HITANO ENTERPRISE CORP. ®

MULTILAYER CERAMIC CAPACITORS EPOXY COATED RADIAL TYPE

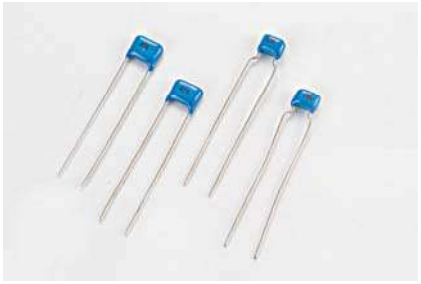
Application

NPO：Temperature compensation type, have little or no change in capacitance with variation in temperature. Hence, they are used in radio-frequency oscillators, precision timing circuits, ultra stable amplifiers, etc.

X7R/X5R：Temperature stable type for by-pass and decoupling in radio and television receivers, computers servo systems. Audio tone, and coupling, etc., where moderate capacitance variations are permissible and dissipation factor is not critical.

Z5U/Y5V：General type for by-pass and filtering applications.

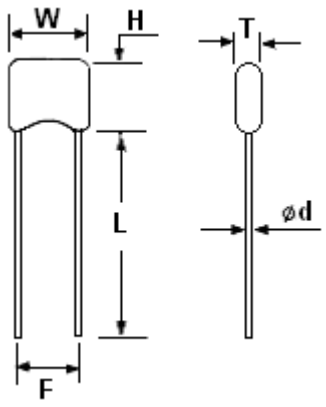
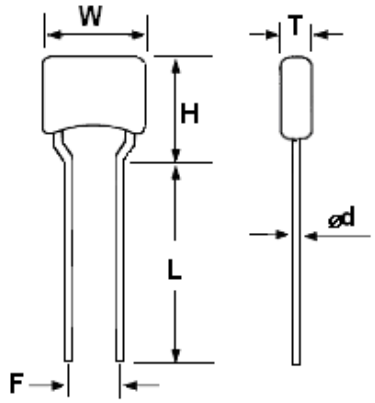
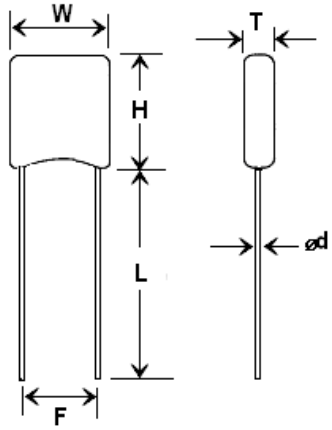
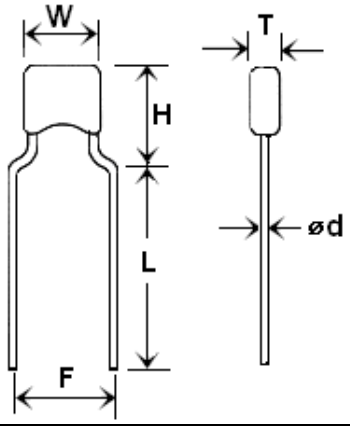
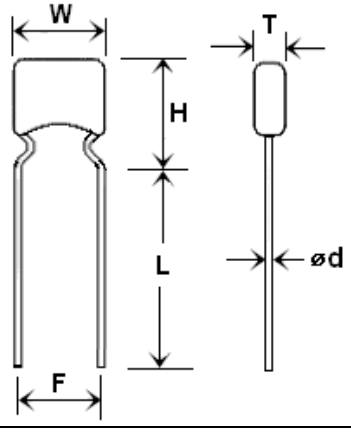
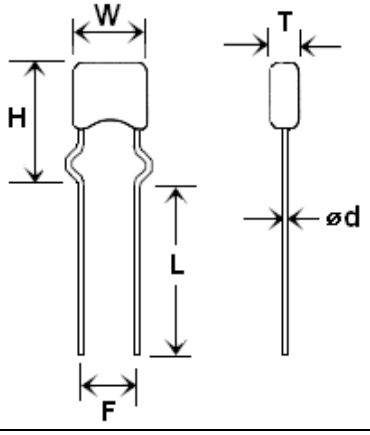
Construction



Part Number Designation:

R15	Z	104	M	1H	L	5	L
SIZE	**T.C**	**Capacitance-Code**	**Tolerance**	**Voltage**	**Lead shape**	**Lead space**	**Package-Lead-length**
R15 R20 R25	N=NPO W=X7R X=X5R Z=Z5U Y=Y5V	Two significant digits ＋No. of zeros. Example 102=1000pf 223=22000pf 104=100000pf	B=±0.10PF C=±0.25PF D=±0.50PF F=±1% G=±2% J=±5% K=±10% M=±20% Z=+80/-20%	0J=6.3V 1A=10V 1C=16V 1E=25V 1H=50V 1J=63V 2A=100V	L=Straight Y=Inside Crimp H=High seated X=Outside Crimp	2=2.54±0.8 5=5.08±0.8 (mm)	R=Tape/Reel B=Tape/Box 6=6±1mm L=25.4mm(min)

1. LEAD SHAPE：

		
R15 L	**R20 Y**	**R25 L**
		
R15 H	**R20 H**	**R15 X**

2. LEAD SPACE (F)

CODE	LEAD SPACE (mm/inch)	
2	2.54±0.8	0.1±0.032
5	5.08±0.8	0.2±0.032

3. LEAD LENGTH (L)

CODE	LEAD LENGTH	REMARK
6	6mm±1mm	Specified lead length upon request.
L	25mm (min)	

4. BODY SIZE & DIMENSION

Size code	Lead style available	Capacitance Range					Dimensions (mm)				
		NPO	X7R	Z5U	Y5V	X5R	W max	H max	T max.	d±0.05	F±0.8
R15	L	50V: 1.0pF -10nF 100V: 0.47-3900pF	50V: 220pF-0.33uF 100V: 220pF-0.1uF	50V: 1.0nF-0.22uF	50V: 1.0nF-0.22uF	16V 1.0uF-10.0uF 25V 1.0uF-4.7uF	4.5	5.5	3.0	0.5	2.54
	X						4.5	7.0	3.0	0.5	2.54
	H						4.5	7.0	3.0	0.5	5.08
R20	Y	25V: 22nF -100nF	25V: 1.0uF -10.0uF	50V: 0.22uF-1.0uF	50V: 0.22uF-2.2uF	6.3V 22.0uF-100uF	5.5	7.0	4.0	0.5	2.54
		50V: 10nF -100nF	50V: 0.1uF -4.7uF			16V 3.3uF-47.0uF					
	H	100V: 1.0nF -10nF	100V: 0.1uF -1.0uF			25V 3.3uF-22.0uF	5.5	7.0	4.0	0.5	5.08
						50V 1.0uF-10.0uF					
R25	L	50V: 150nF -220nF 100V: 12nF – 27nF	50V: 6.8uF -22uF 100V: 1.2uF – 2.2uF	50V: 1.0uF-4.7uF	50V: 1.0uF-4.7uF	6.3V 47.0uF-100uF 16V 10.0uF-22.0uF	7.5	8.0	4.5	0.5	5.08

Typical Performance Characteristics

Specifications

Temperature coefficient

- NPO: ± 30PPM/℃, -55℃ to +125℃
- X7R: ± 15%, -55℃ to +125℃
- X5R: ± 15%, -55℃ to +85℃
- Z5U: +22%,-56%, +10℃ to +85℃
- Y5V: +22%, -82%, -30℃ to +85℃

Dielectric strength 25℃ (Flash Test)

- NPO, X7R, X5R: 300% rated voltage for 5 seconds with 50 mA. max charging current.
- Z5U and Y5V: 250% rated voltage for 5 seconds with 50 mA. max charging current

Capacitance test 25℃

- NPO: 1 VRMS max at 1 KHz (1 MHz for 100pF or less)
- X7R: 1 VRMS max at 1 KHz
- X5R: 1 VRMS max at 1 KHz
- Z5U: 1 VRMS max at 1 KHz
- Y5V: 1 VRMS max at 1 KHz

Life Test :

(1000 hrs at max temp. applied with Flash test voltage Recovery for 24± 2 hrs)

- NPO: ≤ ± 3% at 200% rated voltage, 125℃
- X7R: ≤ ± 3% at 200% rated voltage, 125℃
- X5R: ≤ ± 3% at 200% rated voltage, 125℃
- Z5U: ≤ ± 3% at 200% rated voltage, 85℃
- Y5V: ≤ ± 3% at 200% rated voltage, 85℃

Dissipation Factor 25℃

NPO: 0.15% max at 1KHz, 1VRMS max (1 MHz for 1000pF or less)
Z5U: 5% max (at 1KHz, 1VRMS max)
X7R/X5R: (at 1KHz, 1VRMS max) Y5V: (at 1KHz, 1VRMS max)

Max	Rated voltage	Max	Rated voltage
2.5%	≥50V	5%	≥50V
3.5%	25V & 16V	7%	25V & 16V
5.0%	10V & 6.3V	10%	10V & 6.3V

Insulation Resistance after 60 sec., charging at rated voltage, 25℃, 55% R.H. max

- NPO: 100GΩ or 1000MΩ-uF whichever is less
- X7R : 10GΩ or 100MΩ-uF whichever is less
- X5R : 10GΩ or 100MΩ-uF whichever is less
- Z5U : 10GΩ or 100MΩ-uF whichever is less
- Y5V : 10GΩ or 1000MΩ-uF whichever is less