HITANO
ENTERPRISE CORP. ®

MULTILAYER CERAMIC CAPACITORS EPOXY COATED RADIAL TYPE

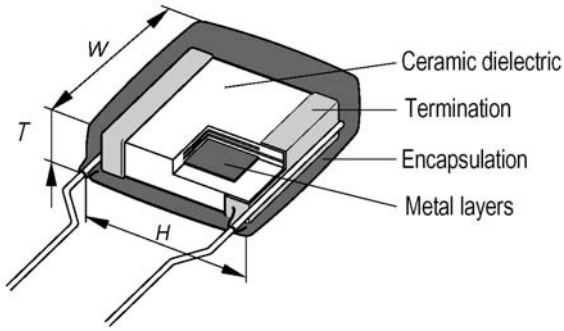
Application

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：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.

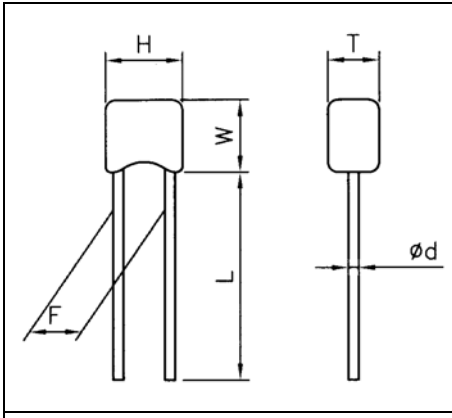
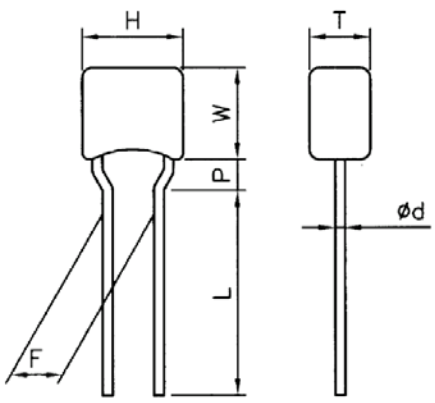
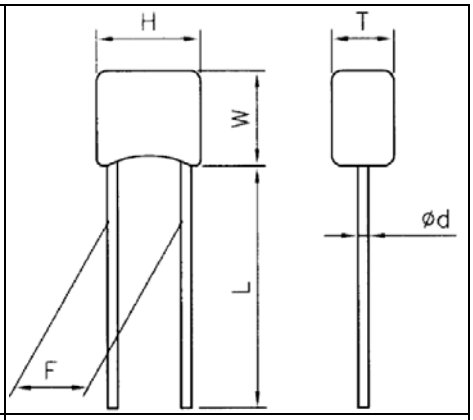
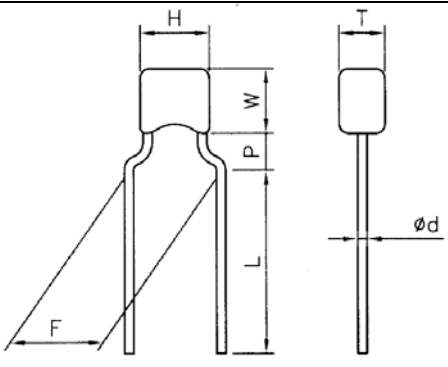
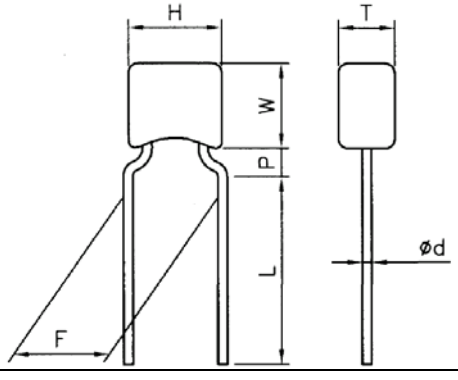
Construction



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 Z=Z5U Y=Y5V	Two significant digits ＋NO. of zeros. Example 102=1000pf 223=22000pf 104=100000pf	G=±2% J=±5% K=±10% M=±20% Z=+80/-20%	1C=16V 1E=25V 1H=50V 1J=63V 2A=100V 2E=250V 2H=500V 3A=1KV 3D=2KV 3F=3KV	L=Straight Y=Inside Crimp H=High seated	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**	

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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
L	25.4mm (min)	upon request.

4. BODY SIZE & DIMENSION

Size code	Lead style available	Capacitance Range				Dimensions (mm)					
		NPO	X7R	Z5U	Y5V	H max	W max	T max.	d±0.05	F±0.08	P
R15	L	50V: 0.47-4700pF	50V: 220pF-0.1uF	50V: 0.01uF-0.22uF	50V: 0.01-0.33uF	3.8	3.8	2.5	0.5	2.54	---
	H	100V: 0.47-2700pF	100V: 220pF-0.1uF		25V: 0.47-1.0uF	3.8	3.8	2.5	0.5	5.08	2.0
R20	Y	25V: 0.12-0.47uF	25V: 1.0-2.2uF	50V: 0.22uF-1.0uF	16V: 10-22uF	5.0	6.0	3.0	0.5	2.54	2.0
		50V: 5600pF-0.01uF	50V: 0.1-1.0uF		25V: 2.2-4.7uF						
	H	100V: 2700-6800pF	100V: 0.1-0.15uF		50V: 0.47-2.2uF	5.0	6.0	3.0	0.5	5.08	2.0
R25	L	25V: 0.1uF	100V: 0.18-0.47uF	100V: 0.47uF-1.5uF	16V: 47uF	6.5	6.5	4.0	0.5	5.08	---
		50V & 100V 0.012-0.022uF			25V: 22uF						
					50V: 10uF						

Typical Performance Characteristics

Specifications

Temperature coefficient

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

Capacitance test 25℃

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

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: (at 1KHz, 1VRMS max)

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

Y5V: (at 1KHz, 1VRMS max)

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

Dielectric strength 25℃ (Flash Test)

- NPO and X7R: 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

LifeTest :

(1000 hrs at max temp. applied with Flash test voltage Recovery: 6-24 hrs for NPO and 24± 2 hrs for X7R & Z5U)

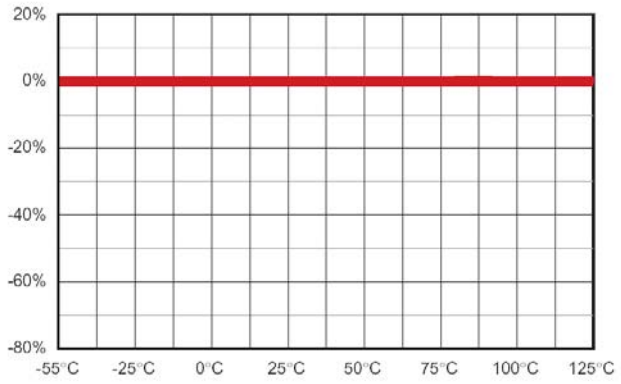
- NPO: ≤ ± 3% at 200% rated voltage, 125℃
- X7R: ≤ ± 3% at 200% rated voltage, 125℃
- Z5U: ≤ ± 3% at 200% rated voltage, 85℃
- Y5V: ≤ ± 3% at 200% rated voltage, 85℃

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

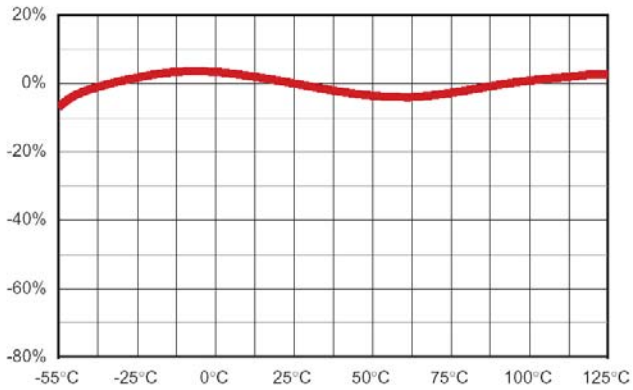
- NPO: 100GΩ or 1000MΩ-uF whichever is less
- X7R : 10GΩ or 100MΩ-uF whichever is less
- Z5U : 10GΩ or 100MΩ-uF whichever is less
- Y5V : 10GΩ or 1000MΩ-uF whichever is less

TEMPERATURE CHARACTERSITCS SPECIFICATIONS

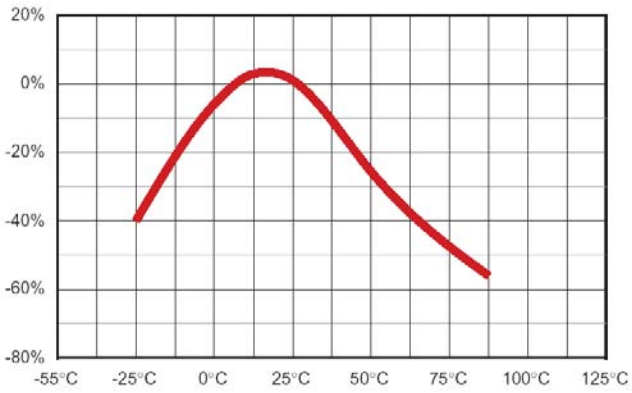
NPO CAP. VS TEMPERATURE



X7R CAP. VS TEMPERATURE



Z5U CAP. VS TEMPERATURE



Y5V CAP. VS TEMPERATURE