

ATC 100 B Series Porcelain Superchip[®] Multilayer Capacitors

- Case B Size (.110" x .110")
- Capacitance Range 0.1 pF to 1000 pF
- High Q
- Ultra-Stable Performance
- Low ESR/ESL
- High Self-Resonance
- Low Noise
- Established Reliability (QPL)
- Available with Encapsulation Option*

ATC, the industry leader, offers new improved ESR/ESL performance for the 100 B Series RF/Microwave Capacitors. This Series is now available with extended operating temperatures up to 175°C. High Density porcelain construction provides a rugged, hermetic package.

ATC offers an encapsulation option for applications requiring extended protection against arc-over and corona.

Typical functional applications: Bypass, Coupling, Tuning, Feedback, Impedance Matching and DC Blocking.

Typical circuit applications: UHF/Microwave RF Power Amplifiers, Mixers, Oscillators, Low Noise Amplifiers, Filter Networks, Timing Circuits and Delay Lines.

*For leaded styles only.

ENVIRONMENTAL TESTS

ATC 100 B Series Capacitors are designed and manufactured to meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123.

THERMAL SHOCK:

MIL-STD-202, Method 107, Condition A.

MOISTURE RESISTANCE:

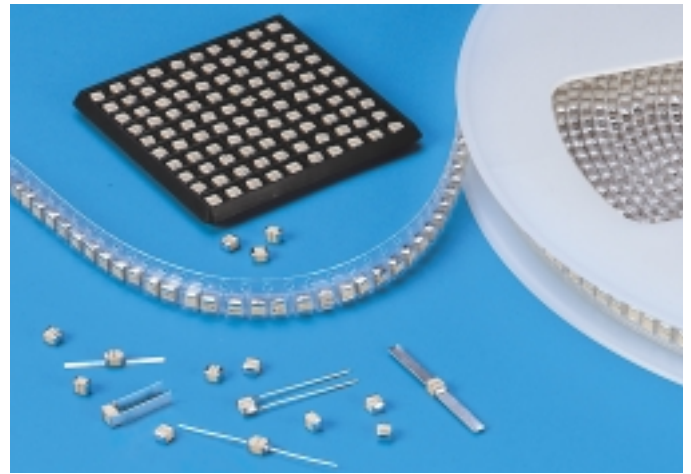
MIL-STD-202, Method 106.

LOW VOLTAGE HUMIDITY:

MIL-STD-202, Method 103, Condition A, with 1.5 Volts DC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours min.

LIFE TEST:

MIL-STD-202, Method 108, for 2000 hours, at 125°C. 200% WVDC applied.



ELECTRICAL AND MECHANICAL SPECIFICATIONS

QUALITY FACTOR (Q): greater than 10,000 at 1 MHz.

TEMPERATURE COEFFICIENT OF CAPACITANCE (TCC):
+90 ±20 PPM/°C (-55°C to +125°C)
+90 ±30 PPM/°C (+125°C to +175°C)

INSULATION RESISTANCE (IR):

0.1 pF to 470 pF:

10⁶ Megohms min. @ +25°C at rated WVDC.

10⁵ Megohms min. @ +125°C at rated WVDC.

510 pF to 1000 pF:

10⁵ Megohms min. @ +25°C at rated WVDC.

10⁴ Megohms min. @ +125°C at rated WVDC.

IR above +125°C is derated by one order of magnitude.

WORKING VOLTAGE (WVDC):

See Capacitance Values Table, page 2.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Case B: 250% of rated WVDC for 5 secs.

RETRACE: Less than ±(0.02% or 0.02 pF), whichever is greater.

AGING EFFECTS: None

PIEZOELECTRIC EFFECTS: None

(No capacitance variation with voltage or pressure).

CAPACITANCE DRIFT: ±(0.02% or 0.02 pF), whichever is greater.

OPERATING TEMPERATURE RANGE:

0.1 to 330 pF: from -55°C to +175°C

360 to 1000 pF: from -55°C to +125°C

(No derating of working voltage).

TERMINATION STYLES:

Available in various surface mount and leaded styles.

See Mechanical Configurations, page 3.

TERMINAL STRENGTH: Terminations for chips and pellets withstand a pull of 5 lbs. min., 15 lbs. typical, for 5 seconds in direction perpendicular to the termination surface of the capacitor. Test per MIL-STD-202, method 211.

American Technical Ceramics



ATC North America
631-622-4700
sales@atceramics.com

ATC Europe
+46 8 6800410
sales@atceramics-europe.com

ATC Asia
+86-755-8366-4318
sales@atceramics-asia.com

 THE
ENGINEERS'
CHOICE™
ISO 9001 REGISTERED

www.atceramics.com

ATC # 001-807 Rev. H 1/05

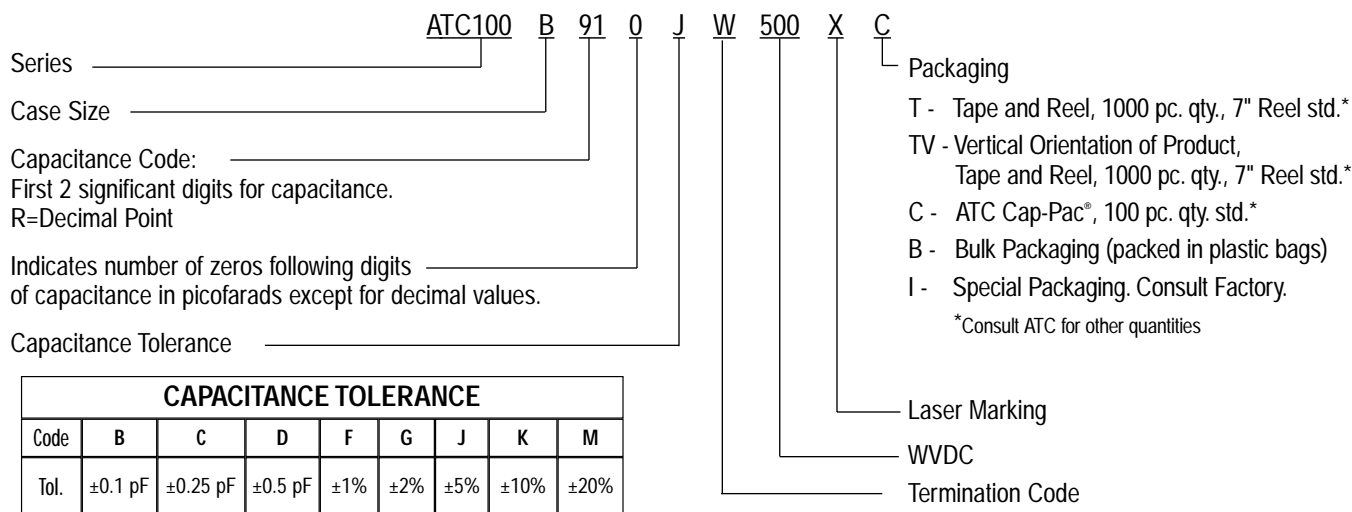
ATC 100 B Capacitance Values

CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC	CAP. CODE	CAP. (pF)	TOL.	RATED WVDC
0R1	0.1	B	500	2R4	2.4	B, C, D	500	200	20	F, G, J, K, M	500	151	150	F, G, J, K, M	300
0R2	0.2	B, C		2R7	2.7			220	22			161	160		
0R3	0.3			3R0	3.0			240	24			181	180		
0R4	0.4	3R3		3.3	270			27	201			200			
0R5	0.5	B, C, D		3R6	3.6			300	30			221	220		
0R6	0.6			3R9	3.9			330	33			241	240		
0R7	0.7			4R3	4.3			360	36			271	270		
0R8	0.8			4R7	4.7			390	39			301	300		
0R9	0.9			5R1	5.1			430	43			331	330		
1R0	1.0			5R6	5.6			470	47			361	360		
1R1	1.1			6R2	6.2			510	51			391	390		
1R2	1.2			6R8	6.8			560	56			431	430		
1R3	1.3	B, C, J, K, M		7R5	7.5			620	62			471	470		
1R4	1.4			8R2	8.2			680	68			511	510		
1R5	1.5			9R1	9.1			750	75			561	560		
1R6	1.6	F, G, J, K, M		100	10			820	82			621	620		
1R7	1.7		110	11	910	91	681	680							
1R8	1.8		120	12	101	100	751	750							
1R9	1.9		130	13	111	110	821	820							
2R0	2.0		150	15	121	120	911	910							
2R1	2.1		160	16	131	130	102	1000							
2R2	2.2		180	18											

VRMS = 0.707 X WVDC

• SPECIAL VALUES, TOLERANCES, HIGHER WVDC AND MATCHING AVAILABLE. • ENCAPSULATION OPTION AVAILABLE. PLEASE CONSULT FACTORY.

ATC PART NUMBER CODE



The above part number refers to a 100 B Series (case size B) 91 pF capacitor,
J tolerance (±5%), 500 WVDC, with W termination (Tin/Lead, Solder Plated over Nickel Barrier), laser marking and ATC Cap-Pac® 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 (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
631-622-4700 • sales@atceramics.com

ATC Europe
+46 8 6800410 • sales@atceramics-europe.com

ATC Asia
+86-755-8366-4318 • sales@atceramics-asia.com

ATC 100 B Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	MIL-PRF-55681	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS Inches (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS			
					LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS		
100B	W	CDR14BG	B Solder Plate		.110 +.020 -.010 (2.79 +.051 -.025)	.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	.015 (0.38) ±.010 (0.25) max.	Tin/Lead, Solder Plated over Nickel Barrier Termination		
100B	P	CDR14BG	B Pellet		.110 +.035 -.010 (2.79 +.089 -.025)	.110 ±.015 (2.79 ±0.38)			Heavy Tin/Lead Coated, over Nickel Barrier Termination		
100B	T	N/A	B Lead-Free Solderable Nickel Barrier		.110 +.020 -.010 (2.79 +.051 -.025)	.110 ±.015 (2.79 ±0.38)			Lead-Free and RoHS Compliant Tin Plated over Nickel Barrier Termination		
100B	CA	CDR13BG	B Gold Chip		.110 +.020 -.010 (2.79 +.051 -.025)	.110 ±.015 (2.79 ±0.38)			Lead-Free and RoHS Compliant Gold Plated over Nickel Barrier Termination		
100B	MS	CDR21BG	B Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.120 (3.05) max.	N/A	LENGTH (L _L)	WIDTH (W _L)	THICKNESS (T _L)
100B	AR	CDR22BG	B Axial Ribbon						.250 (6.35) min.	.093 ±.005 (2.36 ±0.13)	.004 ±.001 (.102 ±.025)
100B	RR	CDR24BG	B Radial Ribbon						.145 ±.020 (3.68 ±0.51)	.500 (12.7) min.	#26 AWG., .016 (.406) dia. nominal
100B	RW	CDR23BG	B Radial Wire								
100B	AW	CDR25BG	B Axial Wire								

Additional lead styles available: Narrow Microstrip (NM), Narrow Axial Ribbon (NA) and Vertical Narrow Microstrip (H). Other lead lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant. For a complete military catalog, request American Technical Ceramics document ATC 001-818.

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
631-622-4700 • sales@atceramics.com

ATC Europe
+46 8 6800410 • sales@atceramics-europe.com

ATC Asia
+86-755-8366-4318 • sales@atceramics-asia.com

ATC 100 B Non-Magnetic Capacitors: Mechanical Configurations

ATC SERIES & CASE SIZE	ATC TERM. CODE	MIL-PRF-55681	CASE SIZE & TYPE	OUTLINES W/T IS A TERMINATION SURFACE	BODY DIMENSIONS Inches (mm)			LEAD AND TERMINATION DIMENSIONS AND MATERIALS			
					LENGTH (L)	WIDTH (W)	THICKNESS (T)	OVERLAP (Y)	MATERIALS		
100B	WN	Meets Requirements	B Non-Mag Solder Plate		.110 +.025 -.010 (2.79 +0.64 -0.25)	.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	.015 (0.38) ±.010 (0.25) max.	Tin/Lead, Solder Plated over Non-Magnetic Barrier Termination		
100B	PN	Meets Requirements	B Non-Mag Pellet		.110 +.035 -.010 (2.79 +0.89 -0.25)	.110 ±.015 (2.79 ±0.38)			.120 (3.05) max.	N/A	Heavy Tin/Lead Coated, over Non-Magnetic Barrier Termination
100B	TN	Meets Requirements	B Non-Mag Lead-Free Solderable Barrier		.110 +.025 -.010 (2.79 +0.64 -0.25)	.110 ±.015 (2.79 ±0.38)					.120 (3.05) max.
100B	MN	Meets Requirements	B Non-Mag Microstrip		.135 ±.015 (3.43 ±0.38)	.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	N/A			
100B	AN	Meets Requirements	B Non-Mag Axial Ribbon						.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	
100B	FN	Meets Requirements	B Non-Mag Radial Ribbon		.145 ±.020 (3.68 ±0.51)	.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	N/A			.500 (12.7) min.
100B	RN	Meets Requirements	B Non-Mag Radial Wire						.145 ±.020 (3.68 ±0.51)	.110 ±.015 (2.79 ±0.38)	
100B	BN	Meets Requirements	B Non-Mag Axial Wire		.145 ±.020 (3.68 ±0.51)	.110 ±.015 (2.79 ±0.38)	.102 (2.6) max.	N/A			.500 (12.7) min.

Additional lead styles available: Narrow Microstrip (NM), Narrow Axial Ribbon (NA) and Vertical Narrow Microstrip (H). Other lead lengths are available; consult factory. All leads are high purity silver attached with high temperature solder and are RoHS compliant.

Suggested Mounting Pad Dimensions

Horizontal Electrode Orientation

Vertical Electrode Orientation

Case B Vertical Mount

Cap Value	Pad Size	A Min.	B Min.	C Min.	D Min.
0.1 pF	Normal	.065	.050	.075	.175
	High Density	.045	.030	.075	.135
0.2 pF	Normal	.090	.050	.075	.175
	High Density	.070	.030	.075	.135
0.3 to 510 pF	Normal	.110	.050	.075	.175
	High Density	.090	.030	.075	.135
> 510 pF	Normal	.120	.050	.075	.175
	High Density	.100	.030	.075	.135

Horizontal Mount

All values	Pad Size	A Min.	B Min.	C Min.	D Min.
All values	Normal	.130	.050	.075	.175
	High Density	.110	.030	.075	.135

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

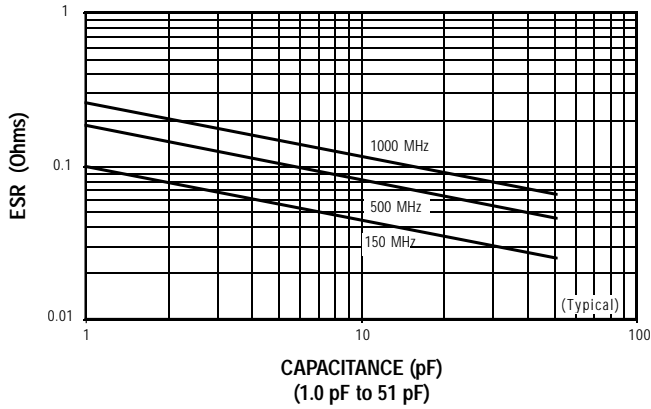
ATC North America
631-622-4700 • sales@atceramics.com

ATC Europe
+46 8 6800410 • sales@atceramics-europe.com

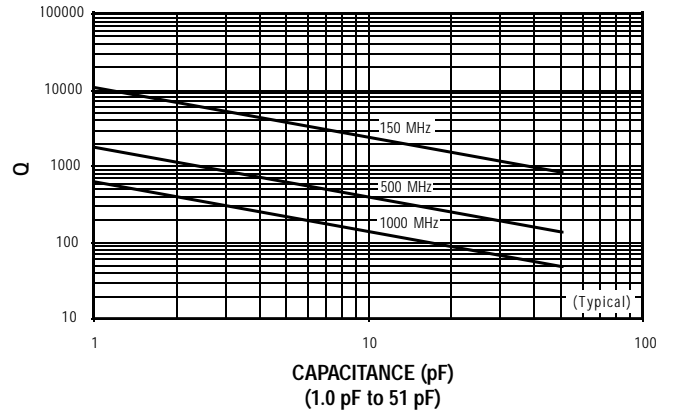
ATC Asia
+86-755-8366-4318 • sales@atceramics-asia.com

ATC 100 B Performance Data

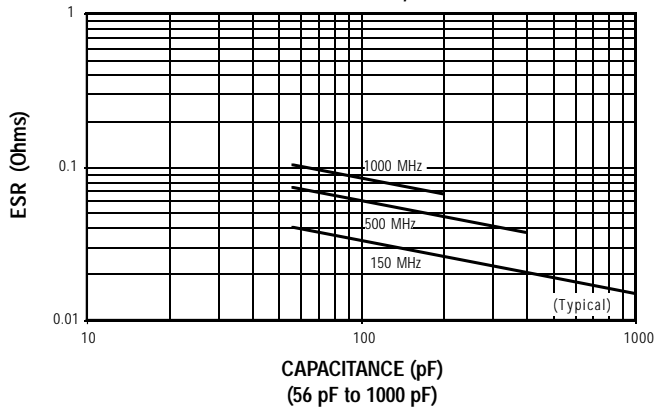
**ESR VS. CAPACITANCE
ATC SERIES 100, CASE B**



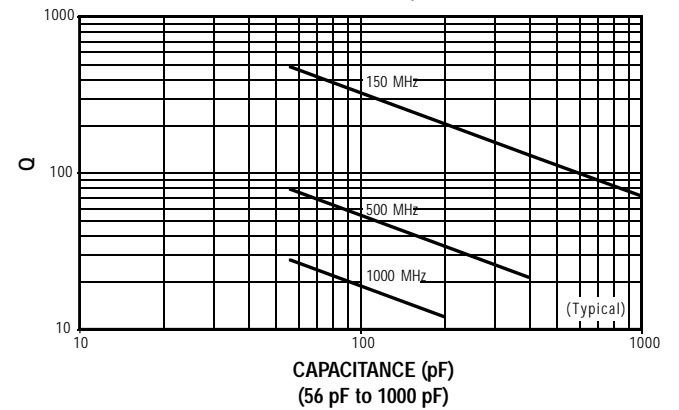
**Q VS. CAPACITANCE
ATC SERIES 100, CASE B**



**ESR VS. CAPACITANCE
ATC SERIES 100, CASE B**



**Q VS. CAPACITANCE
ATC SERIES 100, CASE B**



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

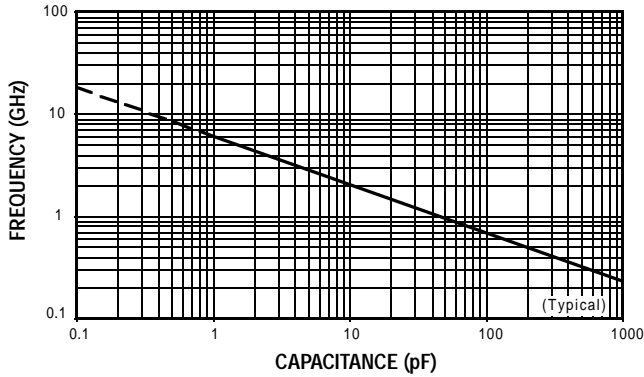
ATC North America
631-622-4700 • sales@atceramics.com

ATC Europe
+46 8 6800410 • sales@atceramics-europe.com

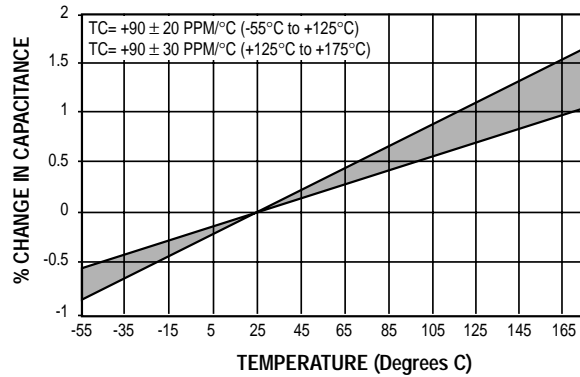
ATC Asia
+86-755-8366-4318 • sales@atceramics-asia.com

ATC 100 B Performance Data

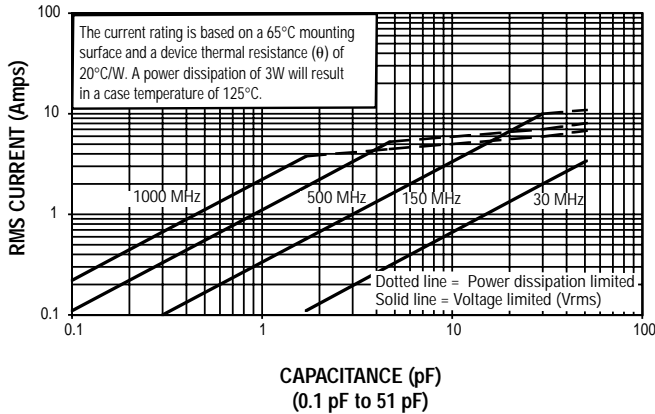
**SERIES RESONANCE VS. CAPACITANCE
ATC SERIES 100, CASE B**



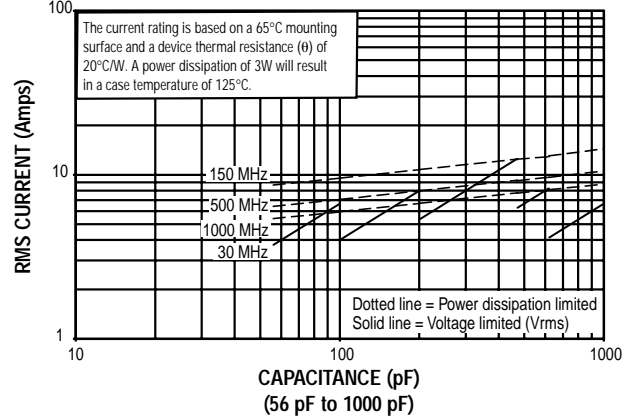
**CAPACITANCE CHANGE VS. TEMPERATURE
ATC SERIES 100, CASE B**



**CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE B**



**CURRENT RATING VS. CAPACITANCE
ATC SERIES 100, CASE B**



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. A 10/03). Copies of these terms and conditions will be provided upon request. They may also be viewed on ATC's website at www.atceramics.com/aboutatc/terms_conditions_sale.html

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 line without prior notice.

© 1996 American Technical Ceramics Corp. All Rights Reserved

ATC # 001-807 Rev. H 1/05

American Technical Ceramics



ATC North America
631-622-4700
sales@atceramics.com

ATC Europe
+46 8 6800410
sales@atceramics-europe.com

ATC Asia
+86-755-8366-4318
sales@atceramics-asia.com

THE
ENGINEERS'
CHOICE™
ISO 9001 REGISTERED

www.atceramics.com