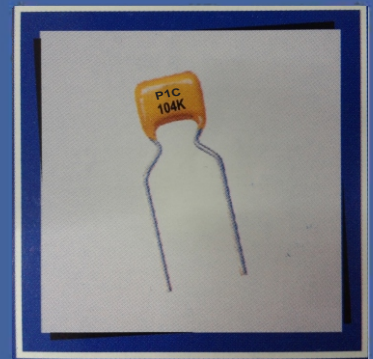




World Class
Multi Layer
Ceramic Capacitor
RADIAL
(RoHS Compliant)

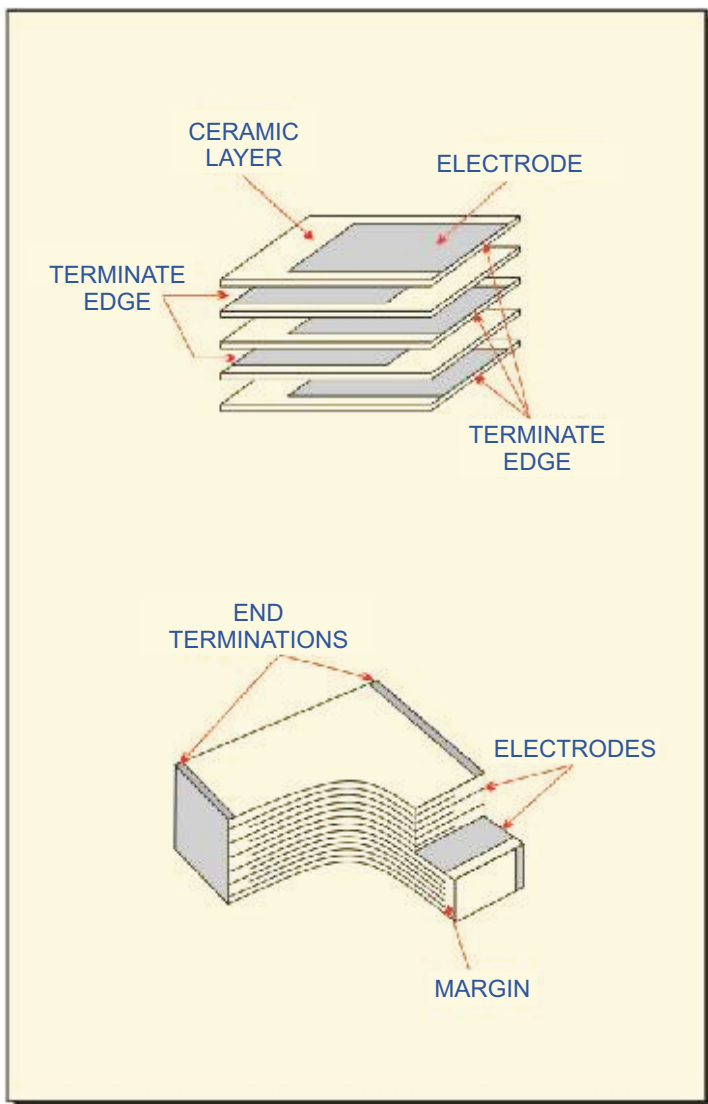


**GUJARAT POLY
ELECTRONICS LIMITED**



MULTILAYER CERAMIC CAPACITORS

A Multilayer Ceramic (MLC) Capacitor is a monolithic block of ceramic containing two sets of offset, interleaved planar electrodes that extend to two opposite surfaces of the ceramic dielectric. This simple structure requires a considerable amount of sophistication, both in material and in manufacture, to produce it in the quality & quantities needed in today's electronic equipments. Multilayer Ceramic Capacitors are available in a wide range of characteristics. They are classified into two types : Class I are the Temperature Compensating type and Class II are the General Purpose Capacitors with non-linear temperature co-efficients.



CLASS-I

Class - I capacitors or Temperature Compensating capacitors are usually made from mixtures of Titanates where Barium Titanate is normally not a major part of the mix. They have predictable temperature coefficients and in general, do not have an aging characteristic. Thus they are the most stable capacitor available. Normally the T.C.s of Class - I Temperature Compensating capacitors are NPO (Negative-Positive zero ppm/ $^{\circ}$ C.) These capacitors are used in tuned circuits and filters where low loss and stability are necessary.

CLASS-II

General Purpose ceramic capacitors are called Class - II capacitors and have become extremely popular because of the high capacitance values available in very small size. Class - II Capacitors are "Ferro electric" and vary in capacitance value under the influence of the environmental and electrical operating conditions. Class - II capacitors are affected by temperature, Voltage (both AC and DC), frequency and time. Temperature effects for Class - II ceramic capacitors are used in coupling and decoupling circuits particularly in controlled temperature environment and in circuits where change of capacitance with temperature is not of major importance.

GPEL's manufacturing range includes Ultra-stable COG/1B(NPO) i.e. NPO temperature characteristic in Class I, Stable X7R/2C1 and General - Purpose Y5V/2F4, Z5U temperature characteristics in Class - II.

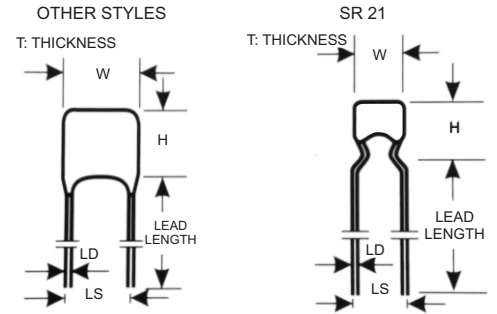
X7R/2C1 Dielectric

SIZE AND CAPACITANCE SPECIFICATIONS

Dimensions: mm(Inches)

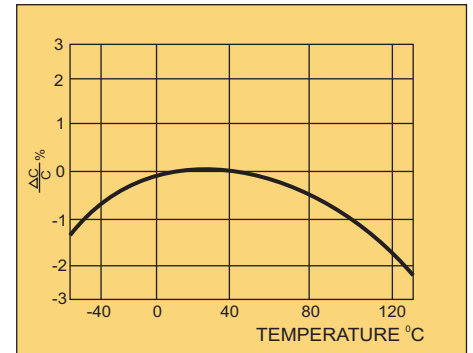


GP E L Style	SR15	SR20	SR21	SR30
Width (W)	3.81 (.150)	5.08 (.200)	5.08 (.200)	7.62 (.300)
Height (H)	3.81 (.150)	5.08 (.200)	7.62 (.300)	7.62 (.300)
Thickness (T)	2.54 (.100)	3.18 (.125)	3.18 (.125)	3.81 (.150)
Lead Spacing (L.S.)	2.54 (.100)	2.54 (.100)	5.08 (.200)	5.08 (.200)
Lead Diameter (L.D.)	.508 (.020)	.508 (.020)	.508 (.020)	.508 (.020)
Cap.in pF	WVDC			WVDC
Cap. Code	200	100	63/50	200
	100	63/50	200	100
	63/50	200	100	63/50
	200	100	63/50	200
	100	63/50	200	100
	63/50	200	100	63/50
1000 -	102			
1200 -	122			
1500 -	152			
1800 -	182			
2200 -	222			
2700 -	272			
3300 -	332			
3900 -	392			
4700 -	472			
5600 -	562			
6800 -	682			
8200 -	822			
10,000 -	103			
12,000 -	123			
15,000 -	153			
18,000 -	183			
22,000 -	223			
27,000 -	273			
33,000 -	333			
39,000 -	393			
47,000 -	473			
56,000 -	563			
68,000 -	683			
82,000 -	823			
100,000 -	104			
120,000 -	124			
150,000 -	154			
180,000 -	184			
220,000 -	224			
270,000 -	274			
330,000 -	334			
390,000 -	394			
470,000 -	474			
560,000 -	564			
680,000 -	684			
820,000 -	824			
1.0μF -	105			
1.5μF -	155			
2.2μF -	225			

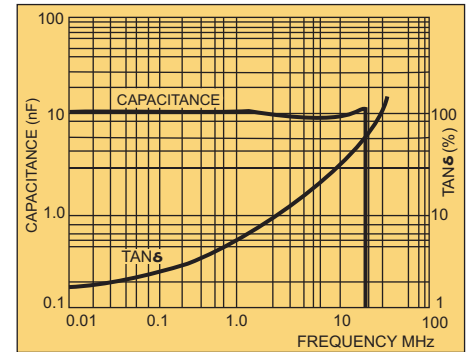


Typical Characteristic Curves

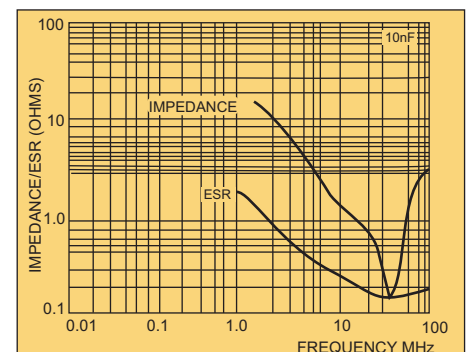
Temperature Coefficient



Capacitance vs. Frequency



Impedance vs. Frequency



Other lead style available on special request.

Dimensions are in millimeters, dimensions in parenthesis are in inches.

Manufactured as per CECC 30 701 013.

Other Capacitance values available on request.

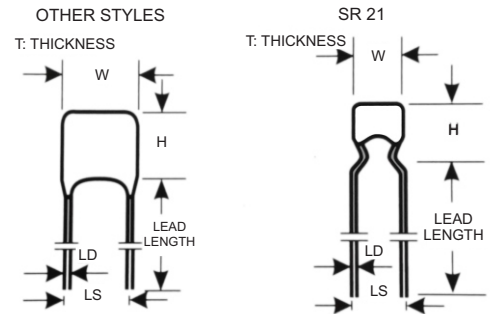
Y5V/2F4 Dielectric

SIZE AND CAPACITANCE SPECIFICATIONS



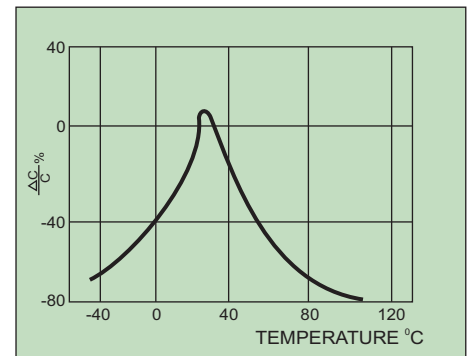
Dimensions: mm(Inches)

GPEL Style		SR15	SR20	SR21	SR30				
Width (W)		3.81 (.150)	5.08 (.200)	5.08 (.200)	7.62 (.300)				
Height (H)		3.81 (.150)	5.08 (.200)	7.62 (.300)	7.62 (.300)				
Thickness (T)		2.54 (.100)	3.18 (.125)	3.18 (.125)	3.81 (.150)				
Lead Spacing (L.S.)		2.54 (.100)	2.54 (.100)	5.08 (.200)	5.08 (.200)				
Lead Diameter (L.D.)		.508 (.020)	.508 (.020)	.508 (.020)	.508 (.020)				
Cap.in pF	Cap. Code	WVDC		WVDC		WVDC		WVDC	
		100	63/50	100	63/50	100	63/50	100	63/50
10,000 -	103								
15,000 -	153								
22,000 -	223								
33,000 -	333								
47,000 -	473								
68,000 -	683								
100,000 -	104								
150,000 -	154								
220,000 -	224								
330,000 -	334								
470,000 -	474								
680,000 -	684								
1.0μF -	105								
1.5μF -	155								
2.2μF -	225								
3.3μF -	335								
4.7μF -	475								

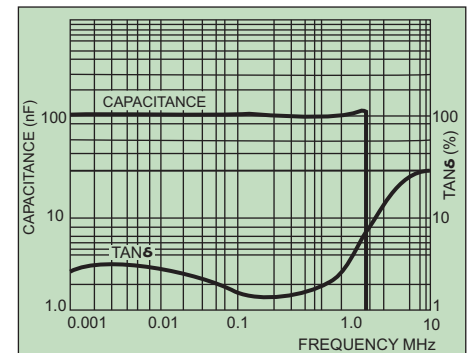


Typical Characteristic Curves

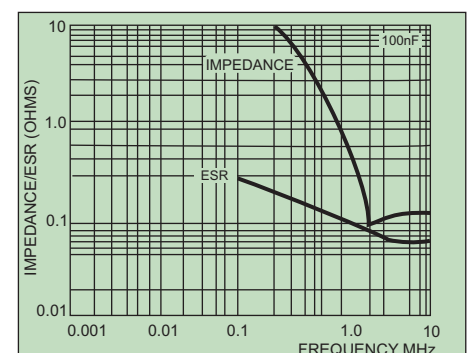
Temperature Coefficient



Capacitance vs. Frequency



Impedance vs. Frequency



Other lead style available on special request.

Dimensions are in millimeters, dimensions in parenthesis are in inches.

Manufactured as per CECC 30 701 006.

Other Capacitance values available on request.



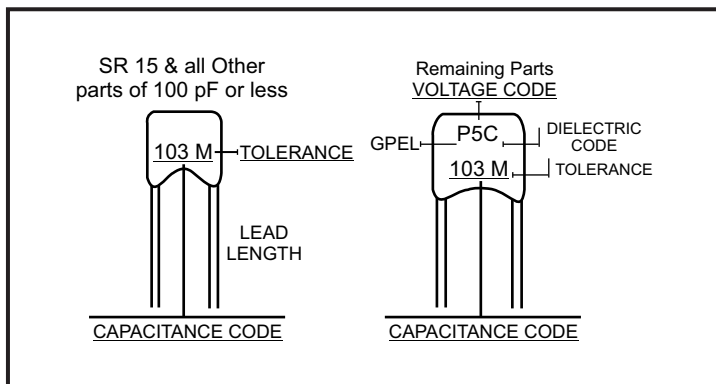
HOW TO ORDER

PART NUMBER EXPLANATION

EXAMPLE : SR21 1C 102 KA600C

SR21	1	C	102	K	A	600C
Lead Styles SR15 SR20 SR21 SR30	Voltage 5=63/50V 1 = 100V 2 = 200v 9 = 300V ψ 8 = 400V ψ 7 = 500V ψ	Temperature coefficient A = COG/1B(NPO) C = X7R/2CI E = Y5V/2F4	Capacitance code (2 significant digits + no. of zeros)** Examples: 10 pF = 100 100 pF = 101 1,000 pF = 102 22,000 pF = 223 220,000 pF = 224 1 μF = 105	Capacitance Tolerance C = ±.25 pF+ D = ±.50 pF+ F = ±1% G = ±2% J = ±5% K = ±10% M = ±20% Z = (+80, -20)%	Specification Code A = Commercial Standard	Lead length / Packaging 600C=8.1 mm, +2mm/- 0mm 0001 = 31.7 mm MIN 5001 5002 5003 = Tape & Reel 5004 (MPQ=3000) 8001 8002 8003 = Tape & Box 8004 (MPQ=2500)

+ C&D tolerance from 1.0 pF to 9.9 pF
 ** For values below 10 pF, use “R” in place of decimal point, e.g., 8.2 pF - 8R2
 ψ available on request



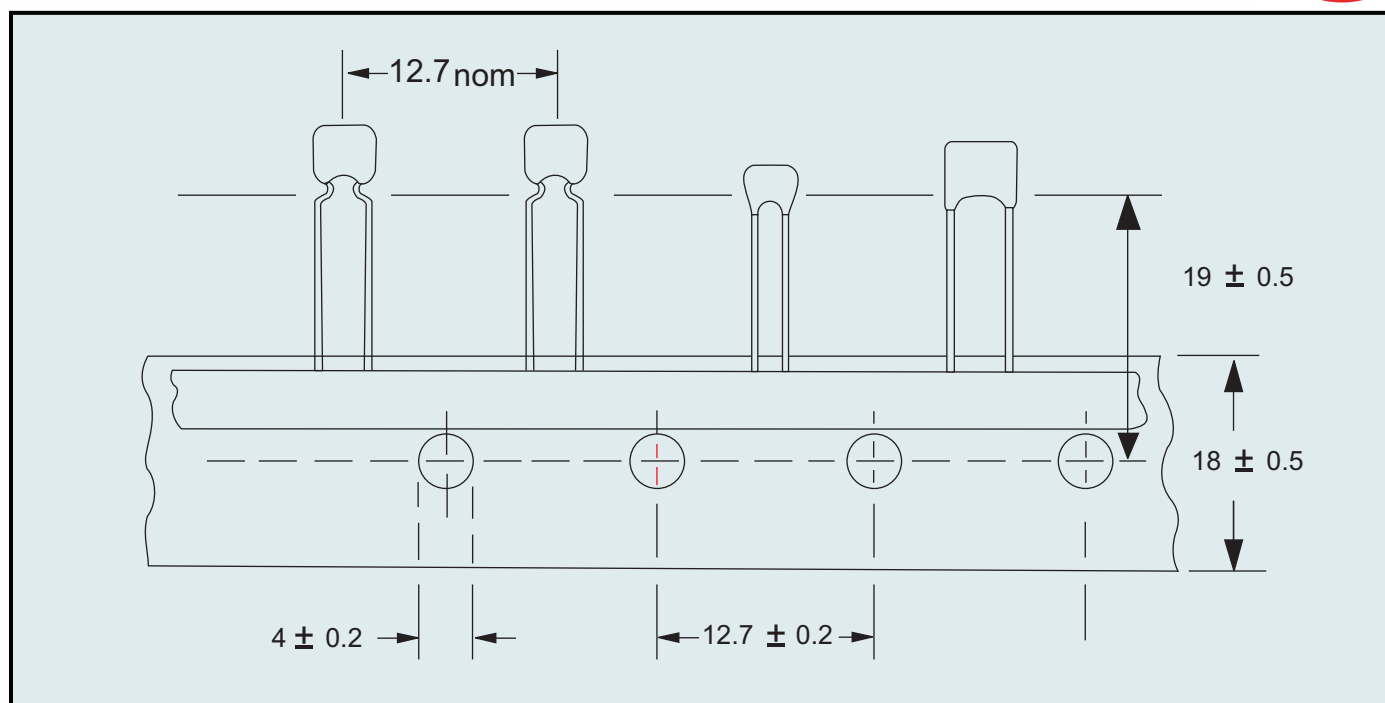
GENERAL SPECIFICATIONS

Dielectric	COG/1B NPO (A)	X7R/2CI (C)	Y5V/2F4 (E)
Capacitance Range	See individual Parts Specifications	See individual Parts Specifications	See individual Parts Specifications
Capacitance Test at 25°C	Measured at 1 VRMS max at 1 KHZ (1 MHz for 1000 pF or less)	Measured at 1 VRMS max at 1 KHZ	Measured at 0.3 V RMS max at 1 KHZ
Capacitance Tolerances	C = ±.25 pF D = ±.5 pF, F = ±1%, G = ±2% J = ±5%, K = ±10%, M = ±20%	J = ±5%, K = ±10%, M = ±20%	M = ±20% Z = +80%-20%
Operationg Temperature Range	-55°C to + 125 °C	-55°C to + 125 °C	-25°C to + 85 °C
Temperature Characteristic	0 ±30 ppm/°C for C > 20pF 0 + 120/-40 ppm/°C for C ≤ 20 pF	±15%	+30% to -80%
Voltage Ratings (DC)	200, 100 and 50/63V DC	200, 100 and 50/63V DC	100 and 50V DC
Dissipation Factor	≤ 0.0015 for C > 50 pF ≤(15/C + 0.7) x 0.0015 For C ≤ 50 pF 1 VRMS, 1MHZ for C ≤ 1000 pF 1 VRMS, 1KHz for C > 1000 pF	2.5% max at 1 KHZ, 1 VRMS	3.0% max at 1 KHZ, 0.3 V RMS
Insulation Resistance at rated voltage DC	100 G ohms or 1000 megaohms -μF minimum whichever is less	100 G ohms or 1000 megaohms -μF minimum whichever is less	10 G ohms or 100 megaohms -μF minimum whichever is less
Dielectric Strength	250% of rated VDC	250% of rated VDC	200% of rated VDC
Life Test (1000 hours)	200% rated Voltage at + 125 °C	200% rated Voltage at + 125 °C	150% rated Voltage at + 85 °C

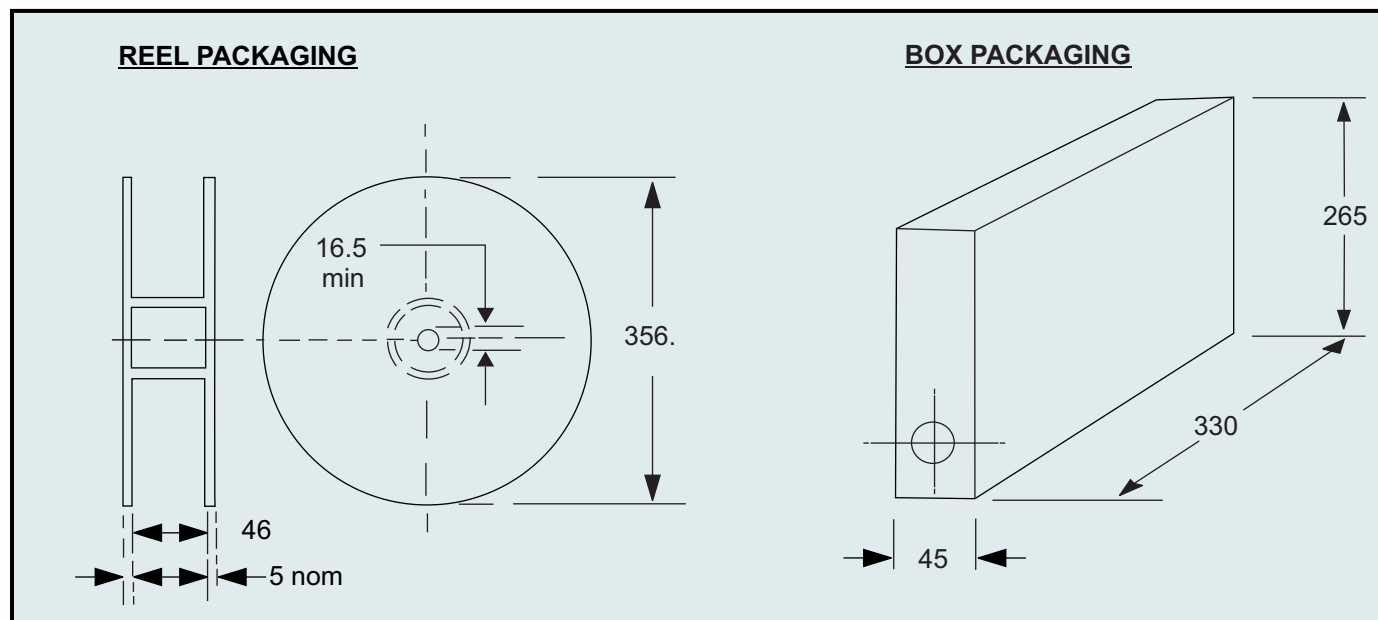
Note: GPEL reserves the right to change the information herein without prior notice.



TAPING DIMENSIONS (mm)



REEL AND BOX DIMENSIONS (mm)



Other Products :- Multilayer Ceramic Capacitors - SMD type & AXIAL type
Single Layer Ceramic Disc Capacitor
Single Layer High Voltage Disc Capacitor
Metal Oxide Varistors (MOV)



PLANT VIEW

GUJARAT POLY ELECTRONICS LIMITED (GPEL) has been promoted jointly by Polychem Ltd. and Gujarat Industrial Investment Corporation Limited (GIIC).

POLYCHEM LIMITED is a pioneer in the production of Plastics in India.

GPEL manufactures Multilayer Ceramic Capacitors in Chip and Leaded (Radial & Axial) configurations, Single Layer Ceramic Capacitors. Capacitors are manufactured on highly sophisticated automatic machines.

GPEL standards are set to meet the challenging and steadily increasing demands of the Electronics industry, with the concept of Total Quality Management.

GPEL Capacitors are approved by C-DOT, ITI, RDSO and major OEM's.

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December - 2018