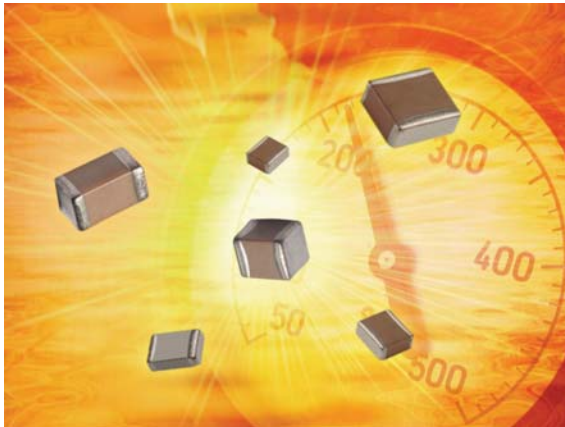


High Temperature MLCC – 250°C Rated



Present military specifications, as well as a majority of commercial applications, require a maximum operating temperature of 125°C. However, the emerging market for high temperature electronics demands capacitors operating reliably at temperatures beyond 125°C. AVX's new high temperature chip capacitor product line, with verified capability of long-term operation up to 250°C is a response to both military and commercial business needs. The new capacitors demonstrate high current handling capabilities, high volumetric efficiency, high insulation resistance and low ESR/ESL. This product has been designed for the most demanding applications, such as "down-hole" oil exploration and aerospace programs.

HOW TO ORDER

AT10	3	T	104	K	A	T	2	A
AVX Style	Voltage Code	Temperature Coefficient	Capacitance Code (2 significant digits + no. of zeros)	Capacitance Tolerance	Test Level	Termination*	Packaging	Special Code
AT06 = 1206 AT10 = 1210 AT12 = 1812 AT14 = 2225	16V = Y 25V = 3	COG = A VHT = T (Class II)	101 = 100pF 102 = 1nF 103 = 10nF 104 = 100nF 105 = 1µF	J = ±5% K = ±10% M = ±20%	A = Standard	1 = Pd/Ag T = 100% Sn Plated (RoHS Compliant)	2 = 7" Reel 4 = 13" Reel 9 = Bulk	A = Standard
*Voltage rating specified at 250°C								

ELECTRICAL SPECIFICATIONS

Temperature Coefficient

COG: A 0±30 ppm/°C, -55°C to +250°C

VHT: T ±15%, -55°C to +150°C

See TCC Plot for +250°C

Capacitance Test (MIL-STD-202, Method 305)

25°C, 1.0 ± 0.2 Vrms (open circuit voltage) @ 1kHz

Dissipation factor 25°C

COG: 0.15% Max at 1.0 ± 0.2 Vrms (open circuit voltage) @ 1kHz

VHT: 2.5% Max at 1.0 ± 0.2 Vrms (open circuit voltage) @ 1kHz

Insulation Resistance 25°C (MIL-STD-202, Method 302)

100GΩ or 1000MΩ.µF (whichever is less)

Insulation Resistance 125°C (MIL-STD-202, Method 302)

10GΩ or 100MΩ.µF (whichever is less)

Insulation Resistance 200°C (MIL-STD-202, Method 302)

1GΩ or 10MΩ.µF (whichever is less)

Insulation Resistance 250°C (MIL-STD-202, Method 302)

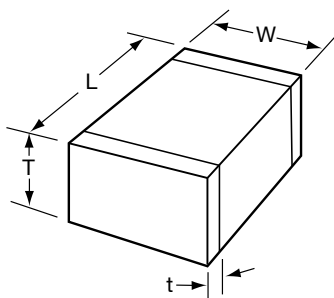
100MΩ or 1MΩ.µF (whichever is less)

Direct Withstanding Voltage 25°C (Flash Test)

250% rated voltage for 5 seconds with 50mA max charging current

(500 Volt units @ 750VDC)

DIMENSIONS

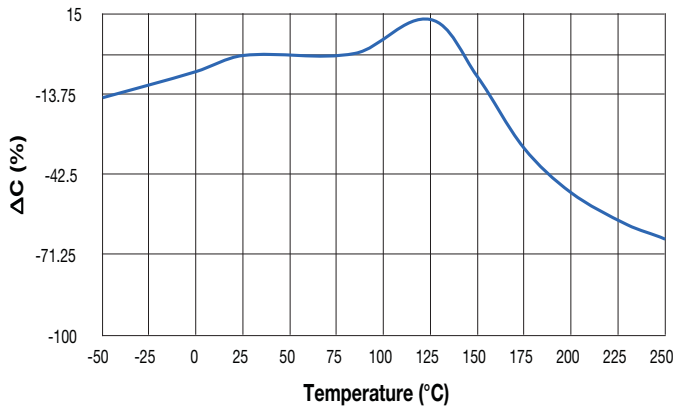


millimeters (inches)

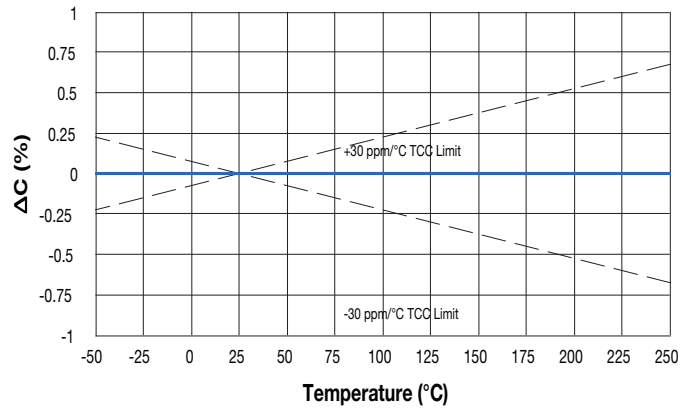
Size	1206	1210	1812	2225
(L) Length	3.20 ± 0.20 (0.126 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)	4.50 ± 0.30 (0.177 ± 0.012)	5.72 ± 0.25 (0.225 ± 0.010)
(W) Width	1.60 ± 0.20 (0.063 ± 0.008)	2.50 ± 0.20 (0.098 ± 0.008)	3.20 ± 0.20 (0.126 ± 0.008)	6.35 ± 0.25 (0.250 ± 0.010)
(T) Thickness Max.	1.52 (0.060)	1.70 (0.067)	2.54 (0.100)	2.54 (0.100)
(t) terminal min. max.	0.25 (0.010) 0.75 (0.030)	0.25 (0.010) 0.75 (0.030)	0.25 (0.010) 1.02 (0.040)	0.25 (0.010) 1.02 (0.040)

PERFORMANCE CHARACTERISTICS

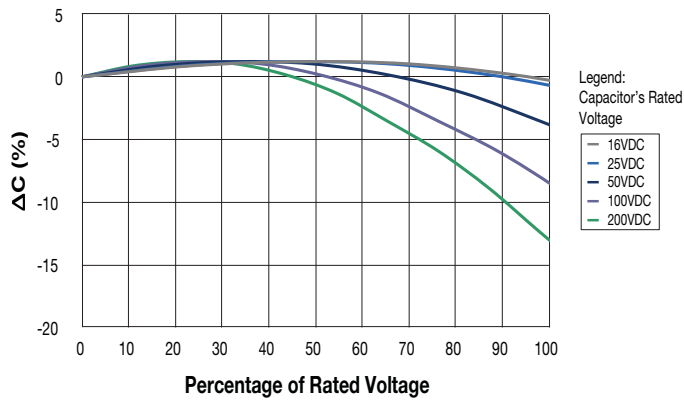
Typical Temperature Coefficient of Capacitance (VHT Dielectric)



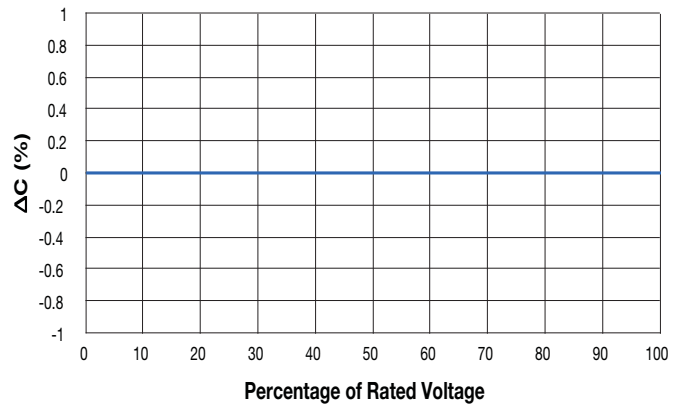
Typical Temperature Coefficient of Capacitance (C0G Dielectric)



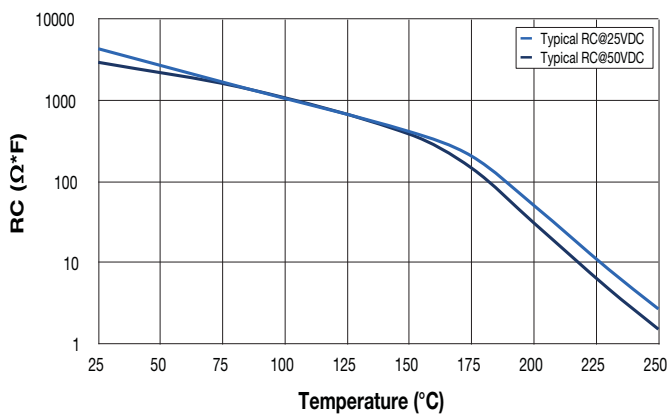
Typical Voltage Coefficient of Capacitance (VHT Dielectric)



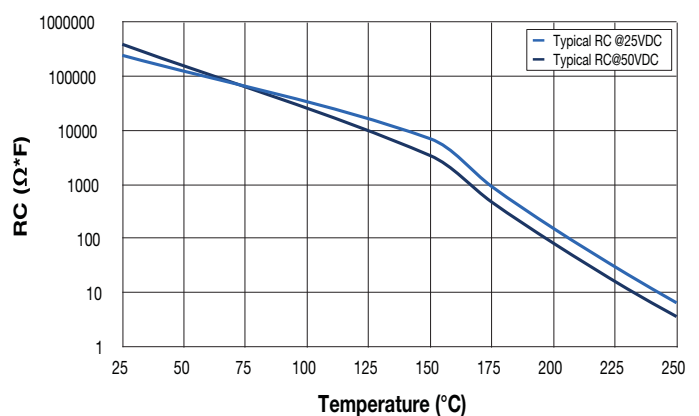
Typical Voltage Coefficient of Capacitance (C0G Dielectric)



RC vs Temperature (VHT Dielectric)

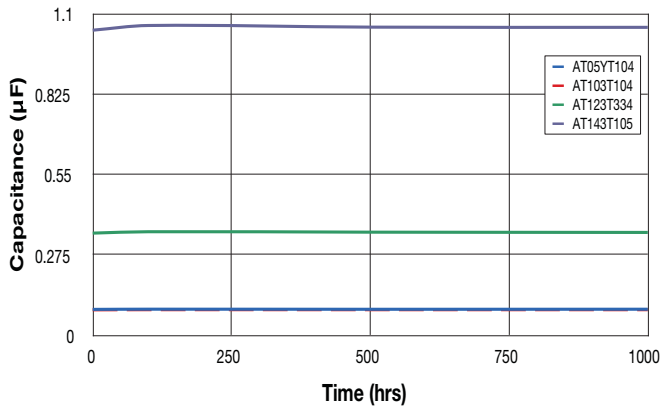


RC vs Temperature (C0G Dielectric)

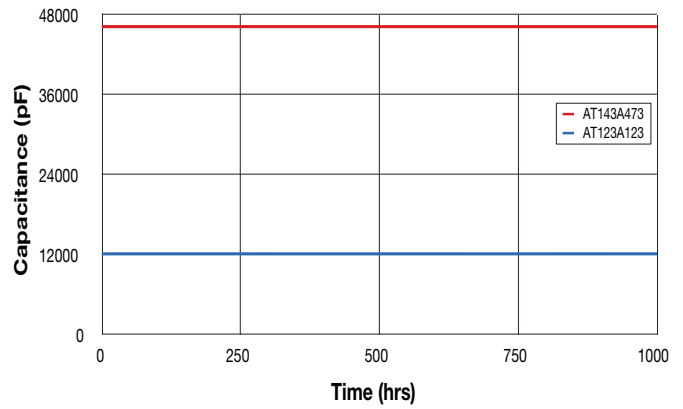


RELIABILITY

250°C Life Test @ 2x Rated Voltage (VHT Dielectric)



250°C Life Test @ 2x Rated Voltage (C0G Dielectric)



VAT - Failure Rate @ 90% Confidence Level (%/1000 hours)		
Temperature (°C)	50% Rated Voltage	100% Rated Voltage
200	0.002	0.017
250	0.026	0.210

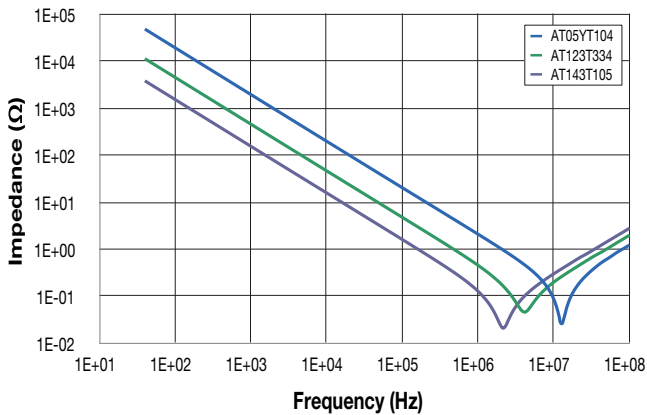
*Typical 1210, 1812, 2225 Failure Rate Analysis based on 250°C testing and voltage ratings specified on the following page.

C0G - Failure Rate @ 90% Confidence Level (%/1000 hours)		
Temperature (°C)	50% Rated Voltage	100% Rated Voltage
200	0.006	0.047
250	0.074	0.590

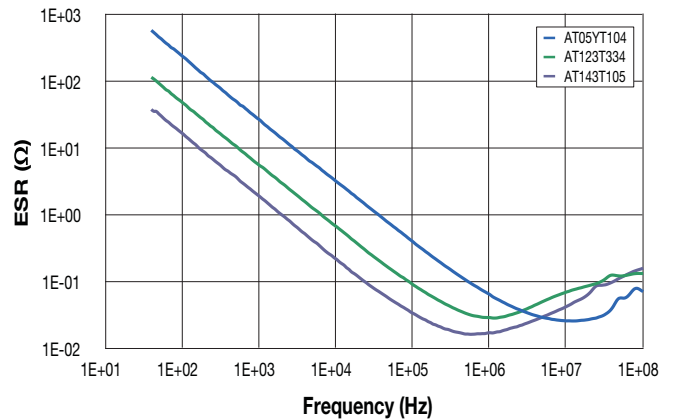
*Typical 1812 and 2225 Failure Rate Analysis based on 250°C testing and voltage ratings specified on the following page.

FREQUENCY RESPONSE

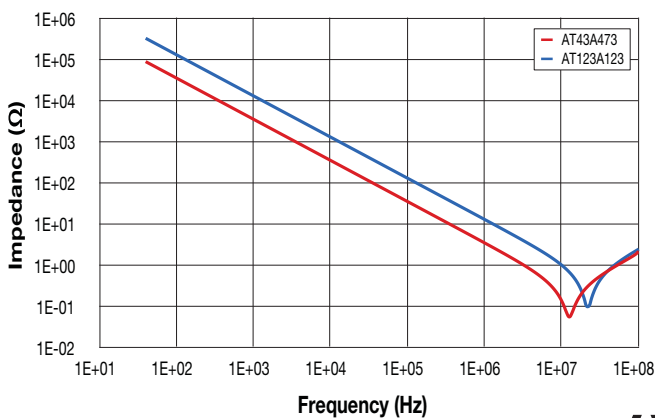
Impedance Frequency Response (VHT Dielectric)



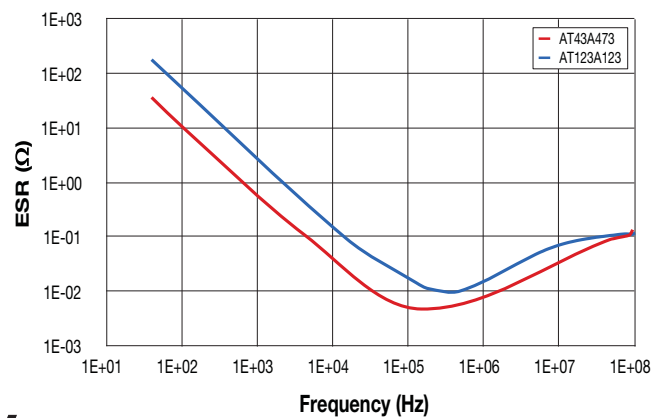
ESR Frequency Response (VHT Dielectric)



Impedance Frequency Response (C0G Dielectric)



ESR Frequency Response (C0G Dielectric)



AT Series



High Temperature MLCC – 250°C Rated

PREFERRED SIZES ARE SHADED

VHT

Case Size		1206		1210		1812		2225		
Soldering		Reflow/Wave		Reflow Only		Reflow Only		Reflow Only		
(L) Length	mm (in.)	3.20 ± 0.20 (0.126 ± 0.008)		3.20 ± 0.20 (0.126 ± 0.008)		4.50 ± 0.30 (0.177 ± 0.012)		2.75 ± 0.25 (0.225 ± 0.010)		
(W) Width	mm (in.)	1.60 ± 0.20 (0.063 ± 0.008)		2.50 ± 0.20 (0.098 ± 0.008)		3.20 ± 0.20 (0.126 ± 0.008)		6.35 ± 0.25 (0.250 ± 0.010)		
(T) Thickness	mm (in.)	1.52 (0.060)		1.70 (0.067)		2.54 (0.100)		2.54 (0.100)		
(t) Terminal	min max	0.25 (0.010) 0.75 (0.030)		0.25 (0.010) 0.75 (0.030)		0.25 (0.010) 1.02 (0.040)		0.25 (0.010) 1.02 (0.040)		
Voltage (V)		16 25		16 25		25		25		
Cap (pF)	1000	102								
	1200	122								
	1500	152								
	1800	182								
	2200	222								
	2700	272								
	3300	332								
	3900	392								
	4700	472								
	5600	562								
	6800	682								
	8200	822								
	Cap (µF)	0.010	103							
		0.012	123							
		0.015	153							
0.018		183								
0.022		223								
0.027		273								
0.033		333								
0.039		393								
0.047		473								
0.056		563								
0.068		683								
0.082		823								
0.100		104								
0.120		124								
0.150		154								
0.180	184									
0.220	224									
0.270	274									
0.330	334									
0.390	394									
0.470	474									
0.560	564									
0.680	684									
0.820	824									
1.000	105									
Voltage (V)		16 25		16 25		25		25		
Case Size		1206		1210		1812		2225		

C0G

Case Size		1812		2225		
Soldering		Reflow Only		Reflow Only		
(L) Length	mm (in.)	4.50 ± 0.30 (0.177 ± 0.012)		2.75 ± 0.25 (0.225 ± 0.010)		
(W) Width	mm (in.)	3.20 ± 0.20 (0.126 ± 0.008)		6.35 ± 0.25 (0.250 ± 0.010)		
(T) Thickness	mm (in.)	2.54 (0.100)		2.54 (0.100)		
(t) Terminal	min max	0.25 (0.010) 1.02 (0.040)		0.25 (0.010) 1.02 (0.040)		
Voltage (V)		25		25		
Cap (pF)	1000	102				
	1200	122				
	1500	152				
	1800	182				
	2200	222				
	2700	272				
	3300	332				
	3900	392				
	4700	472				
	5600	562				
	6800	682				
	8200	822				
	Cap (µF)	0.010	103			
		0.012	123			
		0.015	153			
0.018		183				
0.022		223				
0.027		273				
0.033		333				
0.039		393				
0.047		473				
0.056		563				
0.068		683				
0.082		823				
0.100		104				
Voltage (V)		25		25		
Case Size		1812		2225		

NOTE: Contact factory for non-specified capacitance values

*Voltage rating specified at 250°C. Capacitance values specified at 25°C, derate capacitance value based on TCC & VCC plots on pg 2.