

# Glass/ET Series Caps

## Elevated Temperature



### HEAT

It's the enemy of reliable, long-term circuit performance. In many applications, very high temperatures are not a consideration in circuit design. But in a few specialized areas, elevated temperatures create very real design problems.

That's why AVX ET-Series capacitors keep working at temperatures where more ordinary capacitors usually fail...up to 200°C.

And, of course, AVX ET-Series capacitors provide all the high performance,

high reliability characteristics you've come to expect from all AVX glass capacitors...excellent stability, outstanding capacitance retraceability, rugged, simple construction to eliminate mechanical problems, and electrical performance specifications among the best available at any price.

So when the heat's on your next design and you can't alter the environment, choose AVX ET-Series glass capacitors. That'll be one less problem you'll have to solve.

### FEATURES

- Available in both axial and radial leaded configurations
- Values from 0.5 pF to 2400 pF
- Working temperature range -75°C to 200°C
- "Burned In" versions available – 50 hours @ 1500 VDC, 25°C
- Simple, rugged design and construction
- Short lead times for most values

### STANDARD OPERATING CHARACTERISTICS OF AVX ET-SERIES AXIAL AND RADIAL LEADED GLASS CAPACITORS

Working Temperature Range	-75°C to 200°C
Voltage Rating	50 VDC
Capacitance Range	0.5 pF to 2400 pF
Insulation Resistance	@ 25°C > 100,000 Megohms @ 200°C > 100 Megohms
Dissipation Factor	@ 25°C < .1% at 1kHz @ 200°C < 1% at 1kHz
Life	(1000 hours at rated voltage at 200°C) Post Test Delta C @ 25°C < 2% DF @ 25°C < 2.5% IR > 100 Megohms (axials) IR > 10 Megohms (radials)
Short Time (1 Hour) Exposure to Overtemperature (250°C)	No degradation
Voltage Coefficient	0

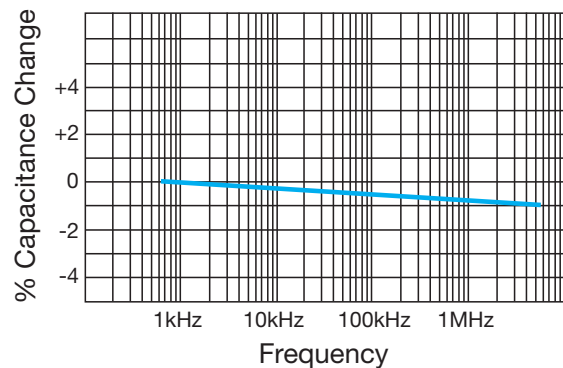
### TYPICAL APPLICATIONS

In general, AVX ET-Series glass capacitors are ideally suited for any environment where high temperature could alter or destroy circuit performance. And since they are rated down to -75°C, ET-Series capacitors are also useful where cycling to colder temperatures may be a problem. Some applications where AVX ET-Series capacitors have already proven themselves include:

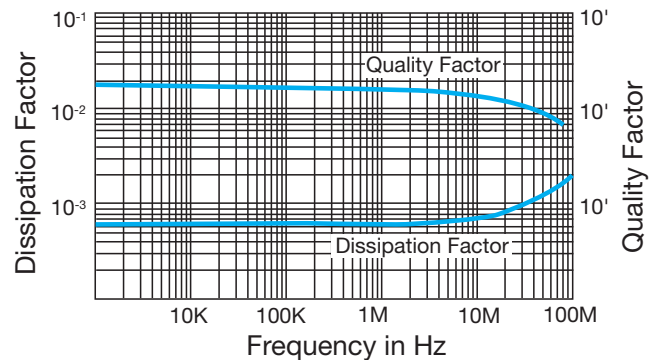
- Oil, well logging and downhole instrumentation, where frictional or geothermal heat is a problem.
- Geophysical pressure probes.
- Missile or aerospace applications where engine or environmental heat needs to be monitored or may cause circuit failure.
- Radar or other microwave applications.
- RF output circuitry where conduction or fan cooling cannot be entirely relied upon to remove all of the heat.
- Space and satellite applications where temperature changes are extreme and "zero failures" are a must.
- Industrial chemical process instrumentation where heat is a part of the process.
- Instrumentation for monitoring at-the-tool performance in metal cutting machinery.
- Fire-safe alarm or control circuitry.

# Glass/ET Series Caps

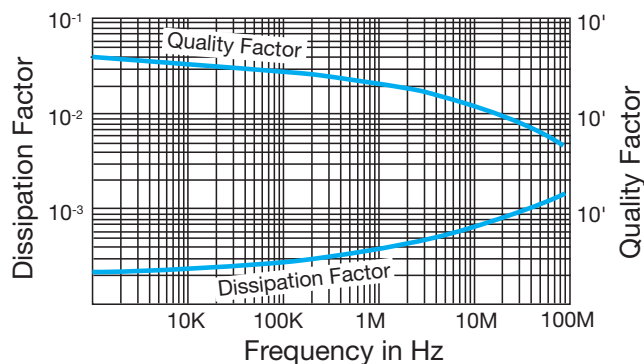
## Performance Curves



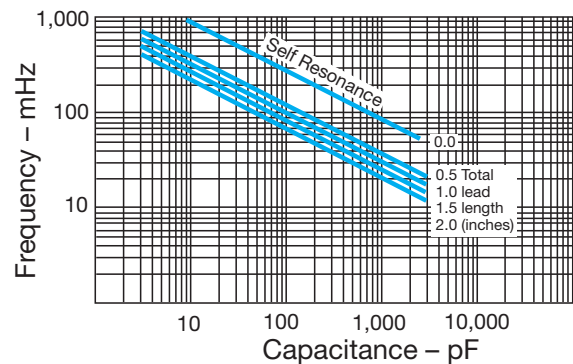
**% Capacitance Change vs. Frequency**  
Radial and Axial



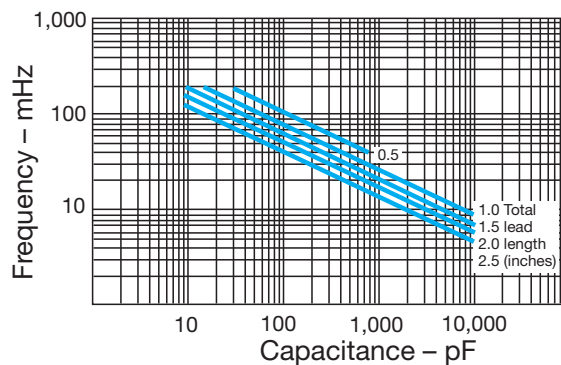
**Quality Factor and Dissipation Factor vs. Frequency**  
Radial



**Quality Factor and Dissipation Factor vs. Frequency**  
Axial



**Resonant Frequency vs. Capacitance**  
Radial



**Resonant Frequency vs. Capacitance**  
Axial



# Glass/ET Series Caps

## Radial Lead Elevated Temperature



### INTRODUCTION

AVX ET-Series radial leaded glass capacitors are available in a broad range of tolerances and values in three case sizes. The fused monolithic capacitive element is housed in a miniature rectangular molded case for high packaging efficiency in circuit board applications. The gold-plated Dumet leads can be soldered or welded.

### PERFORMANCE CHARACTERISTICS

**Tolerance:** The ordering information table on the opposite page gives the available tolerances and values. An explanation of the part marking code is also provided.

**Temperature Coefficient:** Capacitance exhibits retraceability to within 10 ppm/°C over the temperature range -75°C to 200°C. See graph on following page.

**Voltage Coefficient:** Zero

**Losses:** Over the specified temperature range, losses are very low. At 200°C, 1kHz, the dissipation factor is 1% or less.

**Life:** Delta C is less than 2% after 1000 hours at rated voltage, 200°C.

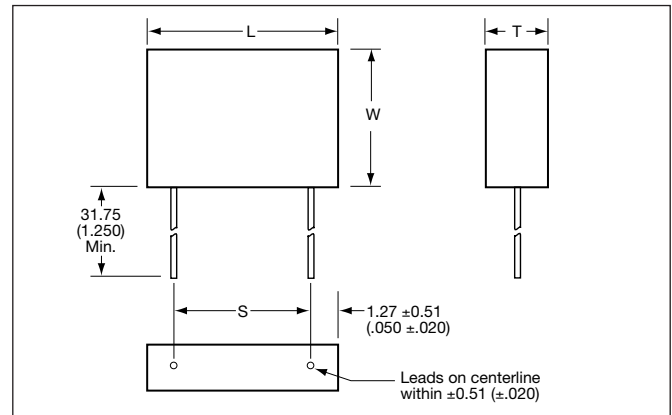
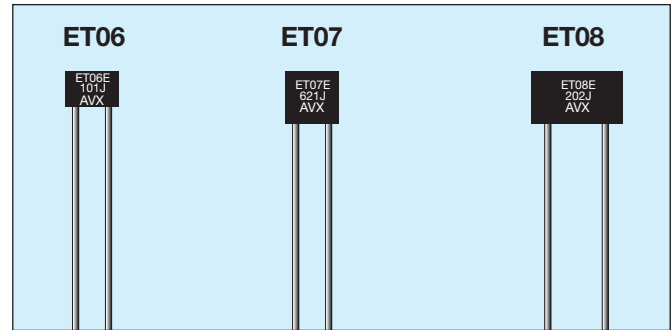
**Insulation Resistance:** 100,000 megohms or greater at 25°C; 100 megohms or greater at 200°C. More than 10 megohms after 1000 hour life-test.

**Voltage/Temperature Rating:** All ET-Series capacitors are rated at 50 VDC over the operating temperature range of -75°C to 200°C. Derating is not required.

**High Voltage Stabilization Screening:** A special version of ET-Series radial leaded capacitors – designated ETR – is available. These capacitors have been “burned in” at room temperature for 50 hours at 1500 VDC.

**Short Time Overtemperature Exposure:** After exposure to 250°C for one hour, ET-Series capacitors have continued to perform to specification.

Additional performance details are given in the AVX “Performance Characteristics of Multilayer Glass Dielectric Capacitors” technical paper.



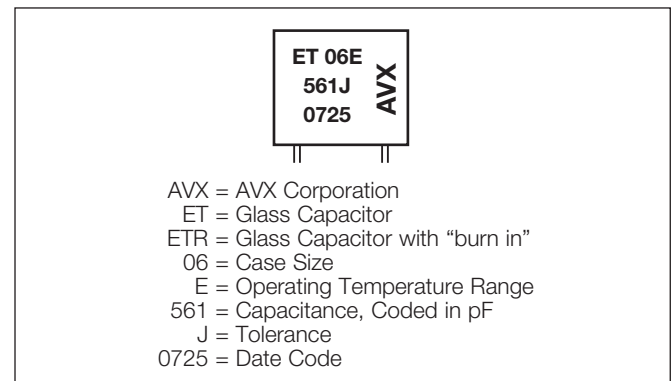
### DIMENSIONS:

millimeters (inches)

Case Size	L ±0.13 (±0.005)	W ±0.25 (±0.010)	T ±0.13 (±0.005)	S ±0.51 (±0.020)	Weight (grams)
ET06	7.62 (0.300)	5.08 (0.200)	2.92 (0.115)	5.08 (0.200)	.3 - .4
ET07	7.62 (0.300)	7.62 (0.300)	2.92 (0.115)	5.08 (0.200)	.4 - .5
ET08	12.7 (0.500)	7.62 (0.300)	2.92 (0.115)	10.16 (0.400)	.7 - .8

**Note:** All leads are 24 AWG, 0.51± 0.05 (0.020±0.002) diameter. Leads are solderable and welded gold-plated Dumet.

### MARKING



# Glass/ET Series Caps



## HOW TO ORDER

<b>ET</b>	<b>06</b>	<b>E</b>	<b>561</b>	<b>J</b>
<b>Style</b> Glass Capacitor	<b>Case Size</b> 06 07 08	<b>Operating Temperature Range</b> -75°C to +200°C	<b>Capacitance Code</b> Capacitance Code is expressed in picofarads (pF). The first two digits represent significant figures and the third digit specifies the number of zeros to follow; i.e. 561 indicates 560 pF. For values below 10 pF, R = decimal point; i.e. 1R5 indicates 1.5 pF.	<b>Capacitance Tolerance</b> C = ±.25 pF D = ±.50 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%

## RATINGS & PART NUMBER REFERENCE (Standard Values\*)

ET Part No.	ETR Part No.	Cap (pF)	Tolerances Available Voltage	DC Working
<b>ET06, ETR06</b>				
ET06E8R2	ETR06E8R2	8.2	C, J, K	50
ET06E9R1	ETR06E9R1	9.1	C, J, K	50
ET06E100	ETR06E100	10	C, J, K, M	50
ET06E110	ETR06E110	11	C, J, K, M	50
ET06E120	ETR06E120	12	C, J, K, M	50
ET06E130	ETR06E130	13	C, G, J, K, M	50
ET06E150	ETR06E150	15	C, G, J, K, M	50
ET06E160	ETR06E160	16	C, G, J, K, M	50
ET06E180	ETR06E180	18	C, G, J, K, M	50
ET06E200	ETR06E200	20	C, G, J, K, M	50
ET06E220	ETR06E220	22	C, G, J, K, M	50
ET06E240	ETR06E240	24	C, G, J, K, M	50
ET06E270	ETR06E270	27	F, G, J, K, M	50
ET06E300	ETR06E300	30	F, G, J, K, M	50
ET06E330	ETR06E330	33	F, G, J, K, M	50
ET06E360	ETR06E360	36	F, G, J, K, M	50
ET06E390	ETR06E390	39	F, G, J, K, M	50
ET06E430	ETR06E430	43	F, G, J, K, M	50
ET06E470	ETR06E470	47	F, G, J, K, M	50
ET06E510	ETR06E510	51	F, G, J, K, M	50
ET06E560	ETR06E560	56	F, G, J, K, M	50
ET06E620	ETR06E620	62	F, G, J, K, M	50
ET06E680	ETR06E680	68	F, G, J, K, M	50
ET06E750	ETR06E750	75	F, G, J, K, M	50
ET06E820	ETR06E820	82	F, G, J, K, M	50
ET06E910	ETR06E910	91	F, G, J, K, M	50

Add letter for tolerance code above lines.

These capacitors include a "burn in", see page 12 High Voltage Stabilization Screening.

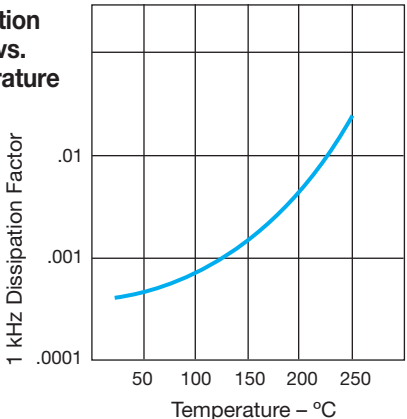
ET Part No.	ETR Part No.	Cap (pF)	Tolerances Available Voltage	DC Working
<b>ET08, ETR08</b>				
ET08E112 *	ETR08E112 **	1100	F, G, J, K, M	50
ET08E122	ETR08E122	1200	F, G, J, K, M	50
ET08E132	ETR08E132	1300	F, G, J, K, M	50
ET08E152	ETR08E152	1500	F, G, J, K, M	50
ET08E162	ETR08E162	1600	F, G, J, K, M	50
ET08E182	ETR08E182	1800	F, G, J, K, M	50
ET08E202	ETR08E202	2000	F, G, J, K, M	50
ET08E222	ETR08E222	2200	F, G, J, K, M	50
ET08E242	ETR08E242	2400	F, G, J, K, M	50

Add letter for tolerance code above lines.

These capacitors include a "burn in", see page 12 High Voltage Stabilization Screening.

\*Other values may be available - contact AVX

**Dissipation Factor vs. Temperature**  
Radial



**% Capacitance Change vs. Temperature**  
Radial

