UHF/RF High Q Power Transmitter Capacitors (NP0 TC)
Multi-Layer Ceramic Capacitors

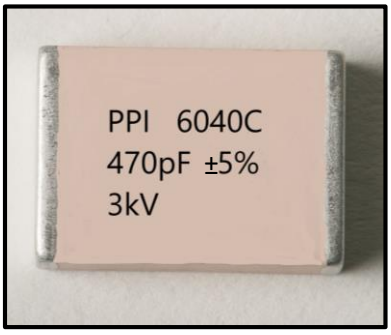
6040C (0.600” x 0.400”)

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



Part Numbering

6040 C 100 J W 502 X

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

Cap. pF	Code	Tol.	Rated Std.	WVDC Ext.
1.0	1R0	B,C,D	5000V Code 502	8000V Code 802
1.2	1R2			
1.5	1R5			
1.8	1R8			
2.2	2R2			
2.7	2R7			
3.3	3R3			
3.9	3R9			
4.7	4R7			
5.6	5R6			
6.8	6R8			
8.2	8R2			
10	100	F,G,J,K		
12	120			
15	150			
18	180			
22	220			
27	270			

Cap. pF	Code	Tol.	Rated Std.	WVDC Ext.
33	330	F,G,J,K	5000V Code 502	8000V Code 802
39	390			
47	470			
56	560			
68	680			
82	820			
100	101			
120	121		3000V Code 302	5000V Code 502
150	151			
180	181			
220	221			
270	271			
330	331			
390	391			
470	471			
560	561			
680	681			

Cap. pF	Code	Tol.	Rated Std.	WVDC Ext.
820	821	F,G,J,K	2000V Code 202	3000V Code 302
1000	102			
1200	122			
1500	152			
1800	182			
2200	222			
2700	272		1000V Code 102	2000V Code 202
3300	332			
4700	472			
5100	512			
5600	562			
6800	682			

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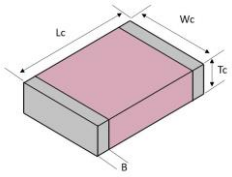
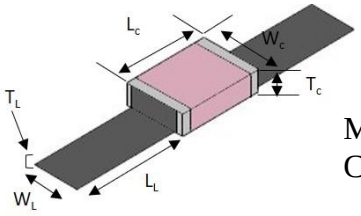
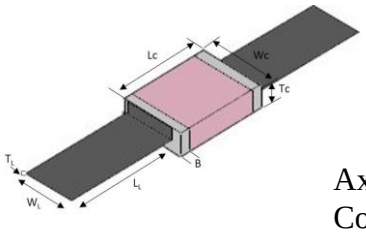
Termination Types and Codes



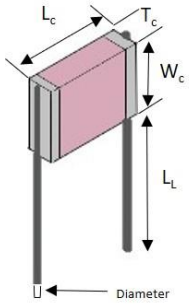
Chip Termination:
Codes: **W, L, P**



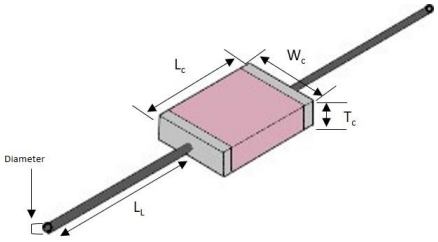
Microstrip Termination:
Codes: **MS, MN**



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



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



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

Termination Code	Magnetic Termination
W RoHS	100% Sn Solder over Nickel Plating
L	90% Sn10%Pb Tin/Lead Solder over Nickel Plating
MS RoHS	Silver-Plated Copper
AR RoHS	
RW RoHS	
AW RoHS	

Termination Code	Non-Magnetic Terminations
P RoHS	100%Sn Solder of Copper Plating
MN RoHS	Silver-Plated Copper
AN RoHS	
RN RoHS	
BN RoHS	

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

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Terminations

For Termination Types images, see previous page

Unit: inch (millimeter)

Magnetic Terminations

		Capacitor Dimensions				Lead Dimensions		
		Length	Width	Thickness	Overlap	Length	Width	Thickness
Code	Term.	Lc	Wc	Tc	B	LL	WL	TL
W	Chip	0.614 -0.010+0.015 (15.6 -0.25+0.38)	0.433±0.010 (11.0±0.25)	0.154±0.008 (3.90±0.20) max	0.063 (1.60) max	-	-	-
MS	Microstrip	0.614 -0.010+0.015 (15.6 -0.25+0.38)	0.433±0.010 (11.0±0.25)	0.154±0.008 (3.90±0.20) max	-	0.787 (20.0) min	0.350 ± 0.010 (8.89±0.25)	0.008±0.001 (0.20± 0.025)
AR	Axial Ribbon							
RW	Radial Wire					0.787 (20.00) min	Dia.: 0.030±0.004 (0.80 ± 0.10)	
AW	Axial Wire					0.984 (25.00) min		

Non-Magnetic Terminations

		Capacitor Dimensions				Lead Dimensions		
		Length	Width	Thickness	Overlap	Length	Width	Thickness
Code	Term.	Lc	Wc	Tc	B	LL	WL	TL
P	Chip	0.614 -0.010+0.015 (15.6 -0.25+0.38)	0.433±0.010 (11.0±0.25)	0.154±0.008 (3.90±0.20) max	0.063 (1.60) max	-	-	-
MN	Microstrip	0.614 -0.010+0.015 (15.6 -0.25+0.38)	0.433±0.010 (11.0±0.25)	0.154±0.008 (3.90±0.20) max	-	0.787 (20.0) min	0.350 ± 0.010 (8.89±0.25)	0.008 ±0.001 (0.20 ± 0.025)
AN	Axial Ribbon							
RN	Radial Wire					0.787 (20.00) min	Dia.: 0.031 ±0 .004 (0.80 ± 0.10)	
BN	Axial Wire					0.984 (25.00) min		

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

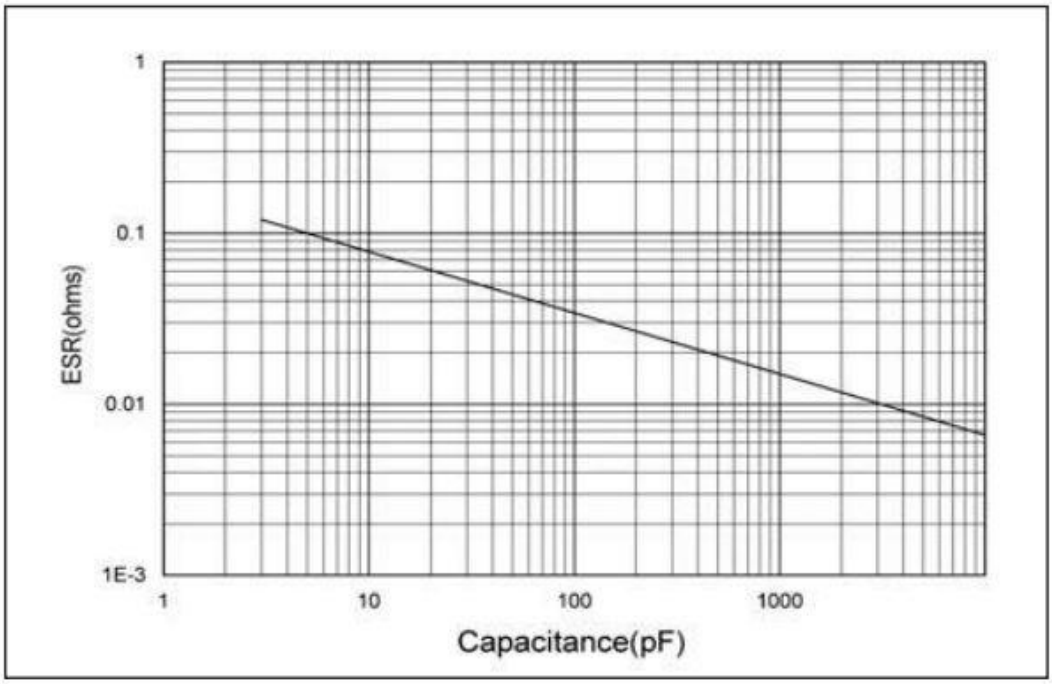
Quality Factor (Q)	No less than 1000pF, Q value more than 2000, Test Frequency 1MHz; More than 1000pF, Q value more than 2000, Test Frequency 1MHz
Insulation Resistance (IR)	Test Voltage: 500V 10^5 Megaohms min. @ +25°C rated WVDC 10^4 Megaohms min. @ +125°C rated WVDC
Rated Voltage	See Rated Voltage Table
Dielectric Withstanding Voltage (WVDC)	250% of Voltage of 5 seconds, Rated Voltage ≤ 500VDC 150% of Voltage for 5 seconds, 500VDC <Rated Voltage ≤ 1250 VDC 120% of Voltage for 5 seconds, Rated Voltage > 1250 VDC
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

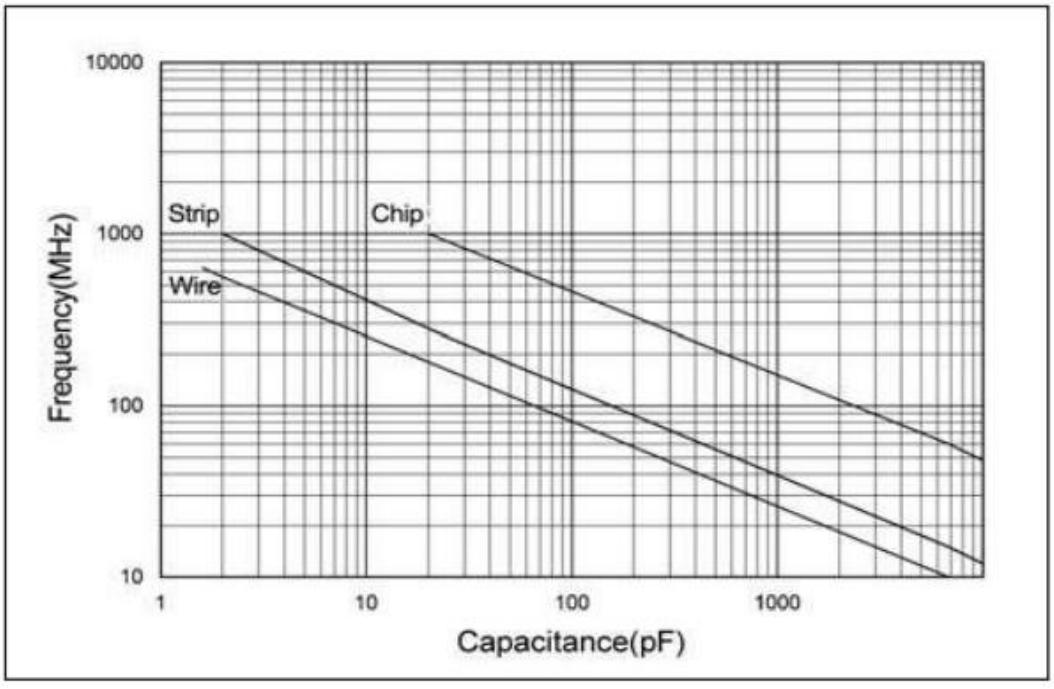
	Specification	Test Parameters
Thermal Shock	**DWV:** The initial value **IR:** Shall not be less than 30% of the initial value. **Capacitance Change:** No more than 0.5% or 0.5pF, whichever is greater.	MIL-STD-202, Method 107, Condition A. At the maximum rated temperature (-55°C and 200°C) stay 30 minutes, 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.

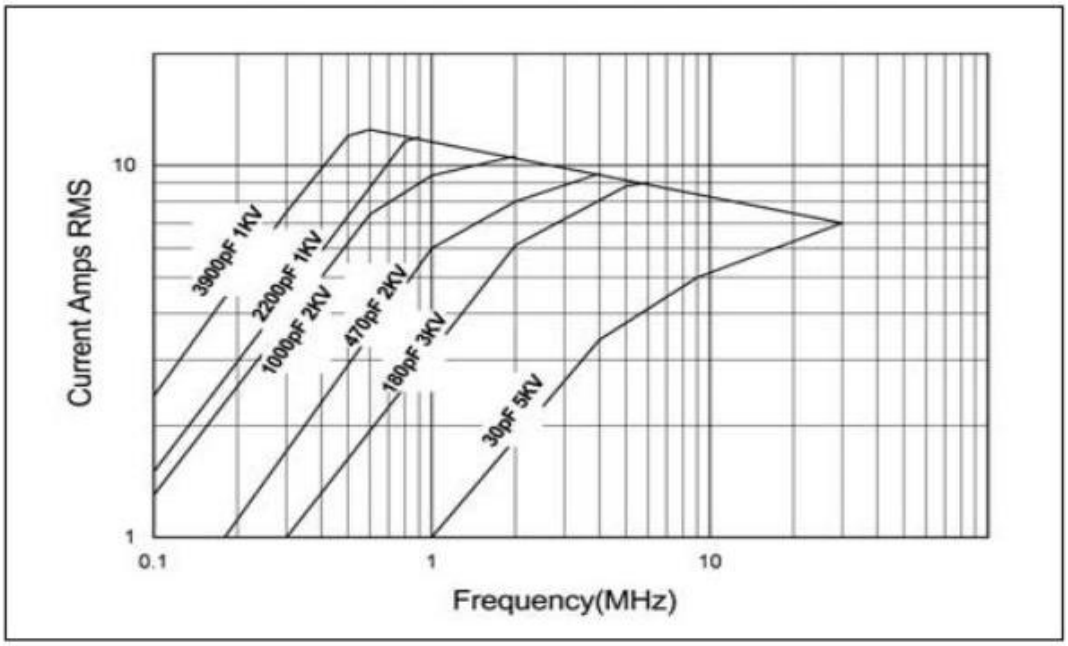
ESR vs. Capacitance Measured @ 30MHz



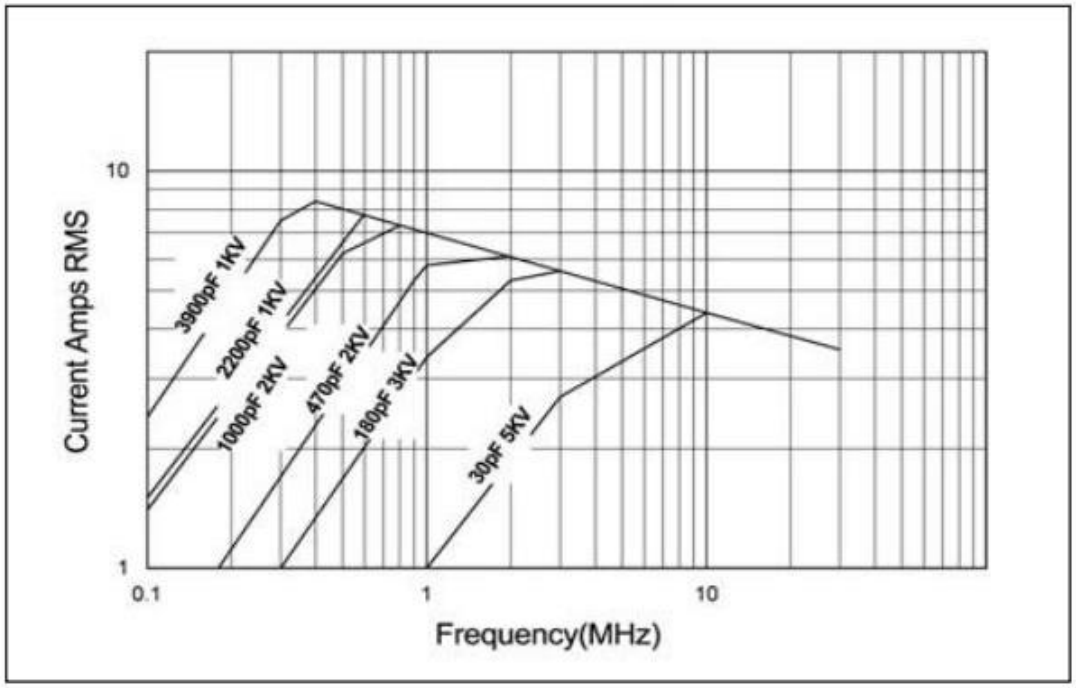
Self Resonant Frequency vs. Capacitance



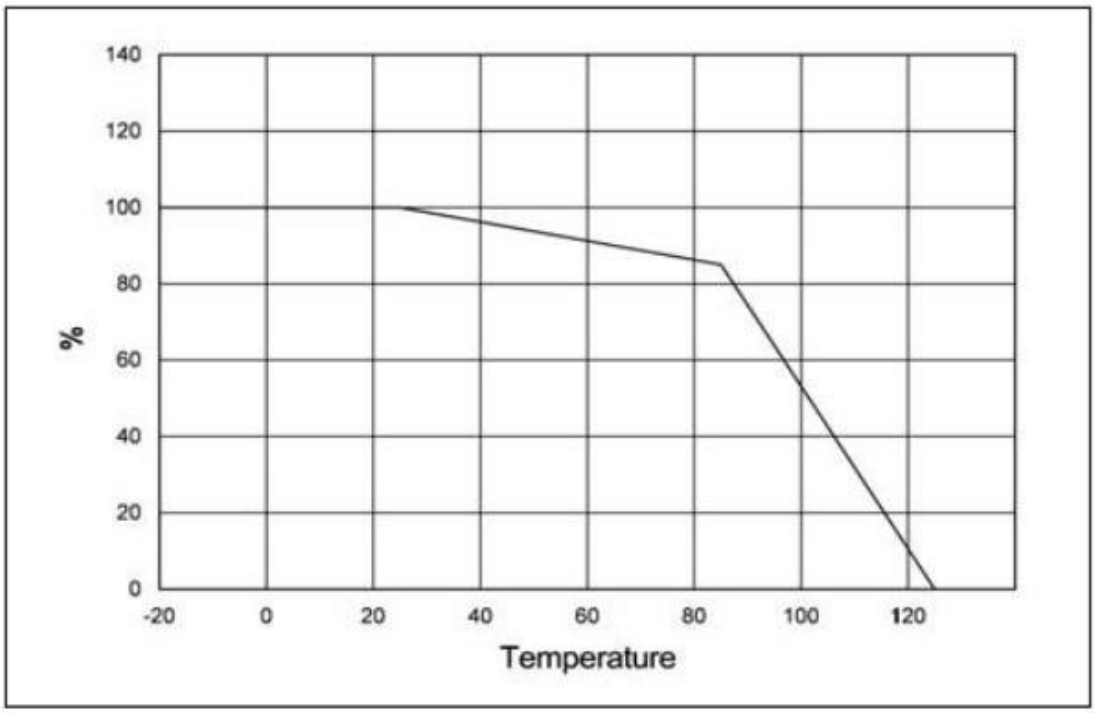
Strip Terminals Rated Current vs. Frequency



Wire Terminals Rated Current vs. Frequency



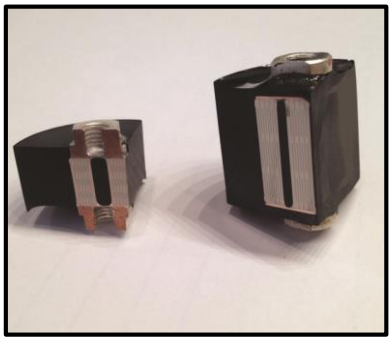
% Maximum Current vs. Ambient Temperature



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.



Recommended Land Pattern Dimensions

When mounting the capacitor to substrate, it's important to carefully consider that the amount of solder (size of fillet) used has a direct effect upon the capacitor once it's mounted.

1) The greater the amount of solder, the greater the stress to the elements. This may cause the substrate to break or crack.

2) In the situation where two or more devices are mounted onto a common land, be sure to separate the device into exclusive pads by using soldering resist.

Horizontal Mounting

A	B	C
13.00	3.30	11.30

Dimensions: mm