

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:

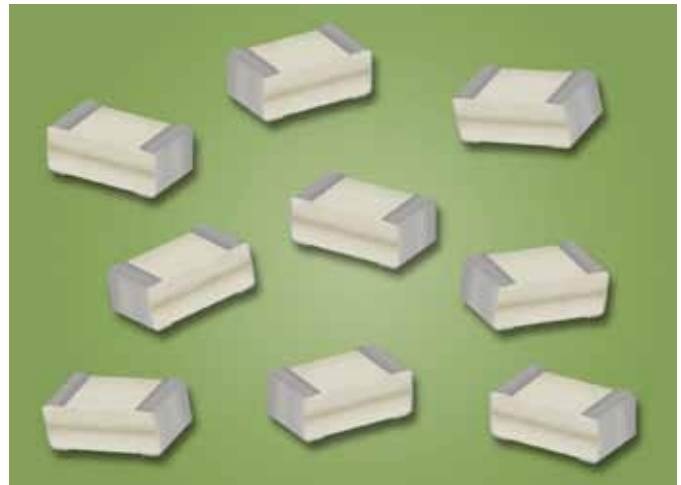
MIL-STD-202F, Method 103B: 85°C, 85% RH, at rated WVDC, 1000 hours

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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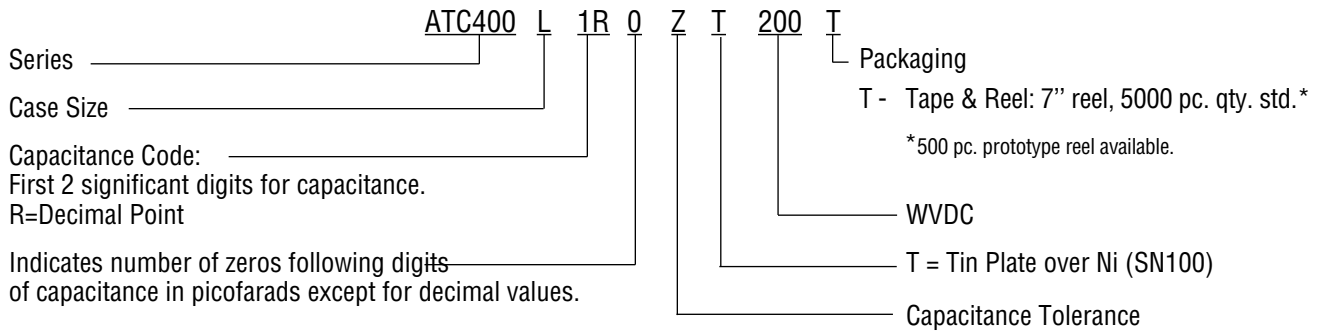
ATC # 001-1125 Rev. C; 5/15

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		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	A, B, C	50	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					
	1R8			1.8	4R3			4.3	240			24					
1R9	1.9	Q, A, B, C	50	4R4	4.4	B, C		270	27		16						
2R0	2.0			4R5	4.5			300	30								
2R1	2.1			Q, A, B, C	50			4R6	4.6					330	33		
	2R2							2.2	4R7					4.7	390		
2R3	2.3			Q, A, B, C	50			5R1	5.1					470	47		10
2R4	2.4							5R6	5.6					560	56		
2R5	2.5							6R2	6.2					680	68		

VRMS = 0.707 X WVDC

ATC PART NUMBER CODE



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.

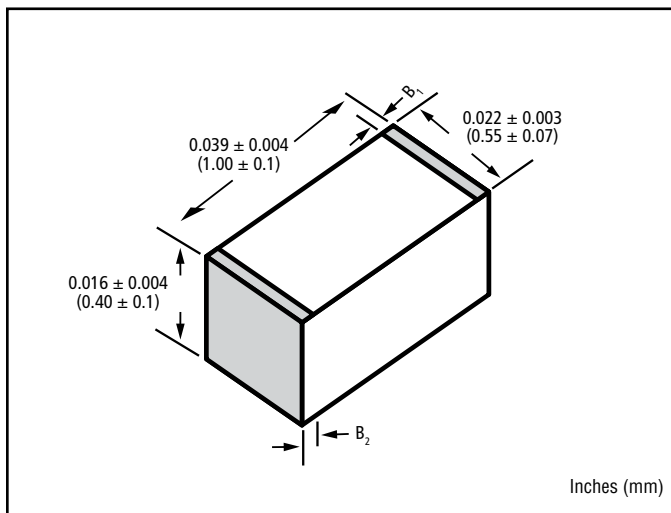
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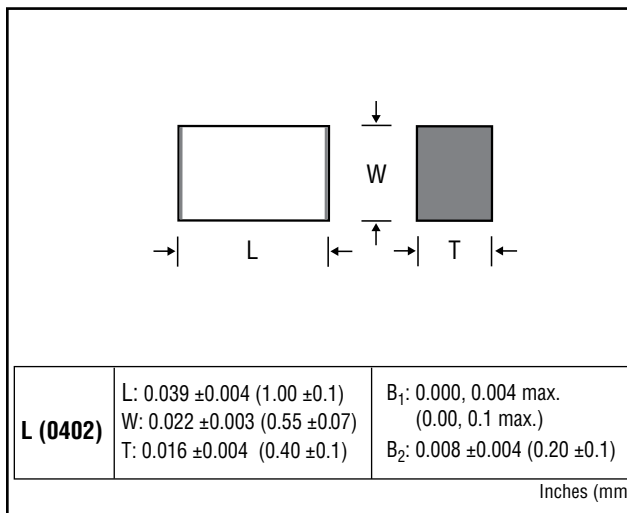
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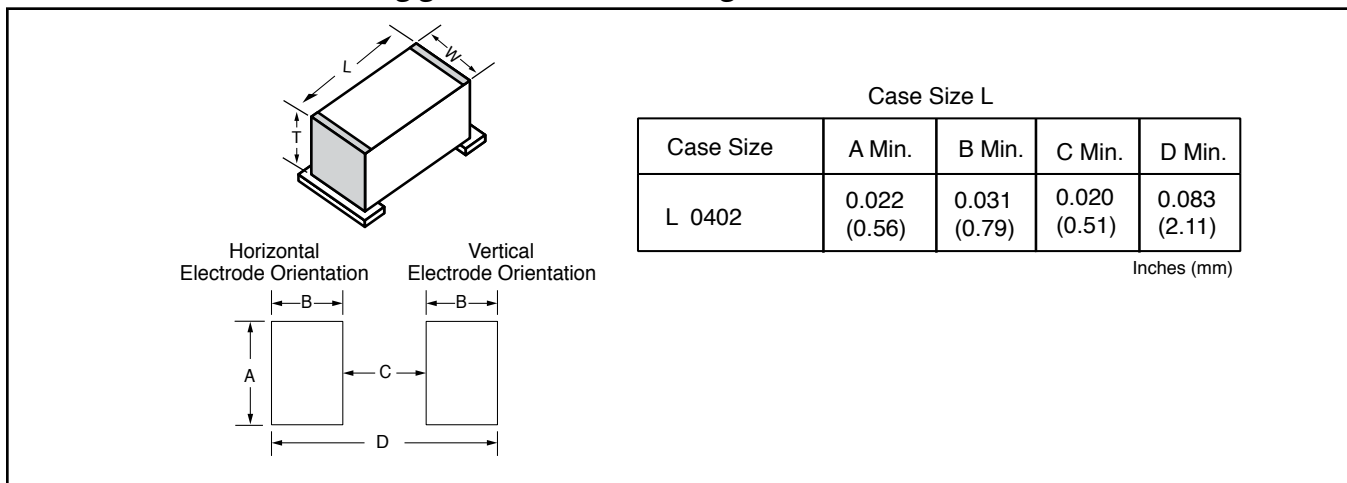
Mechanical Dimensions



Outline Dimensions



Suggested Mounting Pad Dimensions



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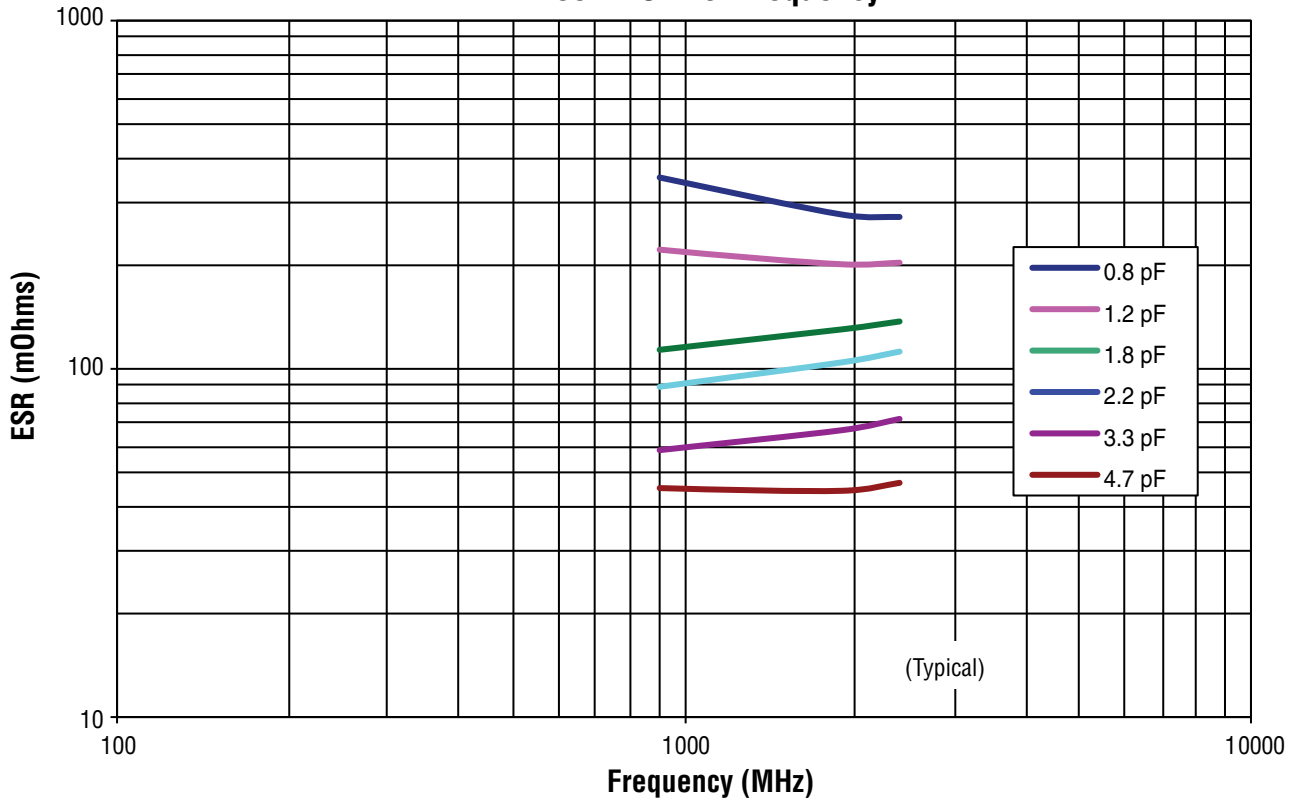
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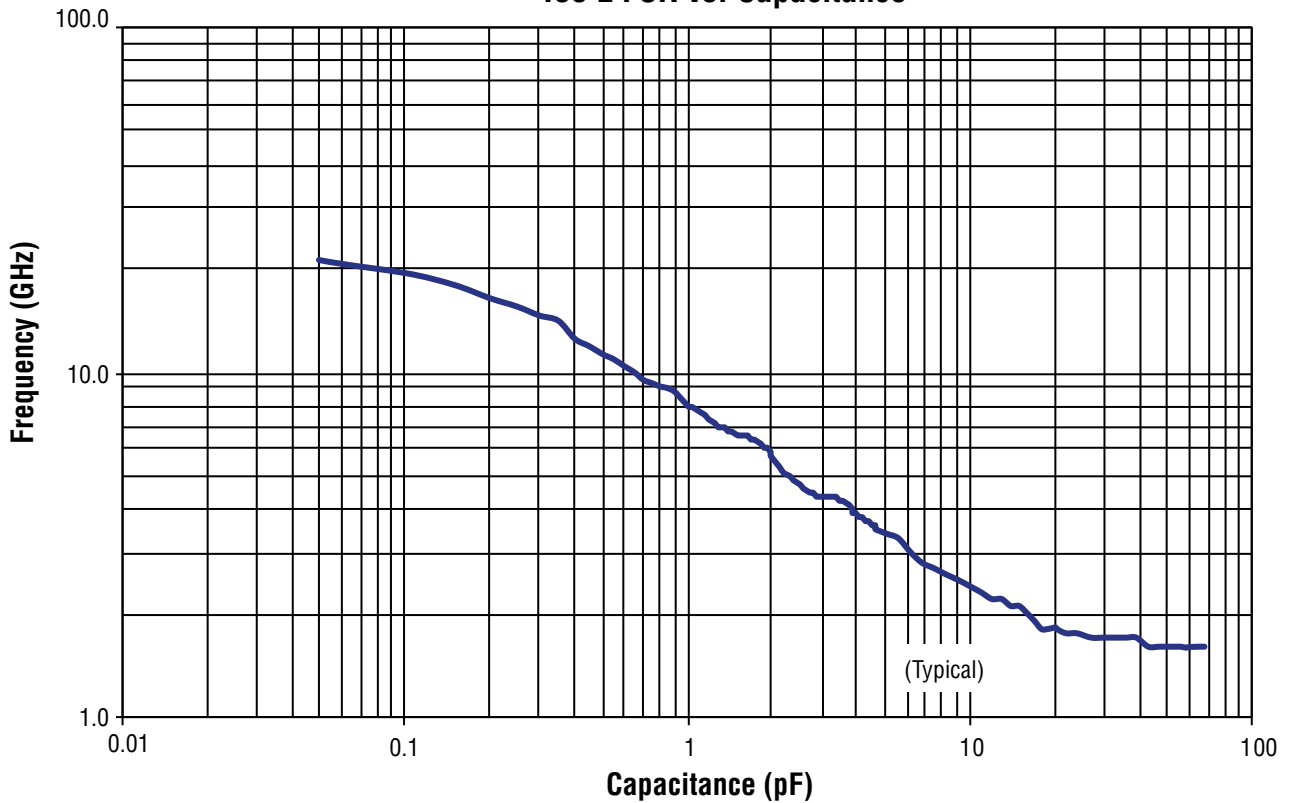
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ATC 400 L Performance Data

400 L ESR vs. Frequency



400 L FSR vs. Capacitance



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