

ATC 400 L Series Precision Tolerance NPO RF Microwave Capacitors

- EIA Case Size 0402
- Capacitance Range 0.1 pF to 68 pF
- Tolerances to ± 0.01 pF
- Ultra Stable Performance
- RoHS Compliant / Lead-Free

ATC's new 400L Series Precision Tolerance, Thin Film, NPO RF Microwave Capacitor is manufactured with the highest quality materials to provide reliable and repeatable performance. The 400L 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 400L is built in an 0402 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:

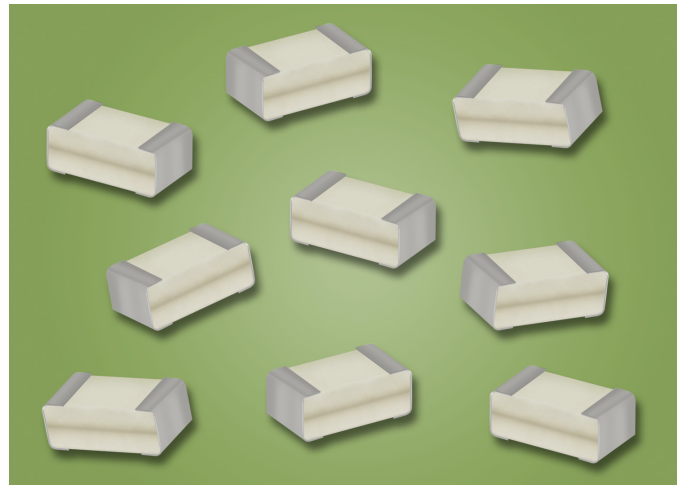
MIL-STD-202F, Method 103B: 85°C, 85% RH, at rated WVDC, 1000 hours

TEMPERATURE CYCLING:

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

RESISTANCE TO SOLDER HEAT IEC-68-2-58:

260°C $\pm 5^\circ\text{C}$ for 10 secs.



ELECTRICAL AND MECHANICAL SPECIFICATIONS

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):

0 ± 30 PPM/ $^\circ\text{C}$ (-55°C to +125°C) 0.1 pF to 12 pF
0 ± 60 PPM/ $^\circ\text{C}$ (-55°C to +125°C) 13 pF to 68 pF

INSULATION RESISTANCE (IR):

10⁴ 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 $\pm 5^\circ\text{C}$ 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 L 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	Z, P, Q, A, B	200	2R6	2.6	Q, A, B, C	50	6R8	6.8	B, C	50
0R2	0.2			2R7	2.7			7R5	7.5		
0R3	0.3			2R8	2.8			8R2	8.2		
0R4	0.4			2R9	2.9			9R1	9.1		
0R5	0.5			3R0	3.0			100	10	F, G, J	25
0R6	0.6			3R1	3.1	110		11			
0R7	0.7			3R2	3.2	120		12			
0R8	0.8			3R3	3.3	130		13			
0R9	0.9			3R4	3.4	140		14			
1R0	1.0			3R5	3.5	150		15			
1R1	1.1	P, Q, A, B	100	3R6	3.6	160		16			
1R2	1.2			3R7	3.7	170		17			
1R3	1.3			3R8	3.8	180		18			
1R4	1.4			3R9	3.8	190		19			
1R5	1.5			4R0	4.0	200		20			
1R6	1.6			4R1	4.1	210		21			
1R7	1.7			4R2	4.2	220		22	16	16	
1R8	1.8			4R3	4.3	240		24			
1R9	1.9	Q, A, B, C	50	4R4	4.4	270		27			
2R0	2.0			4R5	4.5	300		30			
2R1	2.1			4R6	4.6	330		33	10	10	
2R2	2.2			4R7	4.7	390		39			
2R3	2.3			5R1	5.1	470		47			
2R4	2.4			5R6	5.6	560		56			
2R5	2.5			6R2	6.2	680		68			
						B, C					

$$V_{RMS} = 0.707 \times WVDC$$

ATC PART NUMBER CODE

Series ATC400 L 1R 0 Z T 200 T Packaging

Case Size _____ T - Tape & Reel: 7" reel, 5000 pc. qty. std.*

Capacitance Code: _____ *500 pc. prototype reel available.

First 2 significant digits for capacitance.

R=Decimal Point

Indicates number of zeros following digits of capacitance in picofarads except for decimal values.

_____ WVDC

_____ T = Tin Plate over Ni (SN100)

_____ Capacitance Tolerance

CAPACITANCE TOLERANCE

Code	Z	P	Q	A	B	C	F	G	J
Tol.	±0.01 pF	±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 L Series (0402) 1 pF capacitor, Z tolerance (±0.01 pF), 200 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.

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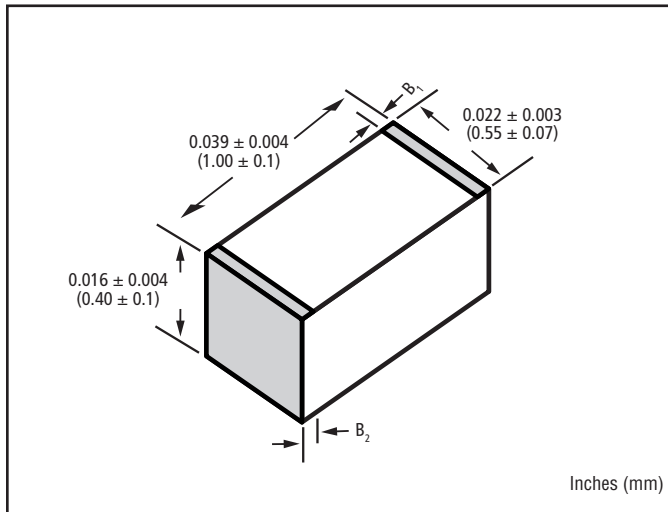
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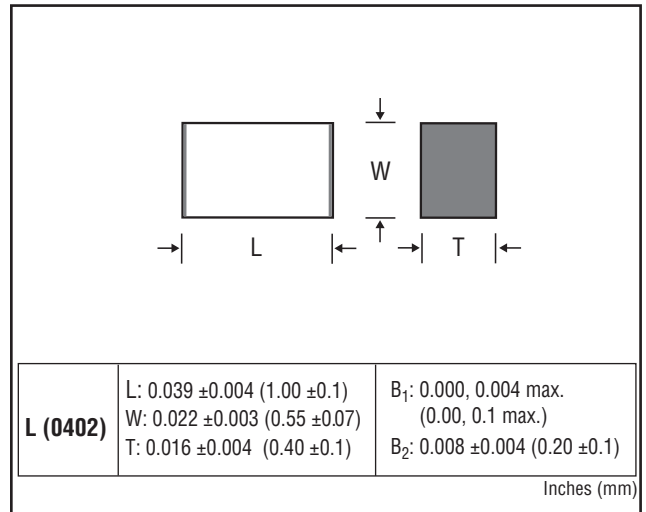
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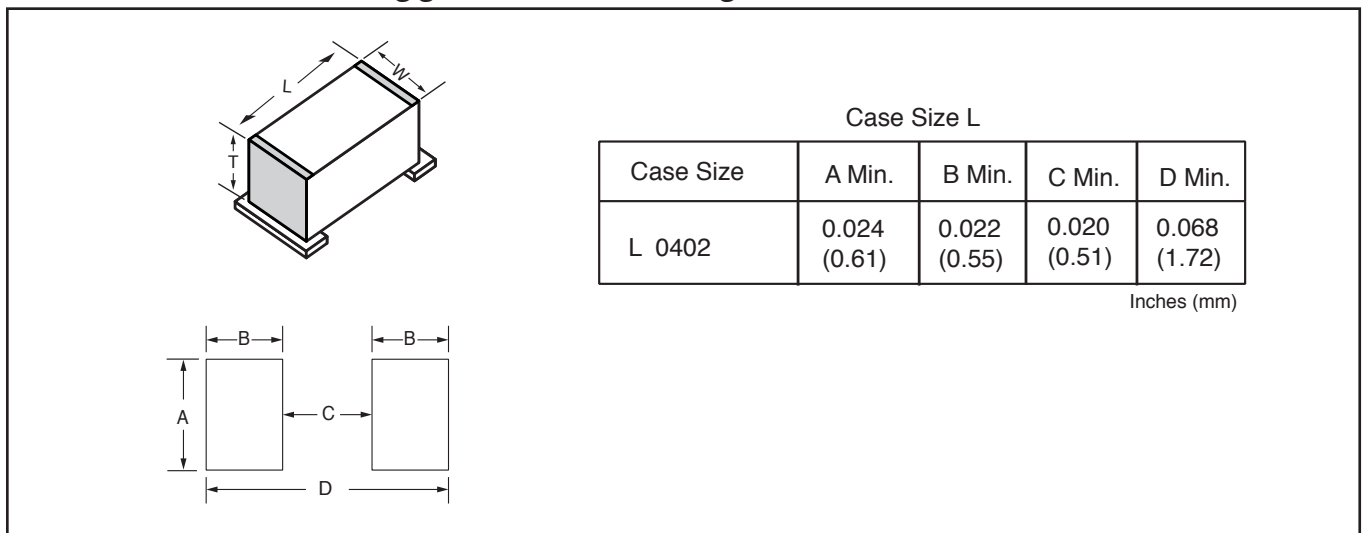
Mechanical Dimensions



Outline Dimensions



Suggested Mounting Pad Dimensions



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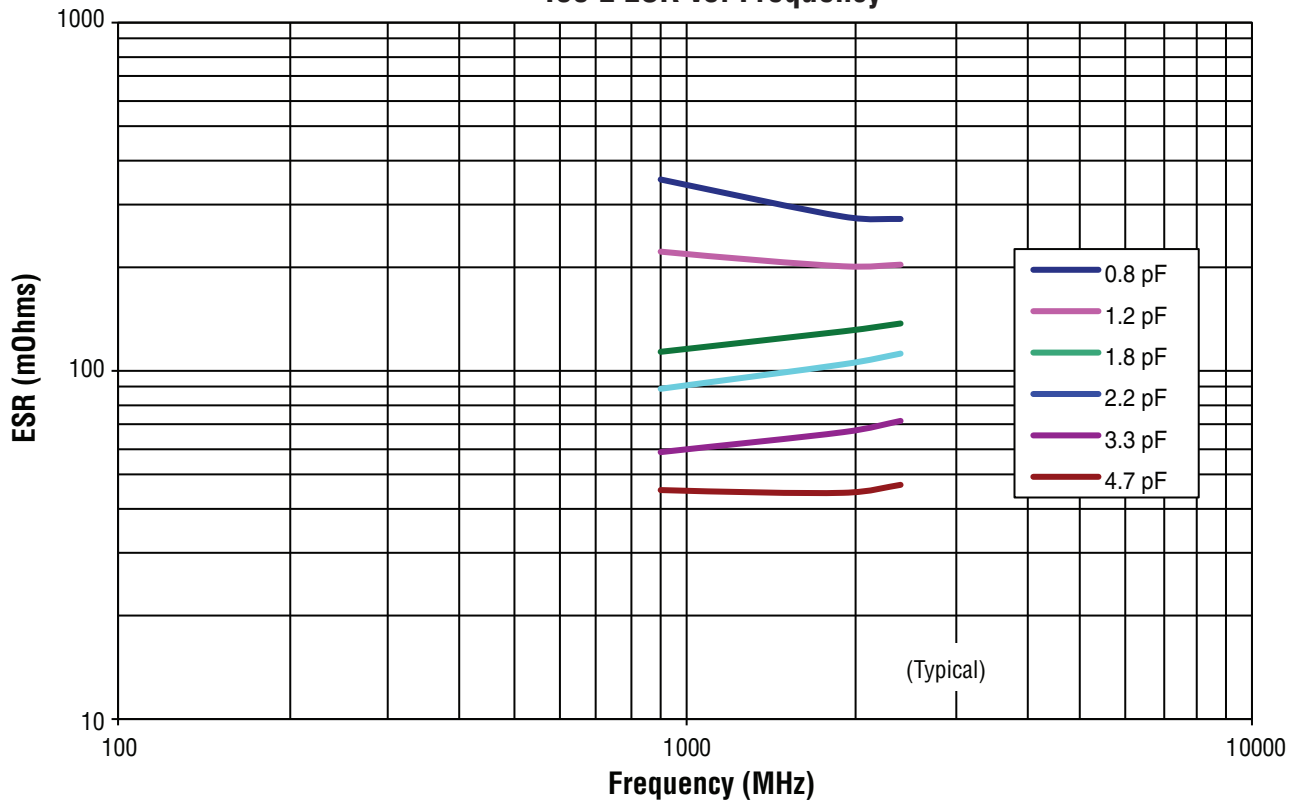
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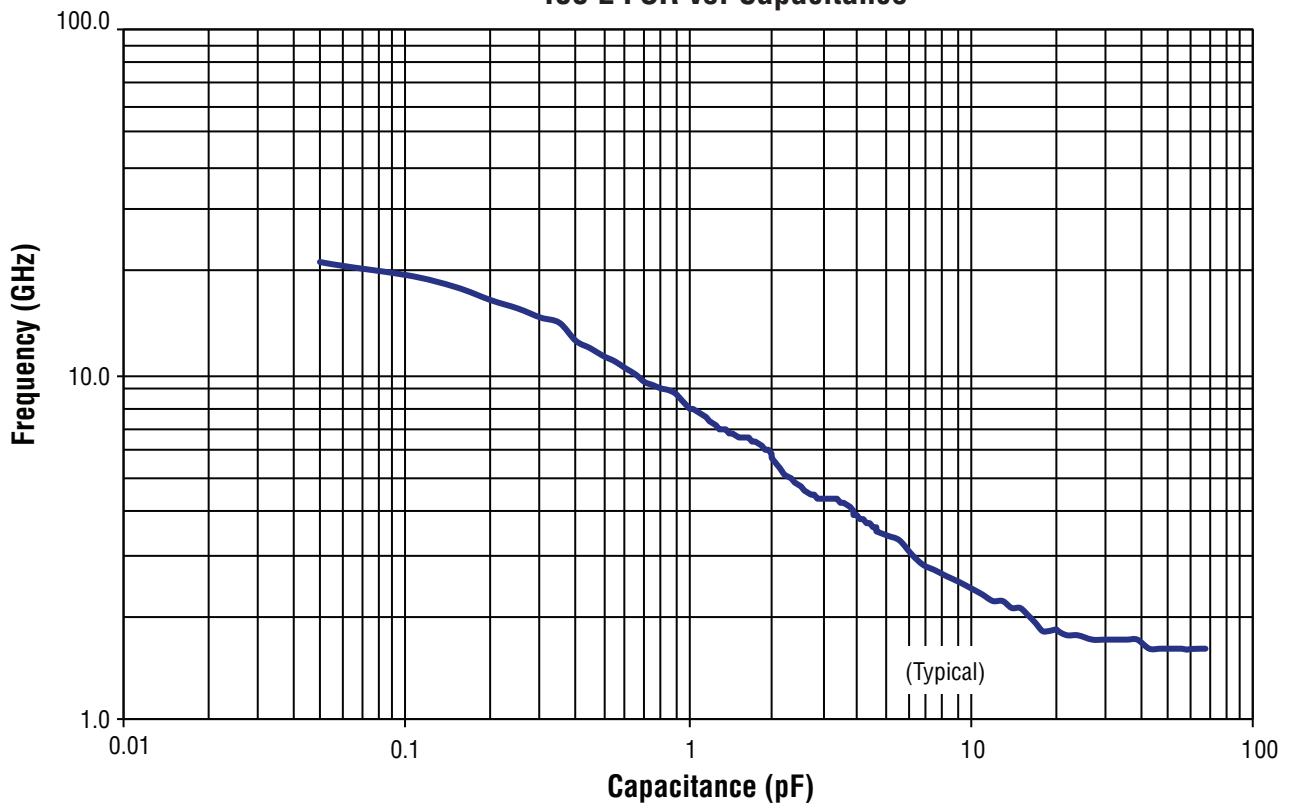
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ATC 400 L Performance Data

400 L ESR vs. Frequency



400 L FSR vs. Capacitance



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