

ATC 400 S Series Precision Tolerance NPO RF Microwave Capacitors

- EIA Case Size 0603
- Capacitance Range 0.1 pF to 68 pF
- Tolerances to ± 0.02 pF
- Ultra Stable Performance
- RoHS Compliant / Lead-Free

ATC's new 400S Series Precision Tolerance, Thin Film, NPO RF Microwave Capacitor is manufactured with the highest quality materials to provide reliable and repeatable performance. The 400S 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 400S is built in an 0603 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:

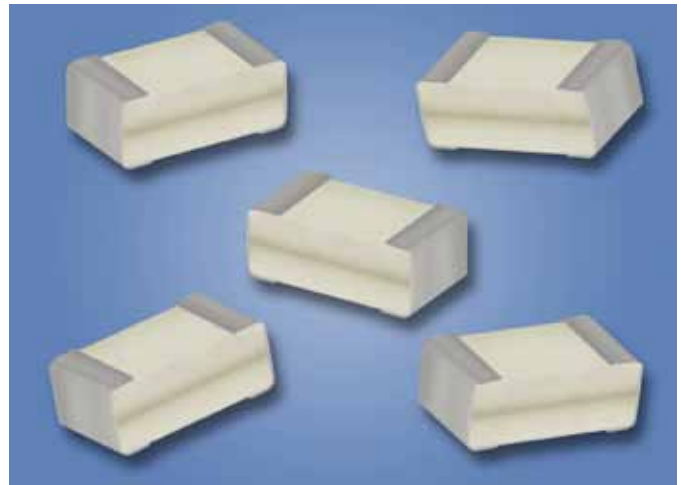
MIL-STD-202F, Method 103B: 85°C, 85% RH, at rated WVDC, 1000 hours

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 24 pF
0 ± 60 PPM/ $^\circ\text{C}$ (-55°C to +125°C) 27 pF to 68 pF

INSULATION RESISTANCE (IR):

10⁵ 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



AMERICAN
ATC North America
sales@atceramics.com

TECHNICAL
ATC Europe
saleseur@atceramics.com

CERAMICS
ATC Asia
sales@atceramics-asia.com

**THE ENGINEERS' CHOICE**
ISO 9001 REGISTERED COMPANY

THE ENGINEERS' CHOICE™

www.atceramics.com

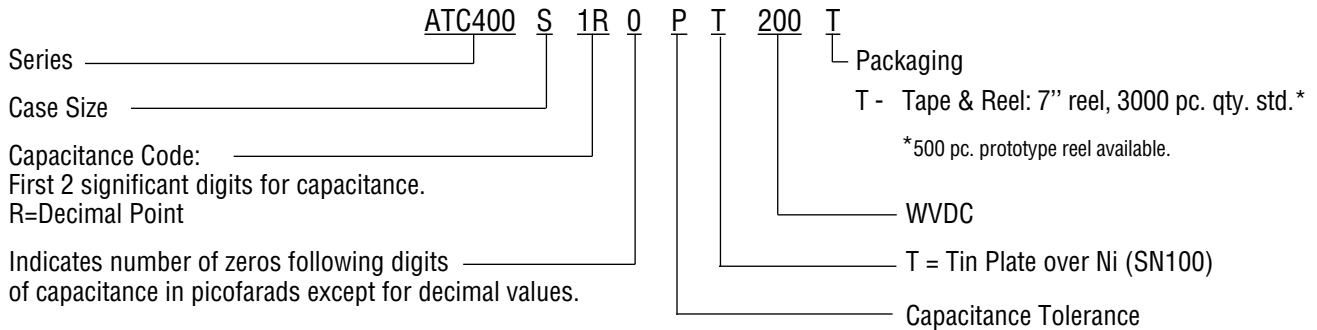
ATC # 001-1126 Rev. C; 5/15

ATC 400 S 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	200	2R6	2.6	Q, A, B, C	100	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			
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	Q, A, B, C	100	3R6	3.6	A, B, C	50	160	16	F, G, J	25
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			4R4	4.4	270		27			
2R0	2.0			4R5	4.5	300		30			
2R1	2.1	Q, A, B, C	100	4R6	4.6	B, C	50	330	33		
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			

VRMS = 0.707 X WVDC

ATC PART NUMBER CODE



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 S Series (0603) 1 pF capacitor, P tolerance (±0.02 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.

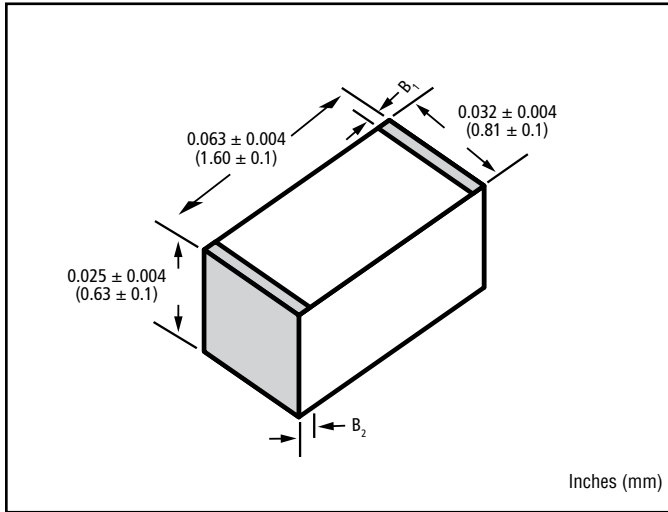
A M E R I C A N T E C H N I C A L C E R A M I C S

ATC North America
 sales@atceramics.com

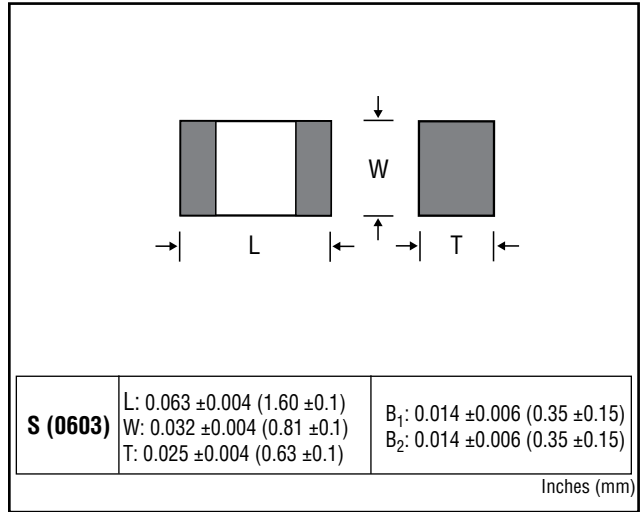
ATC Europe
 saleseur@atceramics.com

ATC Asia
 sales@atceramics-asia.com

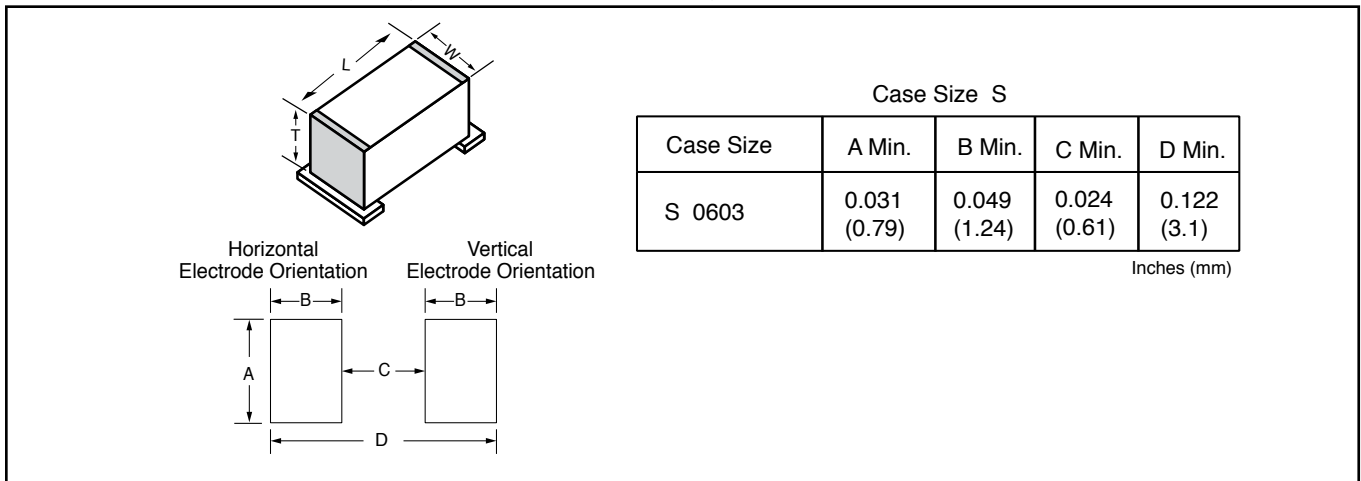
Mechanical Dimensions



Outline Dimensions



Suggested Mounting Pad Dimensions



Sales of ATC products are subject to the terms and conditions contained in American Technical Ceramics Corp. Terms and Conditions of Sale (ATC document #001-992 Rev. B; 12/05). Copies of these terms and conditions will be provided upon request. They may also be viewed on ATC's website at www.atceramics.com/productfinder/default.asp. Click on the link for Terms and Conditions of Sale.

ATC has made every effort to have this information as accurate as possible. However, no responsibility is assumed by ATC for its use, nor for any infringements of rights of third parties which may result from its use. ATC reserves the right to revise the content or modify its product without prior notice.

© 2006 American Technical Ceramics Corp. All Rights Reserved

ATC # 001-1126 Rev. C; 5/15

A M E R I C A N T E C H N I C A L C E R A M I C S

ATC North America
sales@atceramics.com

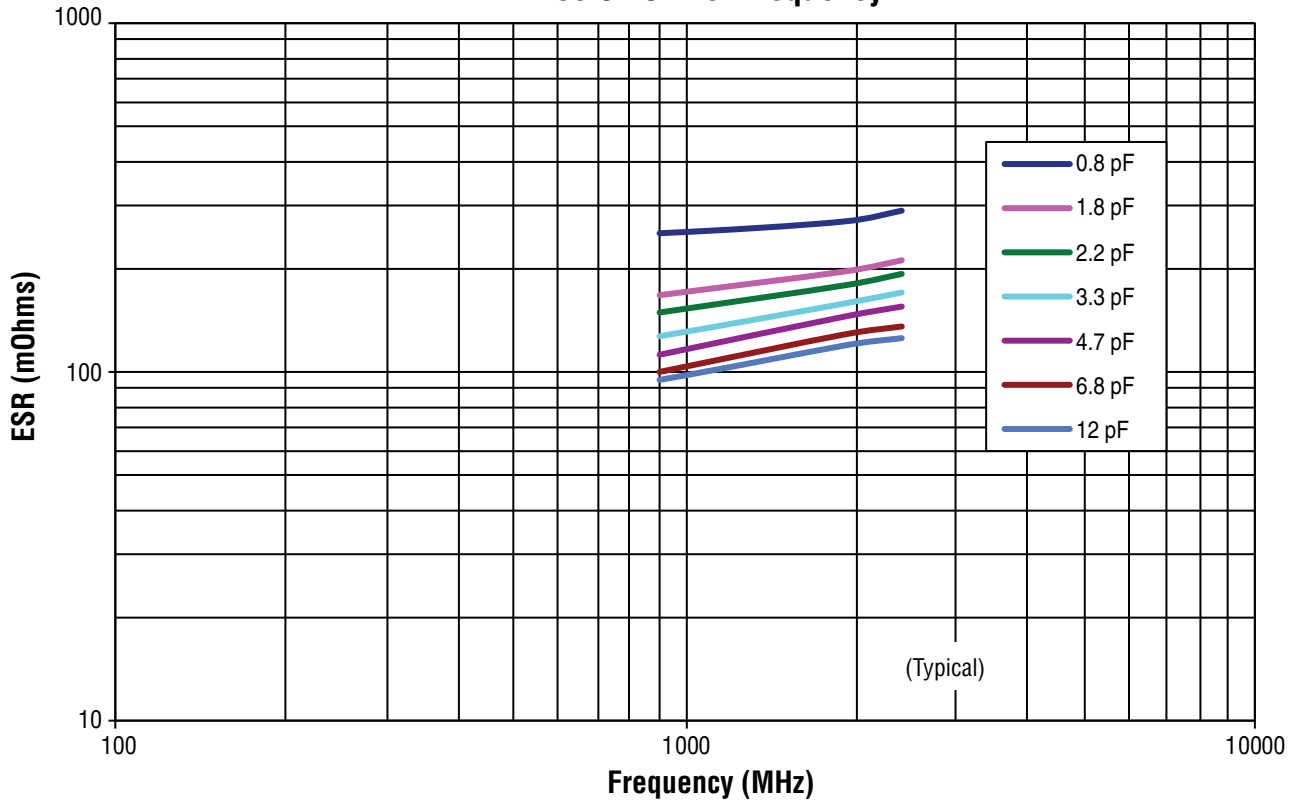
ATC Europe
saleseur@atceramics.com

ATC Asia
sales@atceramics-asia.com

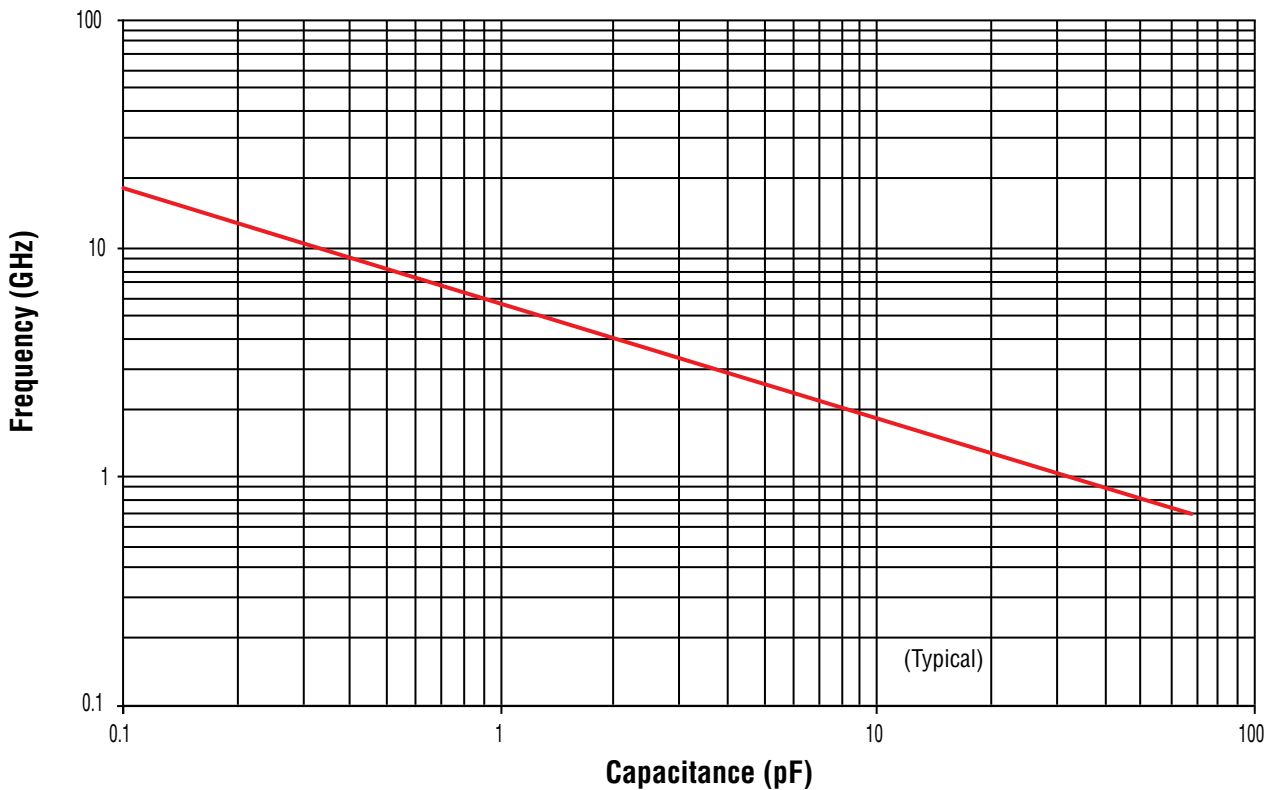
www.atceramics.com

ATC 400 S Performance Data

400 S ESR vs. Frequency



400 S FSR vs. Capacitance



A M E R I C A N T E C H N I C A L C E R A M I C S

ATC North America
sales@atceramics.com

ATC Europe
saleseur@atceramics.com

ATC Asia
sales@atceramics-asia.com