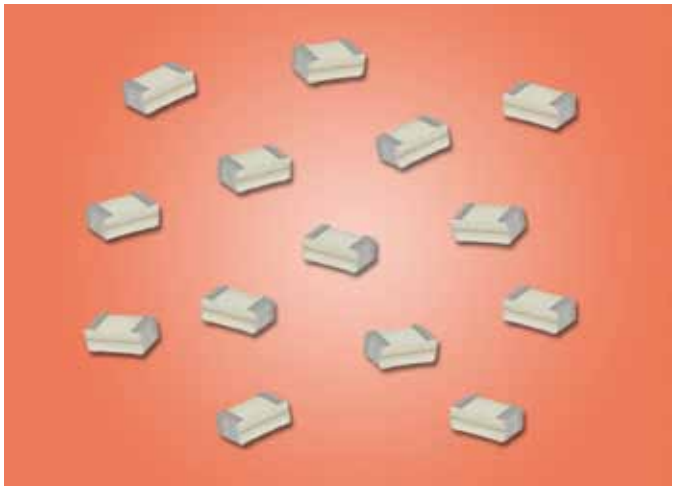
ATC 400 Z Series Precision Tolerance NPO RF Microwave Capacitors

- **EIA Case Size 0201**
- **Capacitance Range 0.1 pF to 22 pF**
- **Tolerances to ±0.02 pF**
- **Ultra Stable Performance**
- **RoHS Compliant / Lead-Free**



ATC's new 400Z Series Precision Tolerance, Thin Film, NPO RF Microwave Capacitor is manufactured with the highest quality materials to provide reliable and repeatable performance. The 400Z is constructed with a low loss silicon dioxide and silicon oxynitride dielectric along with high quality sputtered electrode materials to ensure superior performance.

High electrical and thermal conductivity and high stability over temperature make this device suitable for a variety of critical small and large signal RF and microwave applications. This Series offers the tightest tolerances available over a wide range of capacitance values.

The 400Z is built in an 0201 SMT package and is fully compatible with high speed automated pick-and-place manufacturing. It is designed to meet the most stringent RF and Microwave requirements.

Typical applications: Filter Networks, Matching Networks, High Q Frequency Sources, Tuning, Coupling, Bypass and DC Blocking.

ENVIRONMENTAL TESTS

LIFE TEST:
MIL-STD-202F,Method 108A, for 1000 hours, at 125°C.
200% WVDC applied.

ACCELERATED DAMP HEAT STEADY STATE
MIL-STD-202, Method 106: 85°C, 85% RH, at rated WVDC, 1000 hours

TEMPERATURE CYCLING
MIL-STD-202F METHOD 107E: -55°C to +125°C, 15 cycles

RESISTANCE TO SOLDER HEAT IEC-68-2-58:
260°C ±5°C for 10 secs.

ELECTRICAL AND MECHANICAL SPECIFICATIONS

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):
0 ±30 PPM/°C (-55°C to +125°C) 0.1 to 3.9 pF
0 ±60 PPM/°C (-55°C to +125°C) 4.0 to 22 pF

INSULATION RESISTANCE (IR):
10^4 Megohms min. @ +25°C at rated WVDC

WORKING VOLTAGE (WVDC):
See Capacitance Values Table, page 2

DIELECTRIC WITHSTANDING VOLTAGE (DWV):
250% of rated WVDC for 5 secs

AGING EFFECTS: None

DIELECTRIC ABSORPTION: 0.01%

SOLDERABILITY, IEC-68-2-58: Components completely immersed in a solder bath at 235°C for 2 secs.

LEACH RESISTANCE, IEC-68-2-58: Components completely immersed in a solder bath at 260 ±5°C for 60 secs.

ADHESION, MIL-STD-202F, METHOD 211A: a force of 1.1 lbs. applied for 10 secs.

OPERATING TEMPERATURE RANGE:
From -55°C to +125°C (No derating of working voltage)

TERMINAL STRENGTH IEC-68-2-21, AMEND. 2: a force of 1.1 lbs. applied for 10 secs.

STORAGE: 12 months minimum with components stored in "as received" packaging

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ATC 400 Z Capacitance Values

CAP CODE	CAP (pF)	TOL.	RATED WVDC	CAP CODE	CAP (pF)	TOL.	RATED WVDC	CAP CODE	CAP (pF)	TOL.	RATED WVDC
0R1	0.1	P, Q, A, B	100	2R3	2.3	Q, A, B, C	25	4R5	4.5	A, B, C	25
0R2	0.2			2R4	2.4			4R6	4.6		
0R3	0.3			2R5	2.5			4R7	4.7		
0R4	0.4			2R6	2.6			5R1	5.1	B, C	
0R5	0.5			2R7	2.7			5R6	5.6		
0R6	0.6		50	2R8	2.8			6R2	6.2		
0R7	0.7			2R9	2.9			6R8	6.8		
0R8	0.8			3R0	3.0	A, B, C		7R5	7.5	F, G, J	16
0R9	0.9			3R1	3.1			8R2	8.2		
1R0	1.0			3R2	3.2			9R1	9.1		
1R1	1.1			3R3	3.3			100	10		
1R2	1.2			3R4	3.4			110	11		
1R3	1.3			3R5	3.5			120	12		
1R4	1.4			3R6	3.6			130	13		
1R5	1.5			3R7	3.7			140	14		
1R6	1.6			3R8	3.8			150	15		
1R7	1.7			3R9	3.9			160	16		
1R8	1.8	Q, A, B, C	25	4R0	4.0			170	17		
1R9	1.9			4R1	4.1			180	18		
2R0	2.0			4R2	4.2			190	19		
2R1	2.1			4R3	4.3			200	20		10
2R2	2.2			4R4	4.4			210	21		
								220	22		

VRMS = 0.707 X WVDC

ATC PART NUMBER CODE

ATC400 Z 1R 0 P T 50 T

- Series
- Case Size
- Capacitance Code: First 2 significant digits for capacitance. R=Decimal Point
- Indicates number of zeros following digits of capacitance in picofarads except for decimal values.
- Capacitance Tolerance
- T = Tin Plate over Ni (SN100)
- WVDC
- Packaging
  - T - Tape & Reel: 7" reel, 5000 pc. qty. std.*
  - *500 pc. prototype reel available.

CAPACITANCE TOLERANCE								
Code	P	Q	A	B	C	F	G	J
Tol.	±0.02 pF	±0.03 pF	±0.05 pF	±0.1 pF	±0.25 pF	±1%	±2%	±5%

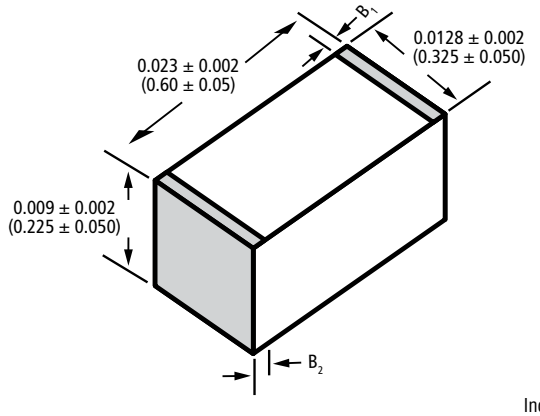
The above part number refers to a 400 Z Series (0201) 1 pF capacitor, P tolerance (±0.02 pF), 50 WVDC, with T termination (Tin Plated over Nickel Barrier Termination), RoHS Compliant), and tape and reel packaging.

ATC accepts orders for our parts using designations ***with*** or ***without*** the "ATC" prefix. Both methods of defining the part number are equivalent, i.e., part numbers referenced with the "ATC" prefix are interchangeable to parts referenced without the "ATC" prefix. Customers are free to use either in specifying or procuring parts from American Technical Ceramics.

For additional information and catalogs contact your ATC representative or call direct at (+1-631) 622-4700.

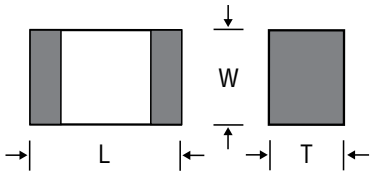
Consult factory for additional performance data.

Mechanical Dimensions



Inches (mm)

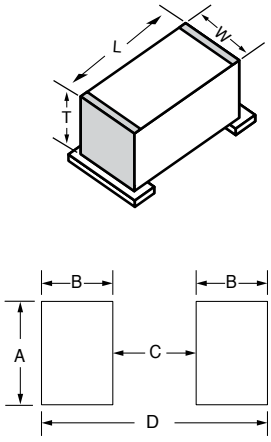
Outline Dimensions



Z (0201)	L: .023 ± .002 (.60 ± .050) W: .0128 ± .002 (.325 ± .050) T: .009 ± 002 (.225 ± .050)	B_1: .0.004 ±.004 (.10 ±.10) B_2: .0.006 ±.002 (.15 ±.05)

Inches (mm)

Suggested Mounting Pad Dimensions



Horizontal Mount

Case Size	A Min.	B Min.	C Min.	D Min.
Z 0201	0.013 (0.33)	0.010 (0.25)	0.010 (0.25)	0.030 (0.76)

Inches (mm)

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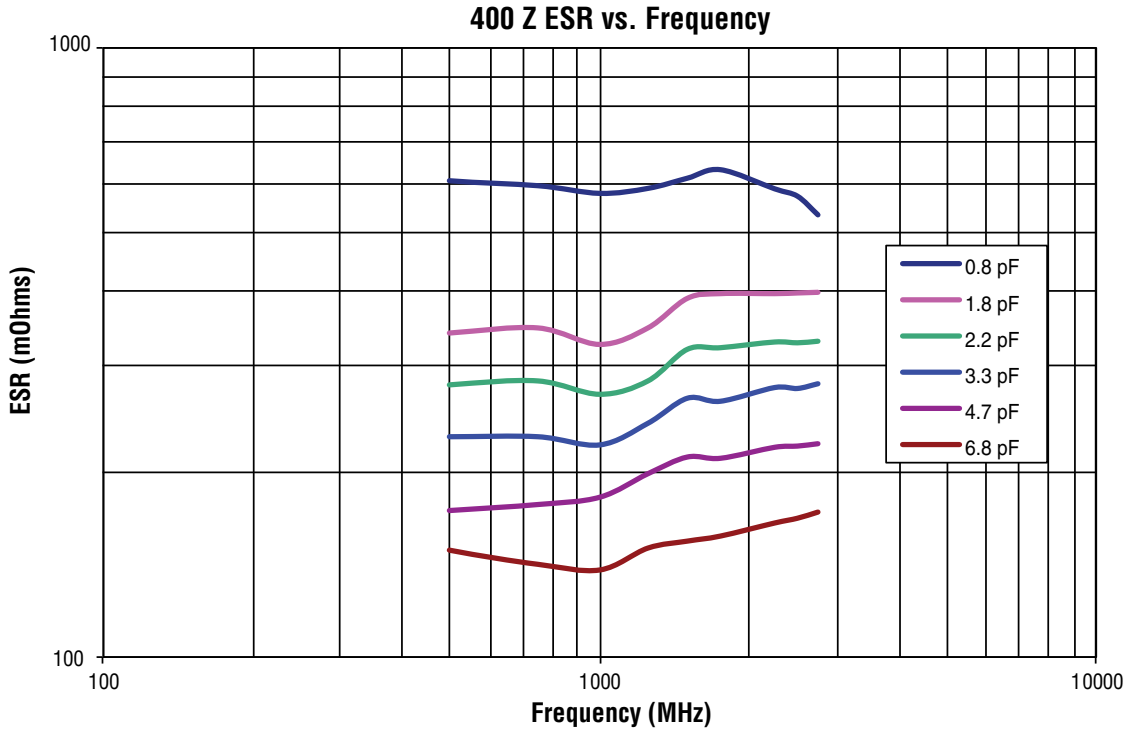
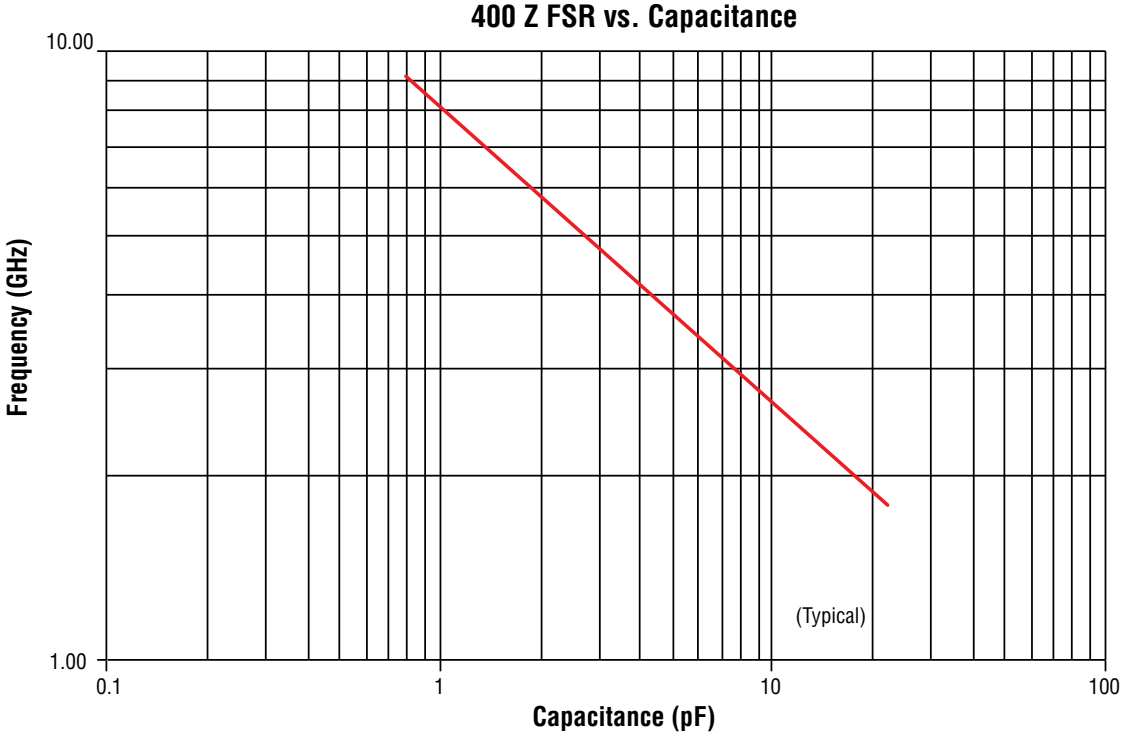
ATC 400 Z Performance Data





Mouser Electronics

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American Technical Ceramics (ATC):

400Z1R8QT25T 400Z0R2AT100T 400Z0R8PT50T 400Z2R5AT25T 400Z2R7AT25T 400Z0R9AT50T 400Z2R6QT25T 400Z0R4PT100T 400Z0R3QT100T 400Z9R1BT16T 400Z200FT10T 400Z0R7PT50T 400Z6R8BT25T 400Z2R2AT25T 400Z4R1AT25T 400Z0R5QT100T 400Z1R7QT50T 400Z140FT16T 400Z3R7AT25T 400Z3R6AT25T 400Z160FT16T 400Z2R9QT25T 400Z2R0QT25T 400Z1R5PT50T 400Z3R4AT25T 400Z3R9AT25T 400Z4R4AT25T 400Z2R4QT25T 400Z2R8QT25T 400Z0R5AT100T 400Z1R2AT50T 400Z1R6PT50T 400Z1R3AT50T 400Z1R7AT50T 400Z0R8QT50T 400Z2R8AT25T 400Z0R3AT100T 400Z110FT16T 400Z4R7AT25T 400Z0R1PT100T 400Z3R8AT25T 400Z1R0AT50T 400Z5R6BT25T 400Z0R7AT50T 400Z0R6AT50T 400Z1R2PT50T 400Z130FT16T 400Z210FT10T 400Z2R1AT25T 400Z1R1QT50T 400Z1R3PT50T 400Z1R4PT50T 400Z1R3QT50T 400Z1R9AT25T 400Z1R7PT50T 400Z0R2PT100T 400Z1R1PT50T 400Z1R9QT25T 400Z3R3AT25T 400Z220FT10T 400Z2R9AT25T 400Z2R2QT25T 400Z190FT16T 400Z1R6AT50T 400Z1R6QT50T 400Z0R4AT100T 400Z1R5QT50T 400Z1R4AT50T 400Z0R1QT100T 400Z2R7QT25T 400Z1R5AT50T 400Z3R0AT25T 400Z0R9QT50T 400Z1R0PT50T 400Z120FT16T 400Z3R5AT25T 400Z6R2BT25T 400Z2R6AT25T 400Z0R1AT100T 400Z0R8AT50T 400Z0R2QT100T 400Z150FT16T 400Z2R3AT25T 400Z2R0AT25T 400Z5R1BT25T 400Z0R6PT50T 400Z2R3QT25T 400Z3R1AT25T 400Z7R5BT16T 400Z4R5AT25T 400Z2R5QT25T 400Z3R2AT25T 400Z0R7QT50T 400Z0R3PT100T 400Z4R0AT25T 400Z0R4QT100T 400Z1R2QT50T 400Z4R6AT25T 400Z100FT16T 400Z4R3AT25T

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