

# Data Sheet

Customer: \_\_\_\_\_

Product: High Voltage Multilayer Ceramic Capacitprs Epoxy Coated Radial Type \_\_\_\_\_

Size : R15 / R20 / R25 \_\_\_\_\_

Issued Date: 18-Feb.-2025 \_\_\_\_\_

Edition: Ver. 4 \_\_\_\_\_

## Record of change

Date	Ver.	Description	Page
2016-08-28	1		
2023-07-03	2	Revised Test Freq. $C \leq 10\mu F \rightarrow 1\text{KHz}/1\text{V}$ & $C > 10\mu F \rightarrow 120\text{Hz}/0.5\text{V}$	2
2023-12-14	3	Revised Part Number Designation	3
2025-02-18	4	Revised BODY SIZE & DIMENSION	4

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Prepared by	Checked by	Approved by	Accepted by (customer)
18-Feb.-2025	18-Feb.-2025	18-Feb.-2025	
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**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

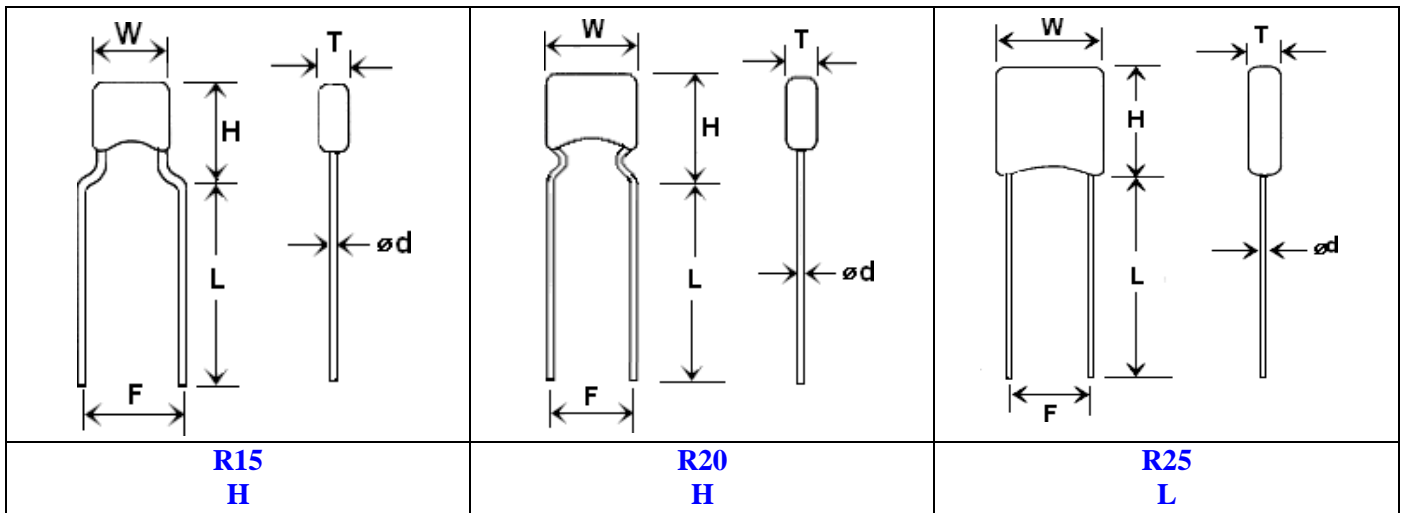
**Construction :**



**Part Number Designation:**

<u>R15</u>	<u>W</u>	<u>223</u>	<u>M</u>	<u>2H</u>	<u>H</u>	<u>5</u>	-	<u>L</u>
SIZE	T.C	Capacitance-Code	Tolerance	Voltage	Lead shape	Lead space		Package-Lead-Length
R15	N=NPO	Two significant	A: ±0.05pF	2E=250V	L=Straight	5=5.08±0.8(mm)		R=Tape/Reel
R20	W=X7R	digits +No. of zeros.	B: ±0.10pF	2H=500V	H=High seated			B=Tape/Box
R25		example: 102=1000pF 223=22000pF 104=100000pF	C: ±0.25pF D: ±0.50pF F: ±1 % G: ±2 % J: ±5 % K: ±10 % M: ±20 % Z: -20%~+80%	3A=1KV 3D=2KV 3F=3KV				6=6±1mm L=25.4mm(Min)

**1. LEAD SHAPE:**



**2. LEAD SPACE (F)**

CODE	LEAD SPACE (mm/inch)	
	5	5.08±0.8

**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	W max	H max	T max.	d±0.05	F±0.8
R15	H	250V: 10 – 1500pF	250V: 100pF – 0.047uF	4.2	7.0	3.0	0.5	5.08
		500V: 10 – 560pF	500V: 100pF – 0.022uF					
R20	H	250V: 2200 – 10,000pF	250V: 0.068 – 0.47uF	5.5	7.0	3.5	0.5	5.08
		500V: 680 – 4700pF	500V: 0.022 – 0.1uF					
		1KV: 10 – 2200pF	1KV: 220pF – 0.047uF					
		2KV: 10 – 1000pF	2KV: 220pF – 3900F					
		3KV: 10 – 220pF	3KV: -----					
R25	L	250V: 0.012 – 0.033uF	250V: 0.047 – 1.0uF	7.0	7.5	4.5	0.5	5.08
		500V: 5600 – 22,000pF	500V: 0.012 – 0.22uF					
		1KV: 2700 – 4700pF	1KV: 0.01uF – 0.056uF					
		2KV: 1000 – 3300pF	2KV: 4700pF – 0.01uF					
		3KV: 270 – 1000pF	3KV: 100 – 4700pF					

**5. SPECIFICATIONS AND TEST METHODS :**

**Test Method :**  
(Capacitance & D.F. shall be measured at 25°C)

Type	NPO	NPO/X7R/X5R	NPO/X7R/X5R
Item	C ≤ 1000pF	Z5U/Y5V C ≤ 10uF	Z5U/Y5V C > 10uF
Frequency	1.0 MHz	1.0 KHz	120 Hz
Voltage	1.0 Vrms	1.0 Vrms	0.5 Vrms

**Dielectric strength 25°C (Flash Test)**

- NPO: 250V-2.0 X V rated, 500V-1.5 X V rated, ≥1KV-1.2 X V rated
- X7R: 250V-2.0 X V rated, 500V-1.5 X V rated, ≥1KV-1.2 X V rated

**Temperature coefficient**

- NPO: ± 30PPM/°C, -55°C to +125°C
- X7R: ± 15%, -55°C to +125°C

**Life Test :**

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

	<u>NPO</u>	<u>X7R</u>
ΔC/C	≤ ± 3%	≤ ± 20%
D.F.	≤ 2 x initial	≤ ± 7%
I.R.		≥ 0.25 x initial

**Dissipation Factor 25°C**

- NPO: 0.15% Max.
- X7R: 2.5% Max.

**Insulation Resistance after 60 secs, charging at rated voltage, 25°C, 55%R.H. max**

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