UHF/RF High-Q Power Transmitter
Multi-Layer Ceramic Capacitors

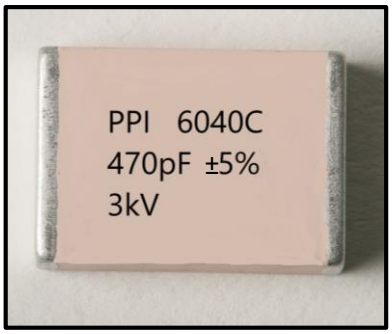
6040C (0.600” x 0.400”)

Product Features

- High Q
- High RF Current/Voltage
- Ultra Stable Performance
- Capacitance Range: 1.0pF to 6800pF
- Working Voltage: 5000V
- Extended Voltage: 8000V

Typical Circuit Applications

- Semiconductor Manufacturing
- High Energy Power Transfers
- Plasma Chambers
- Medical Equipment



Marking shown for illustration purposes only. Actual marking may differ.

Part Numbering

6040	C	100	J	W	502	X
Case Size (0.600” x 0.400”)	C=NP0	Capacitor Code 100=10x10⁰=10pF 1R0=1.0pF	Capacitance Tolerance *See Table*	Termination Type *See Table*	Rated Voltage *See Table*	Laser Marking

Capacitance Tolerance Codes

Code	B	C	D	F	G	J	K
Tol.	±0.1pF	±0.25pF	±0.5pF	±1%	±2%	±5%	±10%

Voltage Codes

Voltage	Code
1000V	102
2000V	202
3000V	302
5000V	502
8000V	802

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6040C Capacitance Values

For special capacitances, tolerances and WVDC, please contact PPI.

Marking shown for illustration purposes only.
Actual marking may differ.

Cap. pF	Cap Code	Tol.	Rated WVDC Std.	Rated WVDC Ext.	Cap. pF	Cap Code	Tol.	Rated WVDC Std.	Rated WVDC Ext.	Cap. pF	Cap Code	Tol.	Rated WVDC Std.	Rated WVDC Ext.
1.0	1R0	B,C, D	5000V	8000V	**39**	390	F,G, J,K	5000V	8000V	**1500**	152	F,G, J,K	2000V	3000V
1.2	1R2				**47**	470				**1800**	182			
1.5	1R5				**56**	560				**2200**	222			
1.8	1R8				**68**	680				**2700**	272	F,G, J,K	1000V	2000V
2.2	2R2				**82**	820				**3300**	332			
2.7	2R7				**100**	101				**4700**	472			
3.3	3R3				**120**	121	F,G, J,K	3000V	5000V	**5100**	512			
3.9	3R9				**150**	151				**5600**	562			
4.7	4R7				**180**	181				**6800**	682			
5.6	5R6				**220**	221								
6.8	6R8				**270**	271								
8.2	8R2				**330**	331								
10	100	F,G, J,K	5000V	8000V	**390**	391								
12	120				**470**	471								
15	150				**560**	561								
18	180				**680**	681								
22	220				**820**	821	F,G, J,K	2000V	3000V					
27	270				**1000**	102								
33	330				**1200**	122								

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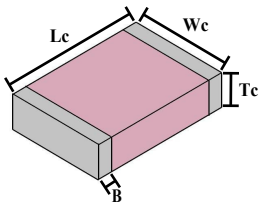
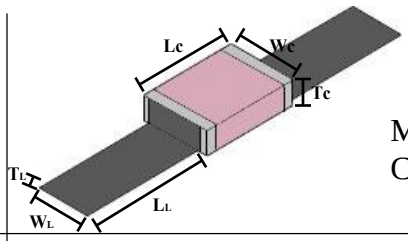
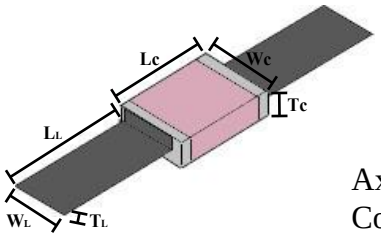
Termination Types and Codes



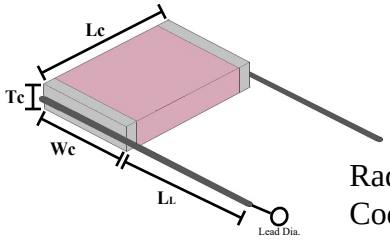
Chip Termination:
Codes: **W, L, P**



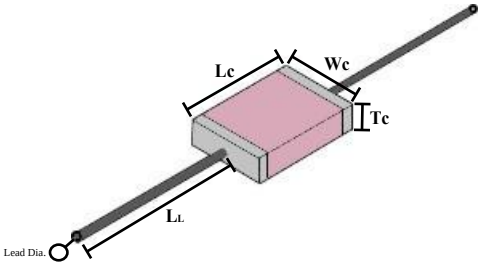
Microstrip Termination:
Codes: **MS, MN**



Axial Ribbon Termination:
Code: **AR, AN**



Radial Wire Termination:
Codes: **RW, RN**



Axial Wire Termination:
Codes: **AW, BN**

Termination Code	Magnetic Termination
W	100% Tin Solder over Nickel Barrier
L	90%Tin/10%Lead Solder over Nickel Barrier
MS	Silver-Plated Copper
AR	
RW	
AW	

Termination Code	Non-Magnetic Termination
P	100% Tin Solder over Copper Barrier
MN	Silver-Plated Copper
AN	
RN	
BN	

Note: “Non-Magnetic” means no magnetic materials.

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Dimensions - For Termination Types images, see previous page

Unit: inch (millimeter)

Code		Magnetic Termination Capacitor Dimensions Length Lc	Width Wc	Thickness Tc	Overlap B	Lead Dimensions Length LL	Width WL	Thickness TL
W/L	Chip	0.614 +0.015 -0.010 (15.6 +0.38 -0.25)	0.433 ± 0.010 (11.0 ± 0.25)	0.154 ± 0.008 (3.90 ± 0.20)	0.063 max (1.60 max)	-	-	-
MS	Microstrip	0.614 +0.015 -0.010 (15.6 +0.38 -0.25)	0.433 ± 0.010 (11.0 ± 0.25)	0.154 ± 0.008 (3.90 ± 0.20)	-	0.787 min (20.0 min)	0.350 ± 0.010 (8.89 ± 0.50)	0.008 ± 0.001 (0.20 ± 0.025)
AR	Axial Ribbon					0.787 min (20.0 min)	0.350 ± 0.010 (8.89 ± 0.50)	0.008 ± 0.001 (0.20 ± 0.025)
RW	Radio Wire					0.787 min (20.0 min)	Dia. = 0.030 ± 0.004	
AW	Axial Wire					0.984 min (25.00 min)	Dia. = (0.80 ± 0.10)	

Code		Non-Magnetic Termination Capacitor Dimensions Length Lc	Width Wc	Thickness Tc	Overlap B	Lead Dimensions Length LL	Width WL	Thickness TL
P	Chip	0.614 +0.015 -0.010 (15.6 +0.38 -0.25)	0.433 ± 0.010 (11.0 ± 0.25)	0.154 ± 0.008 (3.90 ± 0.20)	0.063 max (1.60 max)	-	-	-
MN	Microstrip	0.614 +0.015 -0.010 (15.6 +0.38 -0.25)	0.433 ± 0.010 (11.0 ± 0.25)	0.154 ± 0.008 (3.90 ± 0.20)	-	0.787 min (20.0 min)	0.350 ± 0.010 (8.89 ± 0.50)	0.008 ± 0.001 (0.20 ± 0.025)
AN	Axial Ribbon					0.787 min (20.0 min)	0.350 ± 0.010 (8.89 ± 0.50)	0.008 ± 0.001 (0.20 ± 0.025)
RN	Radio Wire					0.787 min (20.0 min)	Dia. = 0.030 ± 0.004	
BN	Axial Wire					0.984 min (25.00 min)	Dia. = (0.80 ± 0.10)	

Note: Non-Magnetic means no magnetic materials. All leads are attached with high temperature solder and parts are RoHS Compliant.

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Electrical Specifications

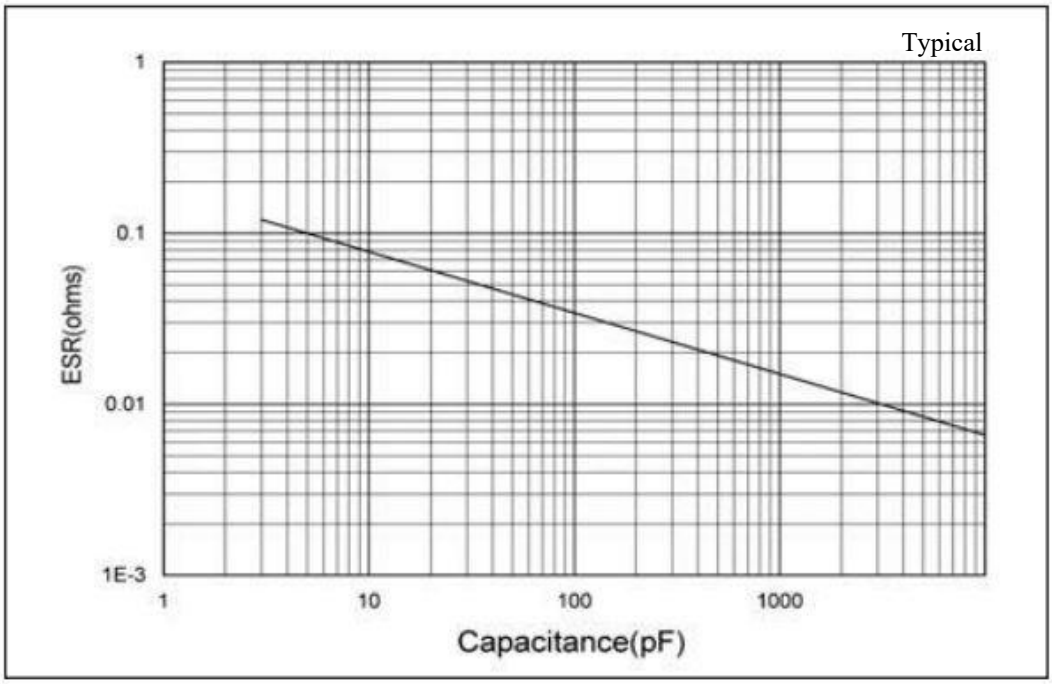
Quality Factor (Q)	No less than 1000pF, Q value more than 2000, Test Frequency 1MHz More than 1000pF, Q value more than 2000, Test Frequency 1kHz
Insulation Resistance (IR)	Test Voltage: 500V 10^5 Megaohms min. @ +25°C 10^4 Megaohms min. @ +125°C
Rated Voltage	See Rated Voltage in Capacitance Table
Dielectric Withstanding Voltage (DWV)	250% of Voltage of 5 seconds, Rated Voltage ≤ 500VDC 150% of Voltage for 5 seconds, 500VDC <Rated Voltage ≤ 1250VDC 120% of Voltage for 5 seconds, Rated Voltage > 1250VDC
Operating Temperature Range	-55°C to 175°C
Temperature Coefficient (TC)	-55°C to 125°C 0±30ppm/°C >125°C to 175°C 0±60ppm/°C
Capacitance Drift	±0.02% or ±0.02pF, whichever is greater
Piezoelectric Effects	None
Termination Type	See Termination Type Table

Environmental Specifications

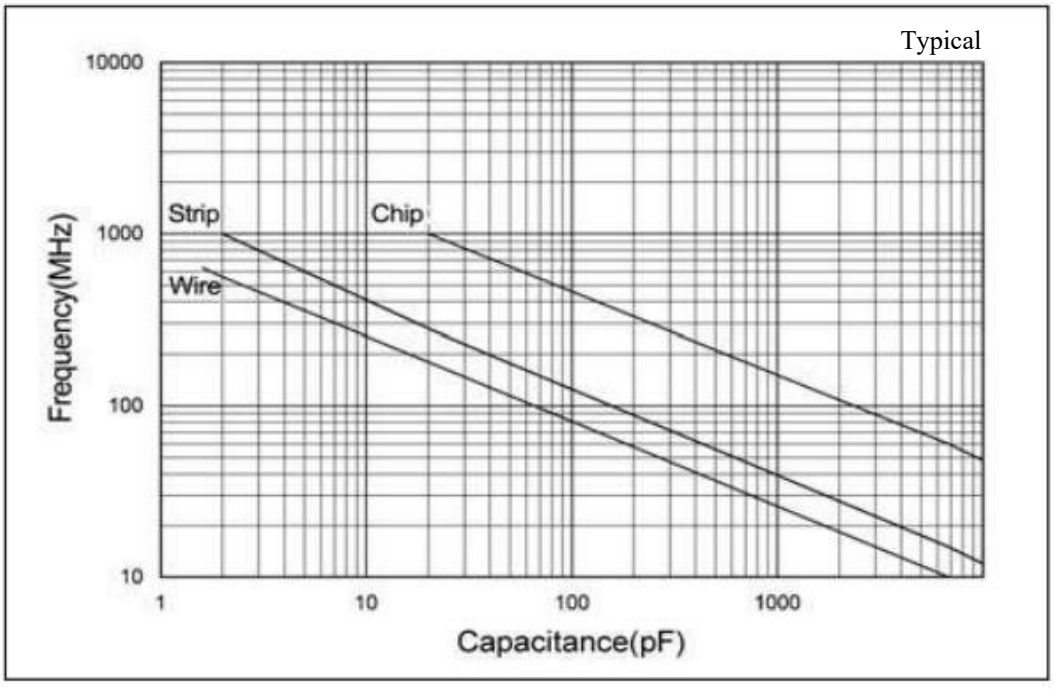
	Specification	Test Parameters
Thermal Shock	**DWV:** The initial value **IR:** Shall not be less than 30% of the initial value. **Capacitance Change:** No more than 0.5% or 0.5pF, whichever is greater.	MIL-STD-202, Method 107, Condition A. At the maximum rated temperature (-55°C and 175°C) stay 30 minutes, the time of removing shall not be more than 3 minutes. Perform 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, whichever is greater.	MIL-STD-202, Method 103, Condition A With 1.5Volts DC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours minimum.
Life	**IR:** Shall not be less than 30% of the initial value. **Capacitance Change**: No more than 2.0% or 0.5pF, whichever is greater.	MIL-STD-202, Method 108. For 2000 hours, at 125°C. 200% of Voltage for Capacitors, Rated Voltage ≤ 500VDC; 120% of Voltage for Capacitors, 500VDC< Rated Voltage ≤1250VDC; 100% for Voltage for Capacitors, Rated Voltage >1250VDC
Terminal Strength	**Force:** 25lbs typical, 20lbs. min. **Duration Time:** 5 to 10 seconds	MIL-STD-202, Method 211A, Test Condition A. Applied a force and maintained for a period of 5 to 10 seconds. The force shall be in the direction of the axes of the terminations.

Capacitors are designed and manufactured to meet the requirements of MIL-PRF-55681 and MIL-PRF-123.

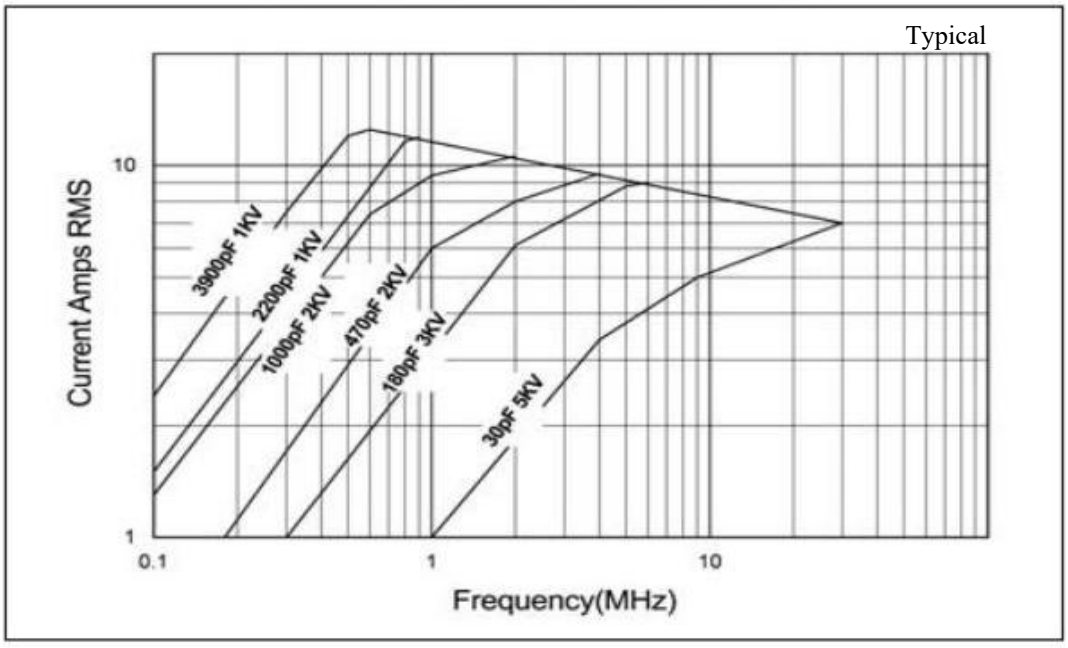
ESR vs. Capacitance Measured @ 30MHz



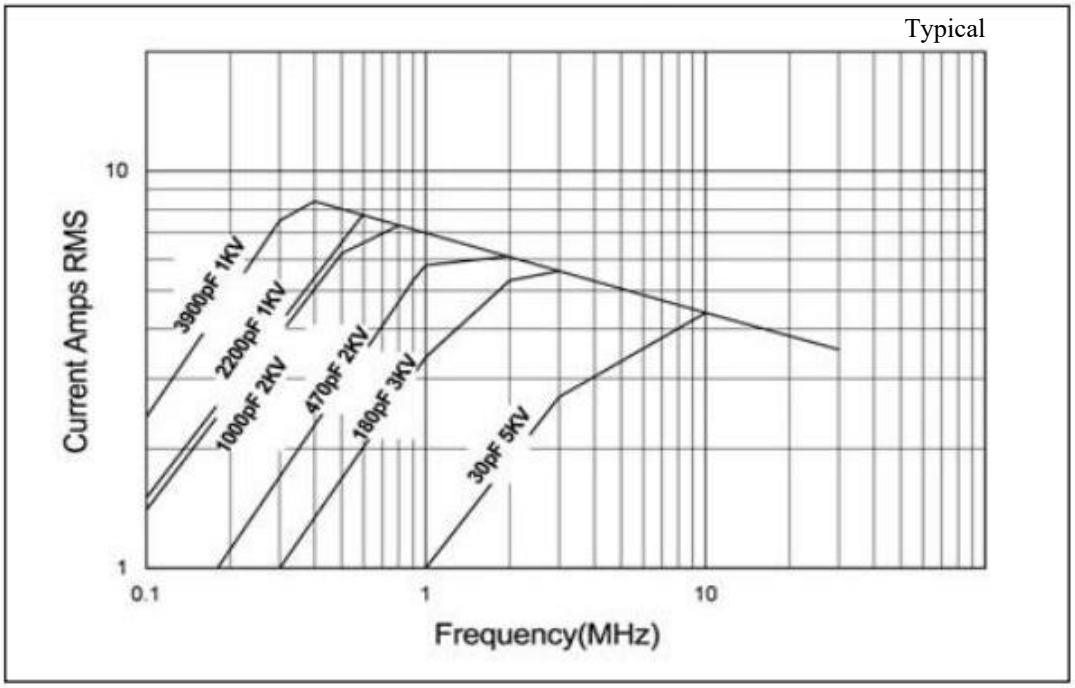
Self Resonant Frequency vs. Capacitance



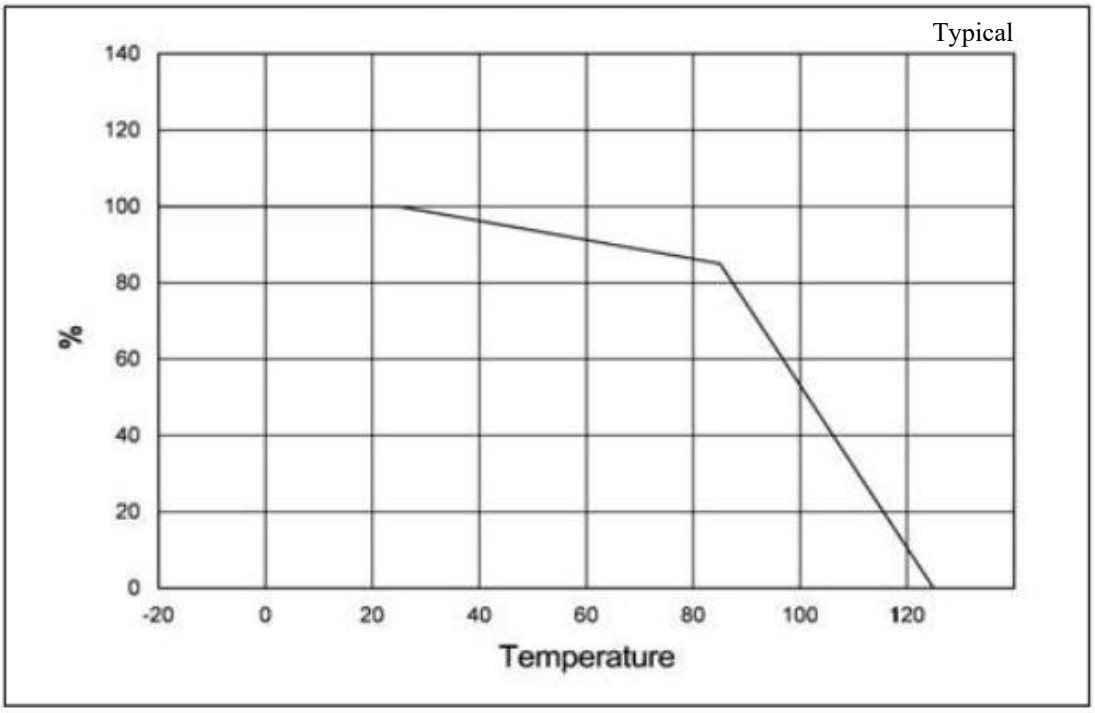
Strip Terminals Rated Current vs. Frequency



Wire Terminals Rated Current vs. Frequency



% Maximum Current vs. Ambient Temperature



Recommended Land Pattern Dimensions

Regarding Landing Patterns, please refer to IPC-7351B (table 3-5, 3-6).

Custom Assemblies

Passive Plus offers Capacitor Assemblies for high power requirements. Typical assemblies are configured in series and/or parallel combinations, producing higher voltage/current handling capabilities, extended capacitance range and tighter tolerances.

To get started, simply send us either a mechanical drawing or circuit conditions and we can recommend a solution. All components are 100% up-screened for Partial Discharge and Sonoscanned. All assemblies include a 100hr Military burn in.