<= 10%	Creditability	60%	
	D , F	0.05	Temperature	+125°C	
	I , R	R x C >= 25s	Voltage	Rating Voltage	
	There shall be no evidence of damage during the test		Time	1000 hours	

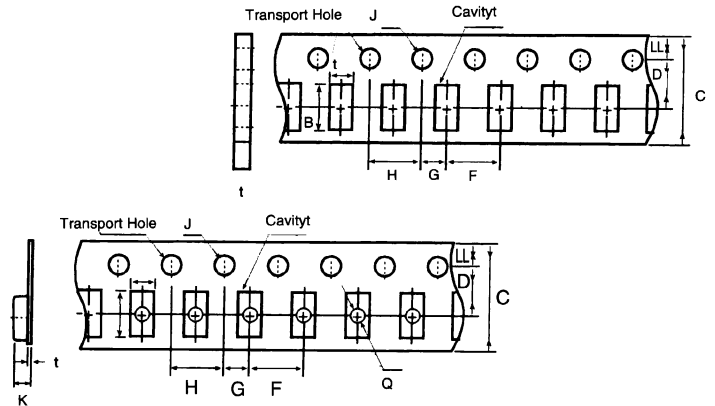
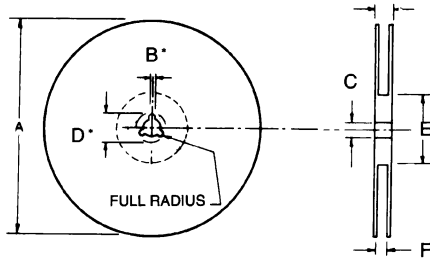
PACKAGING

Structure and Dimension

1. TAPE & REEL

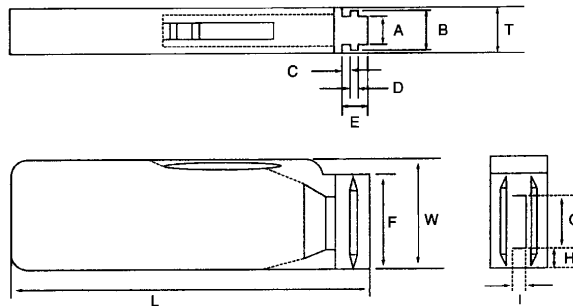
A	B	C	D	E	F	G
178 ± 2.0	3.0	13 ± 0.5	$\phi 32$	50 MIN	$10.0 \pm$	14.9
				$\phi \pm 1$	1.5	12 ± 2.0

PAPER TAPE			PLASTIC TAPE (TE)		
SIZE	A	B	SIZE	A	B
0402	0.6 ± 0.2	1.1 ± 0.2	0402	0.5 ± 0.2	1.2 ± 0.2
0603	1.1 ± 0.2	1.4 ± 0.2	0603	0.8 ± 0.2	2.0 ± 0.2
0805	1.45 ± 0.2	2.3 ± 0.2	0805	1.65 ± 0.2	2.4 ± 0.2
1206	1.8 ± 0.2	3.4 ± 0.2	1206	2.0 ± 0.2	3.6 ± 0.2



2. CARTRIDGE

Symbol	A	B	T	C	D	E
Dimension	6.8 ± 0.1	8.8 ± 0.1	12 ± 0.1	$1.5 \pm 0.1 - 0$	$2 + 0 - 0.1$	4.7 ± 0.1
Symbol	F	W	G	H	L	I
Dimension	$31.5 \pm 0.2 - 0$	$36 + 0 - 0.2$	19 ± 0.35	7 ± 0.35	110 ± 0.7	5 ± 0.35



PACKAGING QUANTITY

SIZE	QUANTITY			
	TP	TE	BC	BP
0402	10000		20000	2000
0603	4000	2500	15000	2000
0805	4000	2500	1000	2000
1206	4000	1000	5000	2000
1210				500
1812				500
2225				200
3035				200

SIZE CODE CAPACITANCE AND VOLTAGE

SIZE CODE	DIMENSIONS				VOLTAGE	CAPACITANCE (PE) X7R (B)
	L	W	T	ME		
0402	1.0 ± 0.05	0.5 ± 0.05	0.5 ± 0.05	0.1 ± 0.05	16V	101 ~ 153
					25V	101 ~ 472
					50V	101 ~ 222
0603	1.6 ± 0.1	0.8 ± 0.10	0.8 ± 0.1	0.3 ± 0.1	16V	101 ~ 104
					25V	101 ~ 683
					50V	101 ~ 273
					100V	101 ~ 153
					200V	
0805	2.00 ± 0.20	1.25 ± 0.20	0.7 ± 0.3 0.2	0.5 ± 0.25	25V	101 ~ 224
			1.25 ± 0.15		50V	101 ~ 104
			1.0 ± 0.3 0.2		100V	101 ~ 183
					200V	101 ~ 472
					500V	101 ~ 222
1206	3.20 ± 0.30	1.60 ± 0.20	1.0 ± 0.3 0.2	0.5 ± 0.25	25V	151 ~ 334
					50V	151 ~ 224
					100V	151 ~ 154
					200V	151 ~ 473
			1.25 ± 0 0.2		500V	151 ~ 103
					1000V	151 ~ 472
					2000V	151 ~ 122
1210	3.20 ± 0.30	2.50 ± 0.30	1.0 ± 0.3 0.2	0.70 ± 0.25	25V	102 ~ 474
					50V	102 ~ 334
					100V	102 ~ 224
					200V	102 ~ 563
			1.25 ± 0.2		500V	102 ~ 223
					1000V	102 ~ 332
					2000V	150-2200
1812	4.50 ± 0.40	3.20 ± 0.30	2.5	0.70 ± 0.25	25V	102 ~ 105
					50V	102 ~ 105
					100V	102 ~ 684
					200V	102 ~ 224
					500V	102 ~ 104
					1000V	271 ~ 153
					2000V	271 ~ 562
2225	5.70 ± 0.50	6.40 ± 0.50	2.5	1.00 ± 0.25	25V	103 ~ 105
					50V	103 ~ 105
					100V	103 ~ 474
					200V	153 ~ 424
					500V	183 ~ 394
					1000V	822 ~ 104
					2000V	122 ~ 103
3035	7.60 ± 10.50	9.00 ± 0.50	3.0	1.00 ± 0.25	25V	103 ~ 225
					50V	103 ~ 225
					100V	103 ~ 105
					200V	103 ~ 125
					500V	682 ~ 105
					1000V	
					2000V	