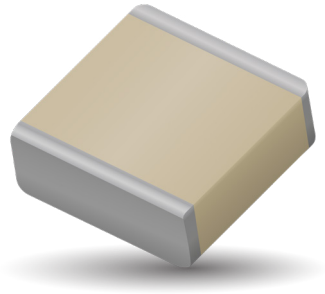
RF/Microwave Capacitors

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

PACKAGING OPTIONS

Tape & Reel

Cap Pac (100 pcs)

RoHS COMPLIANT

FUNCTIONAL APPLICATIONS

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

CIRCUIT APPLICATIONS

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

ENVIRONMENTAL CHARACTERISTICS

Thermal Shock	Mil-STD-202, Method 107, Condition A
Moisture Resistance	Mil-STD-202, Method 106
Low Voltage Humidity	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
Life Test	MIL-STD-202, Method 108, for 2000 hours, at 125 °C. 200% WVDC applied

ELECTRICAL & MECHANICAL SPECIFICATIONS

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

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	B, C, J, K, M		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	G, J, K, M		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

180	R	100	J	W	500	X	T

Series

Case Size

See mechanical dimensions below

Capacitance Code

EIA Capacitance Code in pF.
First two digits = significant figures or "R" for decimal place.
Third digit = number of zeros following digits of capacitance in picofarads except for decimal values

Capacitance Tolerance

Code	B	C	D	G	J	K	M
Tol.	±0.1 pF	±0.25 pF	±0.5 pF	±2%	±5%	±10%	±20%

Packaging

T = Tape and Reel: 500 pcs
T1K = Tape and Reel: 1000 pcs
C100 = Cap Pac: 100 pcs

Laser Marking (Optional)

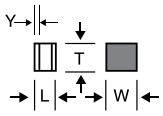
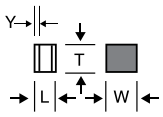
WVDC

Termination Code

Please see 2nd column of mechanical configuration table for other options (in smaller text)

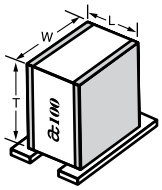
The above part number refers to a 180R Series (case size R) 10 pF capacitor, J tolerance (±5%), 500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and Tape and Reel packaging.

MECHANICAL CONFIGURATION

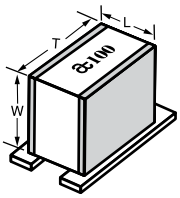
Series & Case Size	Term. Code	Case Size & Type	Outline W/T is a Termination Surface	Body Dimensions inches (mm)			Lead and Termination Dimensions and Material	
				Length (L)	Width (W)	Thickness (T)	Overlap (Y)	Materials
180R	W	R Solder Plate		.070 ±.015 (1.78 ±0.38)	.090 ±.010 (2.29 ±0.25)	.115 (2.92)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

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

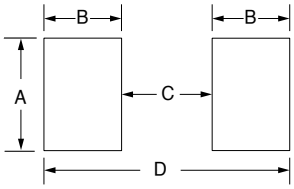
SUGGESTED MOUNTING PAD DIMENSIONS



Horizontal Electrode Orientation



Vertical Electrode Orientation

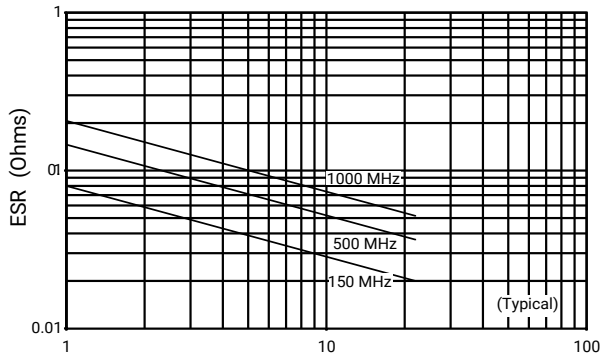


Mount Type	Case R				
	Pad Size	A Min.	B Min.	C Min.	D Min.
Vertical Mount	Normal	.125	.050	.030	.130
	High Density	.115	.030	.030	.090
Horizontal Mount	Normal	.110	.050	.030	.130
	High Density	.090	.030	.030	.090

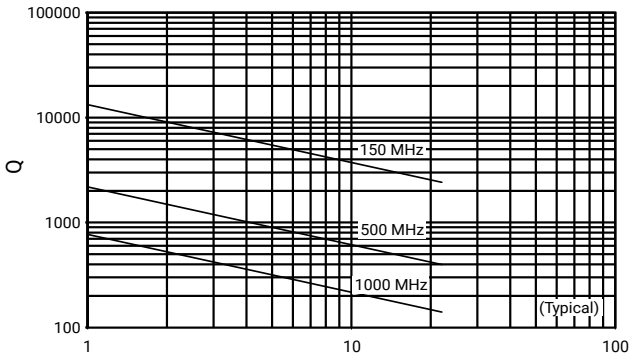
Dimensions are in inches.

PERFORMANCE DATA

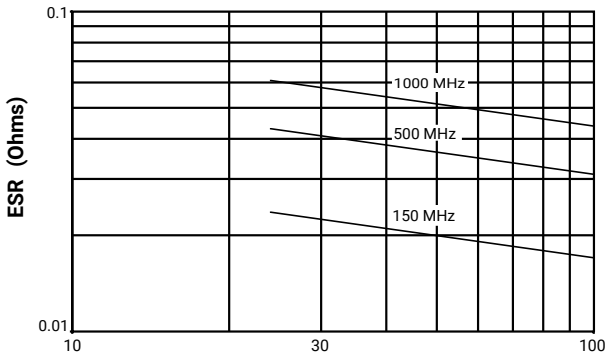
ESR VS. CAPACITANCE
SERIES 180, CASE R



Q VS. CAPACITANCE
SERIES 180, CASE R



ESR VS. CAPACITANCE
SERIES 180, CASE R



Q VS. CAPACITANCE
SERIES 180, CASE R