

# MPR 11

RF/Microwave Porcelain Multilayer Capacitors

## Features

- Capacitance Range: 0.1pF to 100pF
- High Q Low ESR/ESL
- High Power
- Ultra Stable Performance
- High Self-Resonance
- Operating Voltages
  - DC Voltage: 150V
- Extended WVDC up to 250VDC



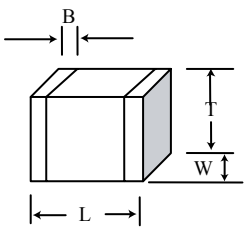
## Applications

Typical Functional Applications: Bypass, Coupling, Tuning, Feedback, Impedance Matching and DC Blocking in circuits such as RF amplifiers, filters and timing circuits.

## AFM Part Number Code

<b>M</b>	<b>P</b>	<b>R</b>	<b>11</b>	<b>W</b>	<b>101</b>	<b>J</b>	<b>E</b>	<b>C</b>	<b>B</b>	<b>B</b>
<b>Product Series:</b> M: High Frequency	<b>Product Type:</b> R: Chip		<b>Chip Size:</b> 11: 0505	<b>Termination Code:</b> C: Pd/Ag Term G: Ag Term, Ni/Au Plated N: Non Magnetic Term (Ag Term, Cu/Sn Plated) P: Solder Dipped W Term in 60/40 Sn/Pb T: Ag Term, Ni/100% Sn Plated (Pb Free) W: Ag Term, Ni Barrier, 90/10 Sn/Pb Plated	<b>Capacitance Code:</b> 1st two digits are significant; Third digit denotes number of zero(s); R=Decimal point 2R0=2.0pF 101=100pF	<b>Tolerance:</b> B: ±0.1pF C: ±0.25pF D: ±0.5pF F: ±1% G: ±2% J: ±5% K: ±10% M: ±20%	<b>Voltage:</b> E: 150 Vdc F: 200 Vdc G: 250 Vdc	<b>Test Code:</b> C: Commercial Test S: Special (Customer Defined) M: Hi-Rel	<b>Marking:</b> B: Not Marked M: Marked (Cap code and tolerance) S: Special Marking	<b>Packaging:</b> B: Bulk T: Tape & Reel W: Waffle Pack

## Chip Dimensions and Termination Options

AFM Series	Term Code	Type	MIL-PRF-55681	Outlines	Body Dimensions Inches (mm)			Lead and Termination Dimensions and Materials	
					Length (L)	Width (W)	Thickness (T)	B	Materials
MPR11	W	Solder Plate	CDR12BG		.055 +.015-.010 (1.40 +0.38-0.25)	.055±.015 (1.4±0.38)	.057 (1.45) max	.015 (0.38) ±.010 (0.25) max	Solder Plated Over Nickel Barrier Termination 90 Sn/ 10 Pb
	P	Pellet	CDR12BG						W Termination with Sn/Pb Solder Dip
	T	Lead Free Solder Plated	N/A						Lead-Free and RoHS Compliant Tin Plated Over Nickel Barrier Termination
	G	Gold Plated	CDR11BG						Lead-Free and RoHS Compliant Gold Plated Over Nickel Barrier Termination
	C	Pd/Ag	CDR11BG						Palladium/Silver Termination
	N	Non Magnetic Term.(Ag Term, Cu/Sn Plated	N/A						Cu/Sn Plated Over Silver Termination

## Standard Capacitance Values

\*STD.:Standard Voltage; EXT.: Extended Voltage

CAP CODE	CAP (pF)	TOL	RATED WVdc		CAP CODE	CAP (pF)	TOL	RATED WVdc		CAP CODE	CAP (pF)	TOL	RATED WVdc		CAP CODE	CAP (pF)	TOL	RATED WVdc				
			STD.*	EXT.*				STD.	EXT.				STD.	EXT.				STD.	EXT.			
																				STD.	EXT.	
0R1	0.1	B	150	250	1R7	1.7	B, C, D	150	250	6R2	6.2	F, G, J, K, M	150	250	270	27	F, G, J, K, M	150				
0R2	0.2				1R8	1.8				6R8	6.8				300	30						
0R3	0.3	B, C			1R9	1.9				7R5	7.5				330	33						
0R4	0.4				2R0	2.0				8R2	8.2				360	36						
0R5	0.5	B, C, D			2R1	2.1				9R1	9.1				390	39					250	
0R6	0.6				2R2	2.2				100	10				430	43						
0R7	0.7				2R4	2.4				110	11				470	47						
0R8	0.8				2R7	2.7				120	12				510	51						
0R9	0.9				3R0	3.0				130	13				560	56						
1R0	1.0				3R3	3.3				150	15				620	62						
1R1	1.1				3R6	3.6				160	16				680	68						
1R2	1.2				3R9	3.9				180	18				750	75						
1R3	1.3				4R3	4.3				200	20				820	82						200
1R4	1.4				4R7	4.7				220	22				910	91						
1R5	1.5	5R1			5.1	240				24	101				100							
1R6	1.6	5R6			5.6																	

## Specification and Performance

Piezoelectric and Aging Effect:	None
Temperature Range:	-55°C to +125°C
Temperature Coefficient of Capacitance (TCC):	+90±20ppm/°C (-55°C to +125°C)
Quality Factor (Q) :	>10,000 at 1MHz
Insulation Resistance (IR, at Rated Voltage):	0.1pF~100pF: 10 <sup>6</sup> MΩ min. at +25°C at rated WVDC 10 <sup>5</sup> MΩ min. at +125°C at rated WVDC
Dielectric Withstand Voltage (DWV):	250% of rated WVDC for 5 secs
Capacitance Drift:	±0.02% or ±0.02pF, whichever is greater

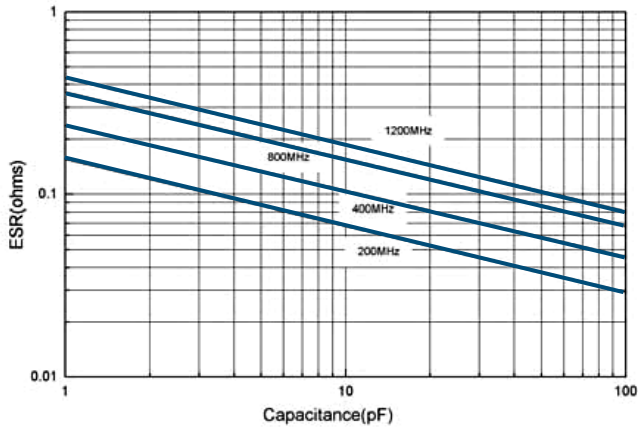
## Environmental Tests

MPR11 Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.

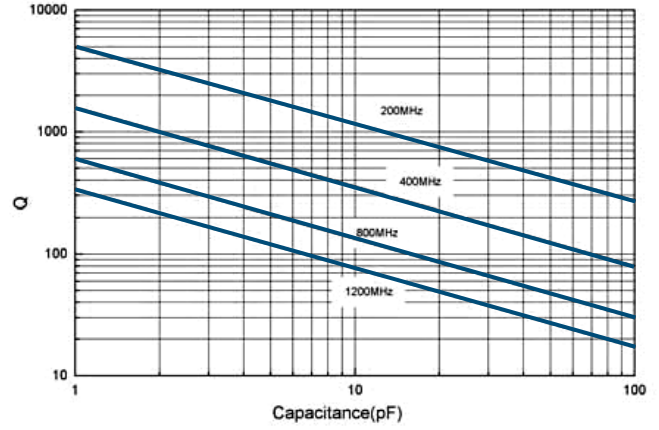
Item	Specifications	Method
Thermal Shock	DWV: the initial value IR: shall be not less than 30% the initial value Capacitance Change: no more than 0.5% or 0.5pF	MIL-STD-202, Method 107, Condition A.  At the maximum rated temperature (-55°C and +125°C) stay 30 minutes, the time of removing shall be not more than 3 minutes.  Perform the five cycles.
Moisture Resistance		MIL-STD-202, Method 106
Humidity (steady state)	DWV: the initial value IR: the initial value Capacitance Change: no more than 0.3% or 0.3pF	MIL-STD-202, Method 103, Condition A, with 1.5 volts D.C. applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours min.
Life	IR: shall be not less than 30% the initial value Capacitance Change: no more than 0.2%	MIL-STD-202, Method 108, for 2000 hours, at 125°C.  200% Rated Voltage D.C. applied.

## Performance Curve

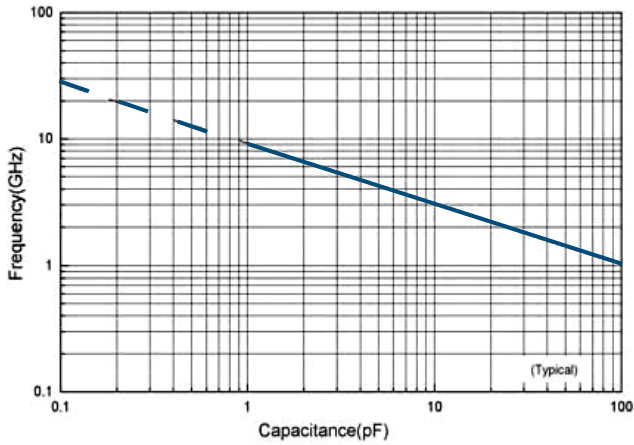
ESR vs. Capacitance



Q vs. Capacitance



Resonance



Current Rating vs. Capacitance

