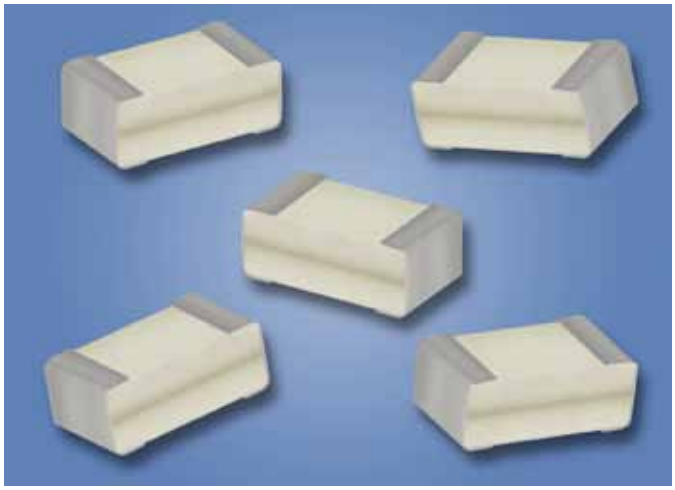
ATC 400 S Series Precision Tolerance NPO RF Microwave Capacitors

- **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 ±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 pF to 24 pF
0 ±60 PPM/°C (-55°C to +125°C) 27 pF to 68 pF

INSULATION RESISTANCE (IR):
10^{11} Ohms 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

AMERICAN TECHNICAL CERAMICS
ATC North America sales@atceramics.com
ATC Europe saleseur@atceramics.com
ATC Asia sales@atceramics-asia.com
THE ENGINEERS' CHOICE®
ISO 9001 REGISTERED COMPANY
THE ENGINEERS' CHOICE™ www.atceramics.com
ATC # 001-1126 Rev. B; 12/14

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	F, G, J	
0R6	0.6			3R1	3.1	A, B, C		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		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		25
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		50	270	27		
2R0	2.0			4R5	4.5			300	30		
2R1	2.1	Q, A, B, C		4R6	4.6			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	B, C		680	68		

VRMS = 0.707 X WVDC

ATC PART NUMBER CODE

ATC400 S 1R 0 P T 200 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, 3000 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%

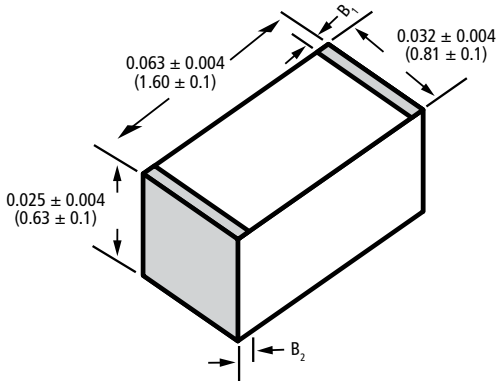
The above part number refers to a 400 S Series (0603) 1 pF capacitor, P tolerance (±0.02 pF), 200 WVDC, with T termination (Tin Plated over Nickel Barrier Termination), RoHS Compliant), and tape and reel packaging.

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.

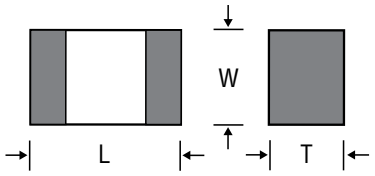
Consult factory for additional performance data.

Mechanical Dimensions



Inches (mm)

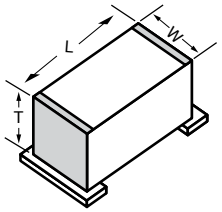
Outline Dimensions

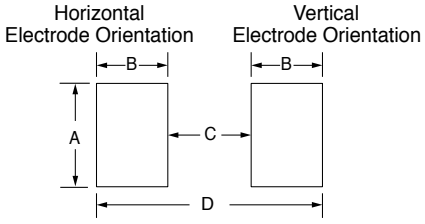


S (0603)	L: 0.063 ±0.004 (1.60 ±0.1) W: 0.032 ±0.004 (0.81 ±0.1) T: 0.025 ±0.004 (0.63 ±0.1)	B_1: 0.014 ±0.006 (0.35 ±0.15) B_2: 0.014 ±0.006 (0.35 ±0.15)

Inches (mm)

Suggested Mounting Pad Dimensions





Case Size S

Case Size	A Min.	B Min.	C Min.	D Min.
S 0603	0.031 (0.79)	0.049 (1.24)	0.024 (0.61)	0.122 (3.1)

Inches (mm)

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

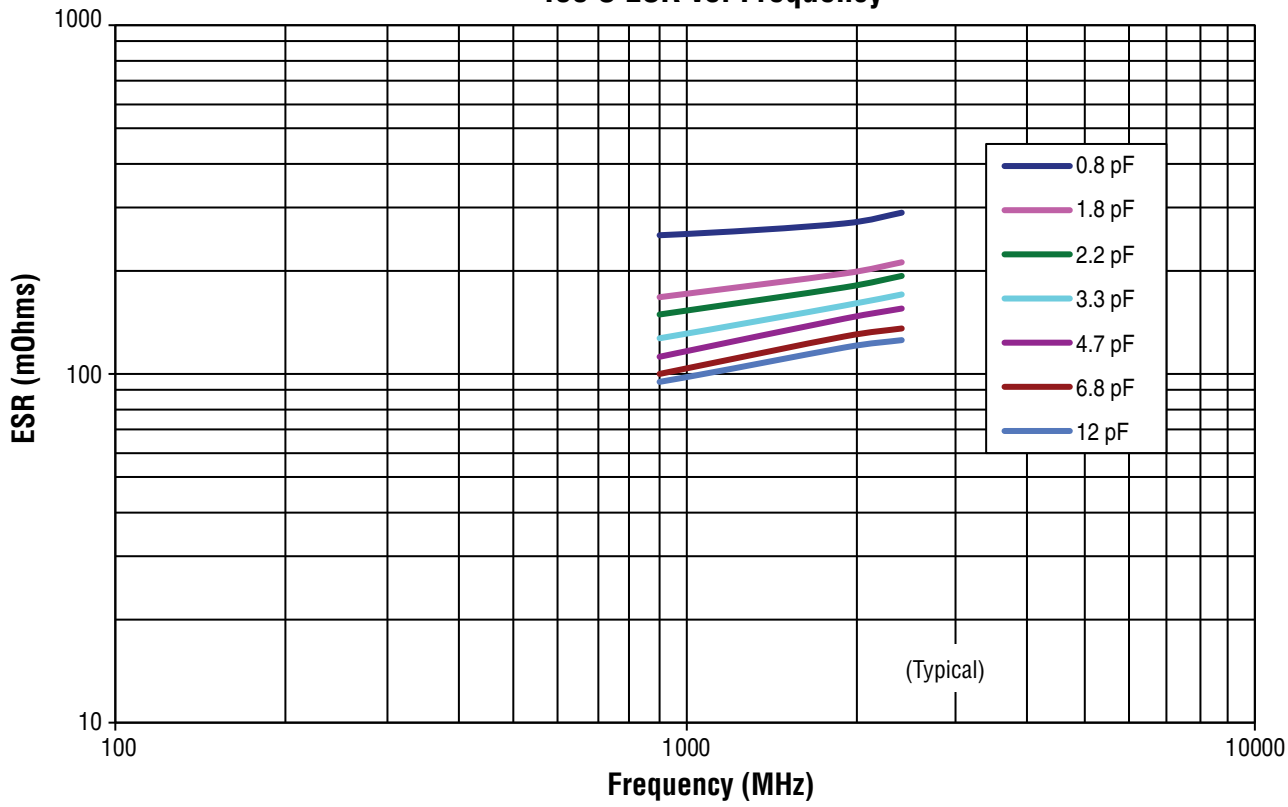
ATC Europe
saleseur@atceramics.com

ATC Asia
sales@atceramics-asia.com

w w w . a t c e r a m i c s . c o m

ATC 400 S Performance Data

400 S ESR vs. Frequency



400 S FSR vs. Capacitance