

# RF/Microwave Capacitors

## RF/Microwave Multilayer Capacitors (MLC)

### 180R Series NPO Porcelain Ultra-Low ESR



## FEATURES

- Case R Size (.070" x .090")
- Capacitance Range 0.5pF to 100pF
- 500 WVDC
- Low ESR/ESL
- High Q
- Ultra-Stable Performance
- High Self-Resonance

## GENERAL DESCRIPTION

KYOCERA AVX, the industry leader, offers new improved ESR/ESL performance for the 180R Series RF Capacitors. This is KYOCERA AVX's lowest ESR multilayer capacitor. The high Q, high self-resonance characteristic many RF/Microwave applications

## FUNCTIONAL APPLICATIONS

- Bypass
- Coupling
- Tuning
- Feedback
- Impedance Matching
- DC Blocking

## CIRCUIT APPLICATIONS

- RF Power Amplifiers
- Filters
- Oscillators
- Timing Circuits
- Delay Lines

## ENVIRONMENTAL CHARACTERISTICS

<b>Thermal Shock</b>	Mil-STD-202, Method 107, Condition A
<b>Moisture Resistance</b>	Mil-STD-202, Method 106
<b>Low Voltage Humidity</b>	Mil-STD-202, Method 103, condition A, with 1.5 VDC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours
<b>Life Test</b>	MIL-STD-202, Method 108, for 2000 hours, at 125 °C. 200% WVDC applied

## PACKAGING OPTIONS



Tape & Reel



Cap Pac  
(100 pcs)



## ELECTRICAL & MECHANICAL SPECIFICATIONS

<b>Quality Factor (Q)</b>	greater than 10,000 at 1 MHz
<b>Temperature Coefficient of Capacitance (TCC)</b>	0±30 PPM/°C (-55°C to +125°C) 0±60 PPM/°C (+125°C to +175°C)
<b>Insulation Resistance (IR)</b>	0.5 pF to 100 pF: 10 <sup>6</sup> Megohms min. @ +25°C at rated WVDC 10 <sup>5</sup> Megohms min. @ +125°C at rated WVDC 10 <sup>4</sup> Megohms min. above +125°C
<b>Working Voltage (WVDC)</b>	500 WVDC
<b>Dielectric Withstanding Voltage (DWV)</b>	Case R: 250% of rated WVDC for 5 secs.
<b>Aging Effects</b>	None
<b>Piezoelectric Effects</b>	None (no capacitance variation with voltage or pressure)
<b>Capacitance Drift</b>	±(0.02% or 0.02 pF), whichever is greater
<b>Operating Temperature Range</b>	-55°C to +175°C (No derating of working voltage)
<b>Termination Style</b>	See Mechanical Configuration
<b>Terminal Strength</b>	Termination for chips withstand a pull of 5 lbs. min., 15 lbs, for 5 seconds in direction perpendicular to the termination surface of the capacitor

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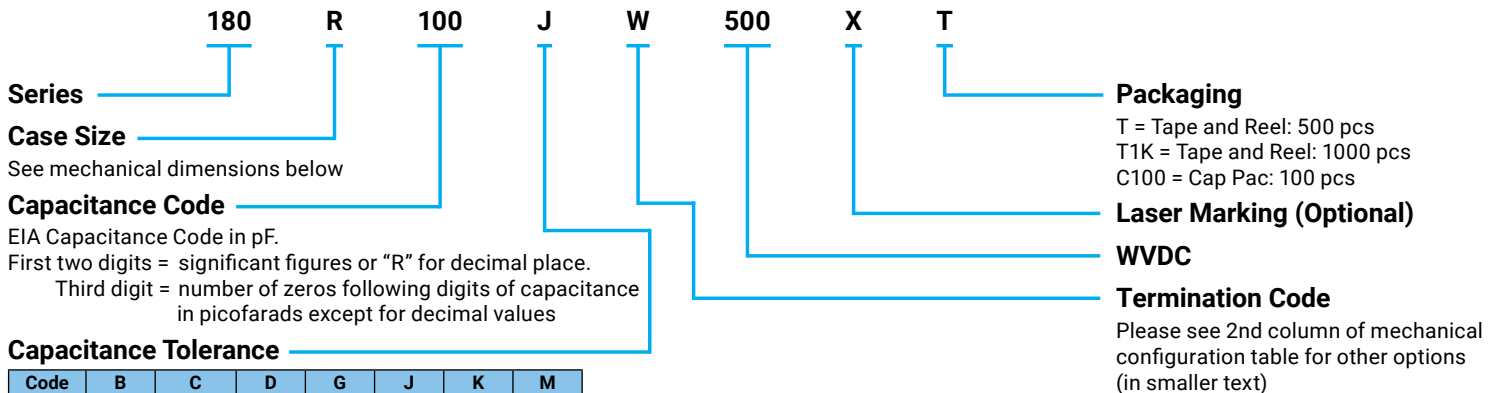


## CAPACITANCE VALUES

Cap. Code	Cap. (pF)	Tol.	Rated WVDC	Cap. Code	Cap. (pF)	Tol.	Rated WVDC	Cap. Code	Cap. (pF)	Tol.	Rated WVDC
0R5	0.5	B, C, D	500	3R0	3.0	B, C, D	500	200	20	G, J, K, M	500
0R6	0.6			3R3	3.3			220	22		
0R7	0.7			3R6	3.6			240	24		
0R8	0.8			3R9	3.9	270		27			
0R9	0.9			4R3	4.3	300		30			
1R0	1.0			4R7	4.7	330		33			
1R1	1.1			5R1	5.1	360		36			
1R2	1.2			5R6	5.6	390		39			
1R3	1.3			6R2	6.2	430		43			
1R4	1.4			6R8	6.8	470		47			
1R5	1.5			7R5	7.5	510		51			
1R6	1.6			8R2	8.2	560		56			
1R7	1.7			9R1	9.1	620		62			
1R8	1.8			100	10	680		68			
1R9	1.9			110	11	750		75			
2R0	2.0			120	12	820		82			
2R1	2.1			130	13	910		91			
2R2	2.2			150	15	101		100			
2R4	2.4	160	16								
2R7	2.7	180	18								

VRMS = 0.707 X WVDC

## HOW TO ORDER



The above part number refers to a 180R Series (case size R) 10 pF capacitor, J tolerance (±5%), 500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and Tape and Reel packaging.

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## MECHANICAL CONFIGURATION

Series & Case Size	Term. Code	Case Size & Type	Outline W/T is a Termination Surface	Body Dimensions inches (mm)			Lead and Termination Dimensions and Material	
				Length (L)	Width (W)	Thickness (T)	Overlap (Y)	Materials
180R	W	R Solder Plate		.070 ±.015 (1.78 ±0.38)	.090 ±.010 (2.29 ±0.25)	.115 (2.92) max.	.010+.010 - .005 (0.25+0.25 - 0.13)	Tin/Lead, Solder Plated over Nickel Barrier Termination
180R	T	R Solderable Nickel Barrier		.070 ±.015 (1.78 ±0.38)	.090 ±.010 (2.29 ±0.25)	.115 (2.92) max.	.010+.010 - .005 (0.25+0.25 - 0.13)	<b>RoHS Compliant</b> Tin Plated over Nickel Barrier Termination

All 180 R Capacitors are available laser marked with ATC's identification, capacitance code and tolerance.

## SUGGESTED MOUNTING PAD DIMENSIONS

Horizontal  
Electrode Orientation

Vertical  
Electrode Orientation

Mount Type	Case R				
	Pad Size	A Min.	B Min.	C Min.	D Min.
Vertical Mount	Normal	.125	.050	.030	.130
	High Density	.115	.030	.030	.090
Horizontal Mount	Normal	.110	.050	.030	.130
	High Density	.090	.030	.030	.090

Dimensions are in inches.

**PERFORMANCE DATA**

