

RADIAL-LEADED, EPOXY-DIPPED MULTILAYER CERAMIC CAPACITORS

DESCRIPTION: MLC RADIAL SERIES (RD TYPE)

Pro-Cap radial-leaded, epoxy-dipped multilayer ceramic capacitors are built by superior moisture and shock resistant epoxy coating, and can be supplied in BULK and TAPE & REEL package for an automatic insertion in printed circuit board. Our RD type capacitors have wide applications in computer, data processor. Telecommunications, industrial control and instrumentation equipment, etc. Termination: 100% tin coated copper wire.

HOW TO ORDER

RD 21 ZU 104 M 500 RA

RADIAL TYPE: _____

SIZE CODE: _____

07	15	16	20	21	30	40	50
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DIELECTRIC CODE: _____

CODE	DIELECTRIC
CG	NPO / COG
XR	X7R
ZU	Z5U
YV	Y5V

CAPACITANCE CODE: _____

Capacitance expressed in pico farads (pF).
 First two digits are significant figures.
 Third digit denotes the number of zeros.
 A few examples are shown with codes.

(μ F)	(nF)	CAPACITANCE (pF)	CODE
		1.0 pF	1R0
		4.7 pF	4R7
		10 pF	100
	0.22 nF	220 pF	221
0.022 μ F	22 nF	22,000 pF	223
0.10 μ F	100 nF	100,000 pF	104
1 μ F	1,000 nF	1,000,000 pF	105

TOLERANCE CODE: _____

CODE	TOLERANCE	CODE	TOLERANCE	CODE	TOLERANCE
A	$\pm 0.05\mu$ F	F	$\pm 1\%$	M	$\pm 20\%$
B	$\pm 0.10\mu$ F	G	$\pm 2\%$	Z	$\pm 80\%, - 20\%$
C	$\pm 0.25\mu$ F	J	$\pm 5\%$	P	$\pm 100\%, - 0\%$
D	$\pm 0.50\mu$ F	K	$\pm 10\%$		

RATED VOLTAGE CODE: _____

2 significant digits + number of zeros.

CODE	VOLTAGE	CODE	VOLTAGE
160	16V DC	251	250 V DC
250	25V DC	501	500 V DC
500	50V DC	102	1000V DC
101	100V DC	202	2000V DC
201	200V DC	302	3000V DC

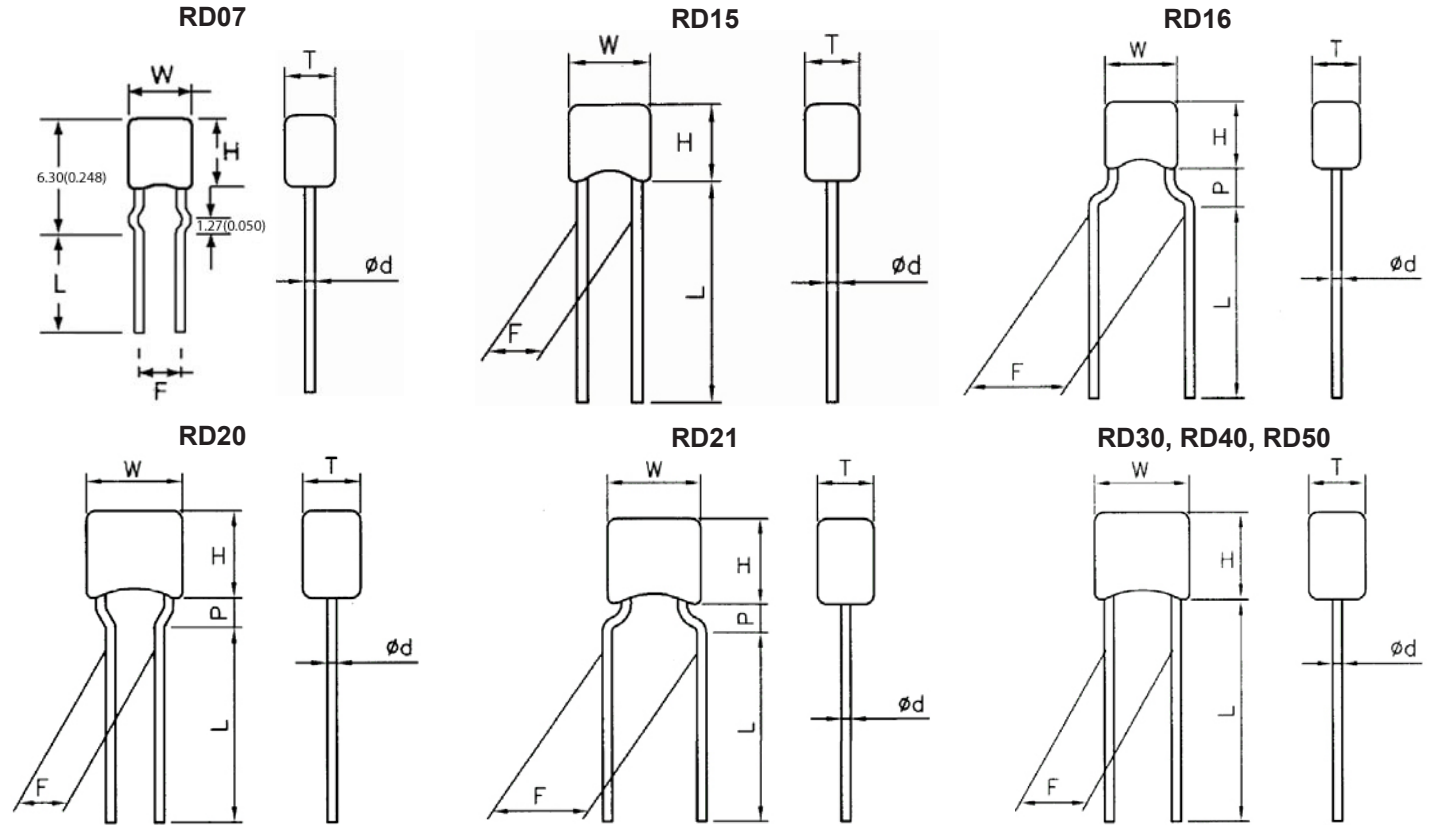
PACKAGING CODE: _____

- RR: Radial-leaded, Reel package
- RB: Radial-leaded, Bulk package
- RA: Radial-leaded, Tape/ammo
- B: Bulk package
- C: Cut package + lead length (example: C6: L = 6mm)

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STYLES AND DIMENSIONS

STYLES:



DIMENSIONS UNITS: mm(inches):

Size Code	W Max.	H Max	T Max	F	L	P Max.	d°
RD07	4.06 (0.16)	3.81 (0.15)	2.54 (0.10)	2.54 (0.10)	28.0 Min. (1.10) (Standard)	2.0 (0.08)	0.53 ± 0.05 (0.02 ± 0.002)
RD15	4.06 (0.16)	3.81 (0.15)	2.54 (0.10)	2.54 (0.10)			
RD16	4.06 (0.16)	3.81 (0.15)	2.54 (0.10)	5.08 (0.20)			
RD20	5.08 (0.20)	5.08 (0.20)	3.05 (0.12)	2.54 (0.10)	10.0 ± 2.0 (0.39 ± 0.08)		
RD21	5.08 (0.20)	5.08 (0.20)	3.05 (0.12)	5.08 (0.20)			
RD30	7.62 (0.30)	7.62 (0.30)	3.81 (0.15)	5.08 (0.20)	6.0 ± 1.0 (0.24 ± 0.08)		
RD40	10.16 (0.40)	10.16 (0.40)	7.62 (0.30)	7.62 (0.30)			
RD50	12.60 (0.50)	12.70 (0.50)	7.62 (0.30)	10.16 (0.40)			

MARKING:

Capacitance are marked in 3 digits for capacitance above 100pF, and marked in actual value for capacitance 100pF and below.



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TYPICAL PERFORMANCE CHARACTERISTICS

TEMPERATURE COEFFICIENT:

NPO/COG: $\pm 30\text{PPM} / ^\circ\text{C}$, -55°C to 125°C
 X7R: $\pm 15\%$, -55°C to $+125^\circ\text{C}$
 Z5U: $+22\%$, -56% , $+10^\circ\text{C}$ to $+85^\circ\text{C}$
 Y5V: $+22\%$, -82% , -30°C to 85°C

CAPACITANCE TEST AT 25°C:

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

DISSIPATION FACTOR 25C:

NPO/COG: 0.15% max at 1KHz, 1 VRMS max(1MHz for 1000pF or less)

X7R: (at 1KHz, 1 VRMS)

Max	Rated Voltage
2.5%	$\geq 50\text{V}$
3.5%	25V & 16V
5.0%	10V & 6.3V

Z5U: 5% max (at 1KHz, 1 VRMS max)

Y5V: (at 1KHz, 1 VRMS max)

Max	Rated Voltage
5%	$\geq 50\text{V}$
7%	25V & 16V
10%	10V & 6.3V

DIELECTRIC STRENGTH 25°C (FLASH TEST):

NPO/COG 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.

LIFE TEST: (1000hrs at max temp. applied with Flash test voltage,

Recovery: 6-24hrs for NPO and 24 \pm 2hrs for X7R & Z5U)

NPO/COG: $\leq \pm 3\%$ at 200% rated voltage, 125°C

X7R: $\leq \pm 3\%$ at 200% rated voltage, 125°C

Z5U: $\leq \pm 3\%$ at 200% rated voltage, 85°C

Y5V: $\leq \pm 3\%$ at 200% rated voltage, 85°C

INSULATION RESISTANCE AFTER 60SEC, CHARGIN AT RATED VOLTAGE, 25°C, 55% R.H. MAX:

NPO/COG: 10G Ω or 1000M Ω -uF whichever is less

X7R: 10G Ω or 100M Ω -uF whichever is less

Z5U: 10G Ω or 100M Ω -uF whichever is less

Y5V: 10G Ω or 1000M Ω -uF whichever is less



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RoHs Compliant

CAPACITANCE RANGE: Y5V

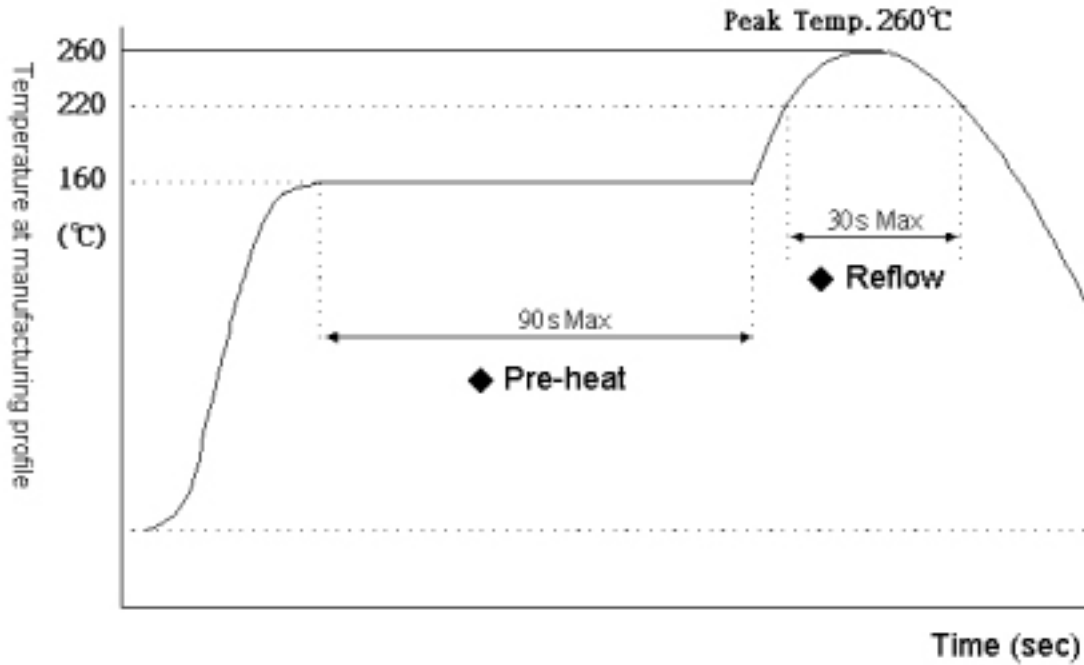
DIELECTRIC CODE		Y5V(2F4)							
SIZE CODE		RD15 RD16		RD20 RD21			RD30		
W.V.D.C.	CODE	25	50	16	25	50	16	25	50
CAP	0.01	103							
(µF)	0.012	123							
	0.015	153							
	0.018	183							
	0.022	223							
	0.027	273							
	0.033	333							
	0.039	393							
	0.047	473							
	0.056	563							
	0.068	683							
	0.082	823							
	0.1	104							
	0.12	124							
	0.15	154							
	0.18	184							
	0.22	224							
	0.27	274							
	0.33	334							
	0.39	394							
	0.47	474							
	0.56	564							
	0.68	684							
	0.82	824							
	1.0	105							
	1.2	125							
	1.5	155							
	1.8	185							
	2.0	205							
	2.2	225							
	2.7	275							
	3.3	335							
	3.9	395							
	4.7	475							
	5.6	565							
	6.8	685							
	8.2	825							
	10	106							
	12	126							
	15	156							
	18	186							
	20	206							
	22	226							
	27	276							
	33	336							
	39	396							
	47	476							



RADIAL-LEADED, EPOXY-DIPPED MULTILAYER CERAMIC CAPACITORS

SOLDERING PROFILE RADIAL LEADED TYPE

Soldering heat resistance as below temperature profile.
Solder iron 400°C 4~5 sec.
Solderability 235°C, 3 ± 1 sec, 95% coverage min.

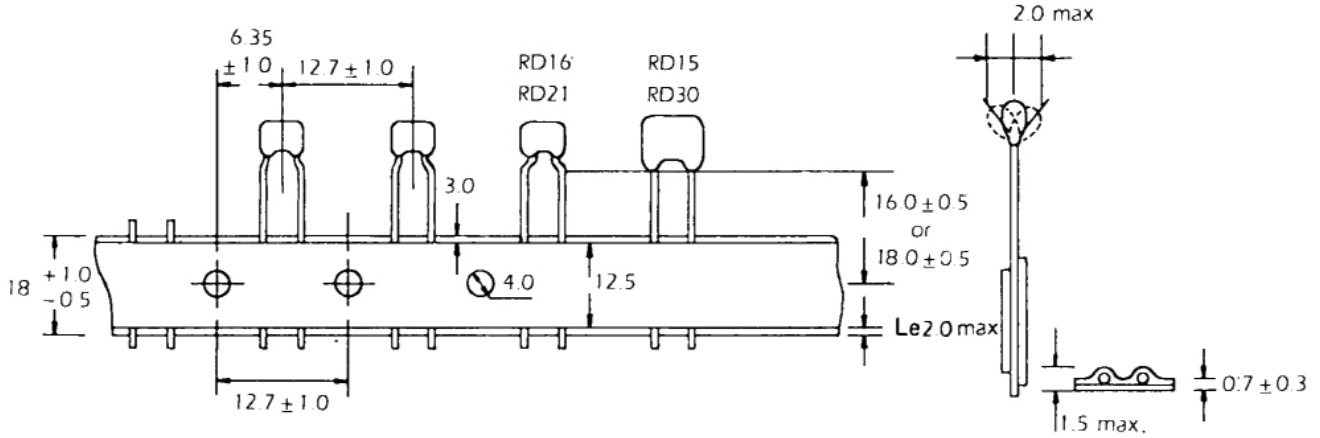


Pre-heating shall be done less then +150°C within 90 seconds.
The temperature at capacitor top shall not exceed +260°C.
The duration of over +220°C temperature at component top shall not exceed 30 seconds.
The standard temperature profile differs by each reflow method.

If components are subject to the conditions beyond the allowable range of reflow, please contact us.

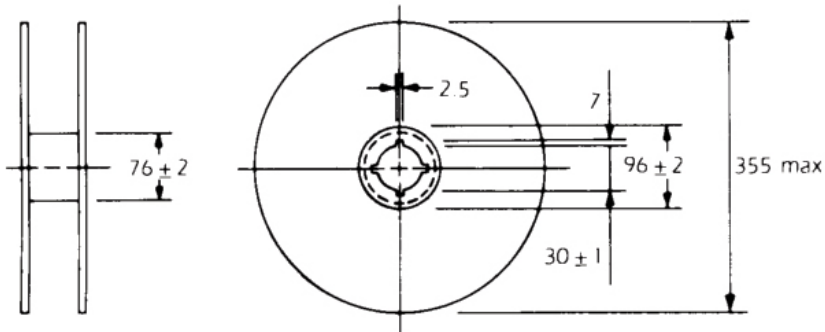
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TAPING DIMENSIONS (mm):

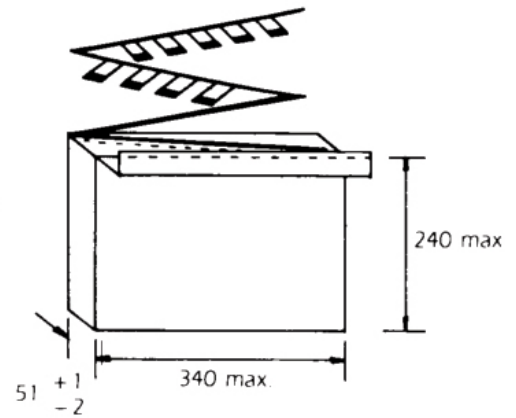


REEL & BOX DIMENSIONS (mm):

Reel Package (Code RR)



Box Package (Code BR)



PACKAGING QUANTITY:

SIZE CODE	TAPING TYPE		BULK TYPE
	QUANTITY PER REEL	QUANTITY PER BOX	QUANTITY PER BAG
RD15, RD16	3,000	2,000	500
RD20, RD21	3,000	2,000	500
RD30	3,000	1,500	500