

Glass-K Capacitors

CK31, 32 (QPL to MIL-C-11015/25)



APPLICATIONS

These miniature multilayer ceramic capacitors, style CK31 and CK32, meet or exceed all requirements of MIL-C-11015/25. High volumetric efficiency and reliable performance result from the special GLASS-K dielectric, which is fused into a compact monolithic structure. Available in three different stability characteristics, these capacitors are suitable for both military and commercial applications in miniature circuitry.

PERFORMANCE CHARACTERISTICS

Tolerance: ±20% and ±10% in characteristics "U" and "V", and ±10% and ±5% in characteristic "T".

Stability Characteristics: Available as follows:

- BT-TC: +2, -10%; TVC: +2, -10%
- BU-TC: +2, -15%; TVC: +2, -15%
- BV-TC: +20, -45%; TVC: +20, -50%

Dissipation Factor:

- BT: ≤ 1.0%
- BU: ≤ 1.5%
- BV: ≤ 3.0%

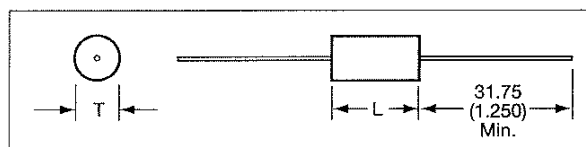
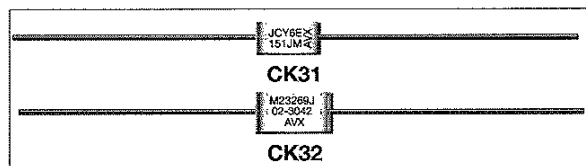
Life: Meets or exceeds requirements of MIL-C-11015. At 200% of rated voltage, 125°C, the maximum capacitance change for each stability characteristic is as follows:

- BT: ±2%
- BU: ±5%
- BV: ±20%

Insulation Resistance: 100,000 megohms or 1,000 megohm-microfarads, whichever is less.

Voltage/Temperature Ratings: Rated voltage is 50 Vdc. The operating temperature range is -55°C to +125°C.

Moisture Resistance: Meets or exceeds requirements of MIL-C-11015 and MIL-STD-202, Method 106. The capacitance change is less than 2% for stability characteristics T and U, and less than 5% for characteristic V.



DIMENSIONS:

Case Size	millimeters (inches)			
	L ±.254 (0.010)	D ±.254 (0.010)	Lead Dia. +0.1(+0.004) -0.03(±0.001)	Weight (Grams) (Typ.)
CK31	6.09 (0.240)	2.29 (0.090)	.41 (0.016)	.2
CK32	6.09 (0.240)	3.30 (0.130)	.41 (0.016)	.3

Note: Leads are gold-plated, solderable and weldable Dumet per MIL-STD-1276, Type D.

QUICK SELECTION GUIDE

Capacitance - pF	Style CK	Stability Char.
270 - 10,000	31	BT
12,000 - 20,000	31 32	BU BT
22,000 - 39,000	31 32	BV BU
47,000 - 51,000	31	BV
56,000 - 100,000	32	BV

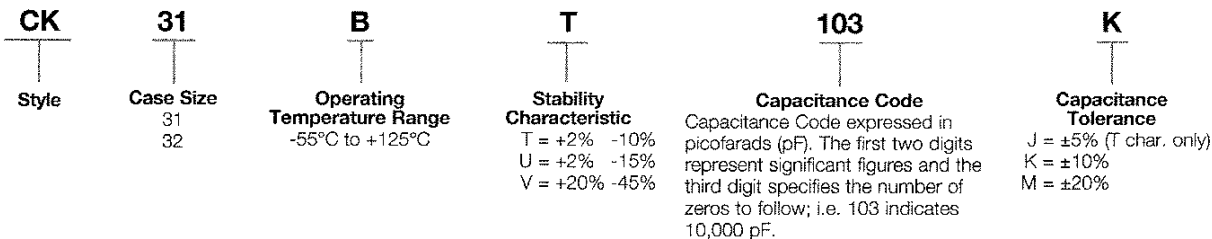


Glass-K Capacitors

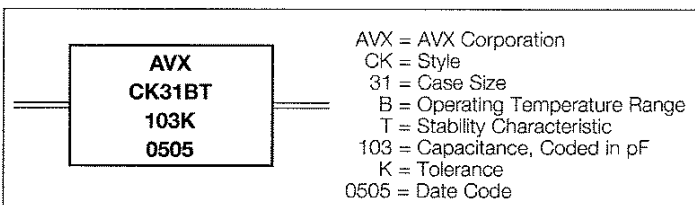
Part Numbers and Ordering Information



HOW TO ORDER



MARKING



RATINGS & PART NUMBER REFERENCE (Standard Values)

Military Type Designation	Capacitance (pF)	Capacitance Tolerance	WVDC
CK31 (BT)			
CK31BT271 *	270	J, K	50
CK31BT331	330	J, K	50
CK31BT391	390	J, K	50
CK31BT471	470	J, K	50
CK31BT561	560	J, K	50
CK31BT681	680	J, K	50
CK31BT821	820	J, K	50
CK31BT102	1,000	J, K	50
CK31BT122	1,200	J, K	50
CK31BT152	1,500	J, K	50
CK31BT182	1,800	J, K	50
CK31BT222	2,200	J, K	50
CK31BT272	2,700	J, K	50
CK31BT332	3,300	J, K	50
CK31BT392	3,900	J, K	50
CK31BT472	4,700	J, K	50
CK31BT562	5,600	J, K	50
CK31BT682	6,800	J, K	50
CK31BT822	8,200	J, K	50
CK31BT103	10,000	J, K	50
CK31 (BU)			
CK31BU123 *	12,000	K, M	50
CK31BU153	15,000	K, M	50
CK31BU183	18,000	K, M	50
CK31BU203	20,000	K, M	50
CK31 (BV)			
CK31BV223 *	22,000	K, M	50
CK31BV273	27,000	K, M	50
CK31BV333	33,000	K, M	50
CK31BV393	39,000	K, M	50
CK31BV473	47,000	K, M	50
CK31BV513	51,000	K, M	50

Add Capacitance Tolerance Letter
J = ±5%, K = ±10% or M = ±20%

Military Type Designation	Capacitance (pF)	Capacitance Tolerance	WVDC
CK32 (BT)			
CK32BT123 *	12,000	J, K	50
CK32BT153	15,000	J, K	50
CK32BT183	18,000	J, K	50
CK32BT203	20,000	J, K	50
CK32 (BU)			
CK32BU223 *	22,000	K, M	50
CK32BU273	27,000	K, M	50
CK32BU333	33,000	K, M	50
CK32BU393	39,000	K, M	50
CK32 (BV)			
CK32BV563 *	56,000	K, M	50
CK32BV623	62,000	K, M	50
CK32BV683	68,000	K, M	50
CK32BV753	75,000	K, M	50
CK32BV823	82,000	K, M	50
CK32BV913	91,000	K, M	50
CK32BV104	100,000	K, M	50

Add Capacitance Tolerance Letter
J = ±5%, K = ±10% or M = ±20%



Datasheet from www.33audio.com

Glass Capacitors

CY06, 07, 08 (QPL to MIL-C-11272/13/14/15)



APPLICATIONS

These precision miniature glass capacitors, AVX style CY0, meet or exceed all requirements of MIL-C-11272. Constructed of a fused monolithic capacitive element in a rectangular case with gold-plated radial Dumet leads, this series permits high packaging efficiency for printed circuit applications where extremely stable, low-loss capacitors are required.

PERFORMANCE CHARACTERISTICS

Tolerance: Available tolerances for each value of capacitance are shown in the ordering information table. For codes, refer to the Part Numbers paragraph.

Temperature Coefficient: $+140 \pm 25$ ppm/ $^{\circ}\text{C}$ at 100kHz. TC will track and retrace to within ± 5 ppm. Capacitance drift is less than 0.1% or 0.1pF, whichever is greater.

Voltage Coefficient: Zero.

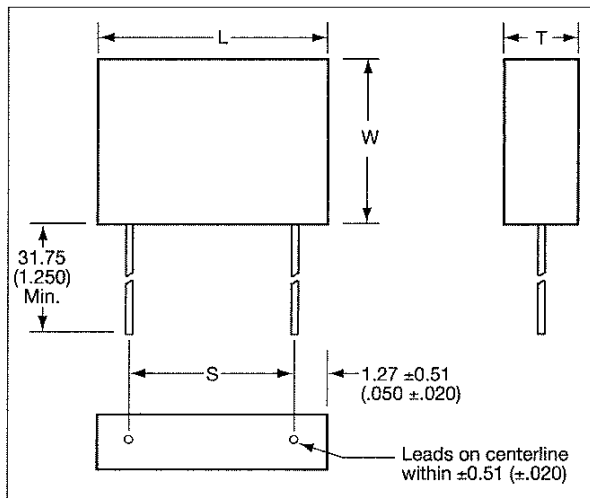
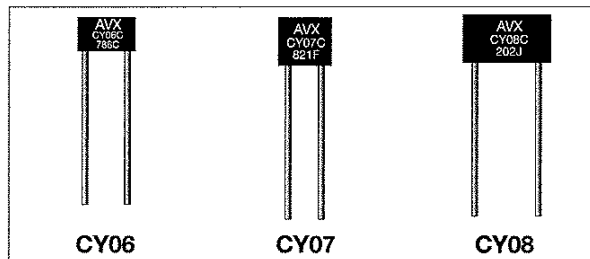
Losses: Extremely low, and remain relatively low at elevated temperatures. Dissipation factor at 1kHz and 25°C is less than 0.001 for values greater than 100pF and less than 0.002 for values of 100pF and below.

Life: After 2,000 hours at 125°C with 150% of rated voltage applied, capacitance change is less than 0.5% or 0.5 pF; dissipation factor is less than 0.0025 for values above 100 pF and less than 0.0045 for values of 100 pF and below.

Insulation Resistance: Greater than 100,000 megohms at 25°C ; greater than 10,000 megohms at 125°C .

Voltage/Temperature Rating: 300 WVDC over the temperature range of -55°C to $+125^{\circ}\text{C}$ with no derating required.

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)
CY06	7.62 (0.300)	5.08 (0.200)	2.92 (0.115)	5.08 (0.200)	.3 - .4
CY07	7.62 (0.300)	7.62 (0.300)	2.92 (0.115)	5.08 (0.200)	.4 - .5
CY08	12.70 (0.500)	7.62 (0.300)	2.92 (0.115)	10.16 (0.400)	.7 - .8

Note: All leads are 24 AWG, $0.51 \pm .05$ (0.020 ± 0.002) diameter. Leads are solderable and weldable gold-plated Dumet, per MIL-STD-1276, Type D.

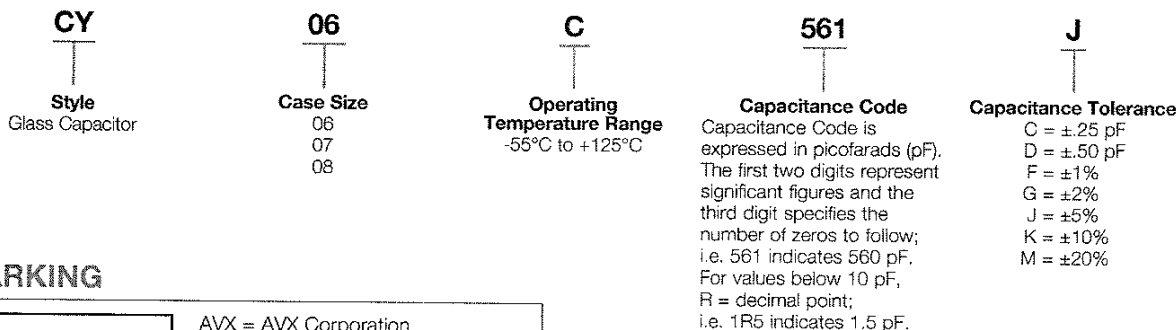


Glass Capacitors

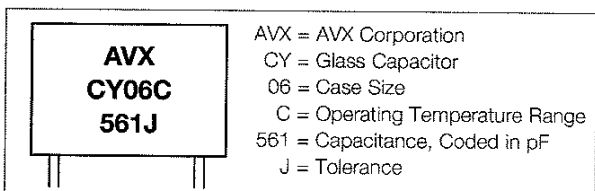
Part Numbers and Ordering Information



HOW TO ORDER



MARKING



RATINGS & PART NUMBER REFERENCE (Standard Values)

Military Type Designation	Capacitance (pF)	Tolerances Available	DC Working Voltage
CY06			
CY06C1R0_	1.0	C, D	300
CY06C1R5_	1.5	C, D	300
CY06C2R2_	2.2	C, D	300
CY06C2R7_	2.7	C, D	300
CY06C3R0_	3.0	C, D	300
CY06C3R3_	3.3	C, D	300
CY06C3R6_	3.6	C, D	300
CY06C3R9_	3.9	C, D	300
CY06C4R3_	4.3	C, D	300
CY06C4R7_	4.7	C, K	300
CY06C5R1_	5.1	C, J, K	300
CY06C5R6_	5.6	C, J, K	300
CY06C6R2_	6.2	C, J, K	300
CY06C6R8_	6.8	C, J, K	300
CY06C7R5_	7.5	C, J, K	300
CY06C8R2_	8.2	C, J, K	300
CY06C9R1_	9.1	C, J, K	300
CY06C100_	10	C, J, K, M	300
CY06C110_	11	C, J, K, M	300
CY06C120_	12	C, J, K, M	300
CY06C130_	13	C, G, J, K, M	300
CY06C150_	15	C, G, J, K, M	300
CY06C160_	16	C, G, J, K, M	300
CY06C180_	18	C, G, J, K, M	300
CY06C200_	20	C, G, J, K, M	300
CY06C220_	22	C, G, J, K, M	300
CY06C240_	24	C, G, J, K, M	300
CY06C270_	27	F, G, J, K, M	300
CY06C300_	30	F, G, J, K, M	300
CY06C330_	33	F, G, J, K, M	300
CY06C360_	36	F, G, J, K, M	300
CY06C390_	39	F, G, J, K, M	300
CY06C430_	43	F, G, J, K, M	300
CY06C470_	47	F, G, J, K, M	300
CY06C510_	51	F, G, J, K, M	300
CY06C560_	56	F, G, J, K, M	300
CY06C620_	62	F, G, J, K, M	300
CY06C680_	68	F, G, J, K, M	300
CY06C750_	75	F, G, J, K, M	300
CY06C820_	82	F, G, J, K, M	300

—Add letter for tolerance code above lines.

Military Type Designation	Capacitance (pF)	Tolerances Available	DC Working Voltage
CY06 (cont)			
CY06C910_	91	F, G, J, K, M	300
CY06C101_	100	F, G, J, K, M	300
CY06C111_	110	F, G, J, K, M	300
CY06C121_	120	F, G, J, K, M	300
CY06C131_	130	F, G, J, K, M	300
CY06C151_	150	F, G, J, K, M	300
CY06C161_	160	F, G, J, K, M	300
CY06C181_	180	F, G, J, K, M	300
CY06C201_	200	F, G, J, K, M	300
CY06C221_	220	F, G, J, K, M	300
CY06C241_	240	F, G, J, K, M	300
CY06C271_	270	F, G, J, K, M	300
CY06C301_	300	F, G, J, K, M	300
CY06C331_	330	F, G, J, K, M	300
CY06C361_	360	F, G, J, K, M	300
CY06C391_	390	F, G, J, K, M	300
CY06C431_	430	F, G, J, K, M	300
CY06C471_	470	F, G, J, K, M	300
CY06C511_	510	F, G, J, K, M	300
CY06C561_	560	F, G, J, K, M	300
CY07			
CY07C621_	620	F, G, J, K, M	300
CY07C681_	680	F, G, J, K, M	300
CY07C751_	750	F, G, J, K, M	300
CY07C821_	820	F, G, J, K, M	300
CY07C911_	910	F, G, J, K, M	300
CY07C102_	1,000	F, G, J, K, M	300
CY08			
CY08C112_	1,100	F, G, J, K, M	300
CY08C122_	1,200	F, G, J, K, M	300
CY08C132_	1,300	F, G, J, K, M	300
CY08C152_	1,500	F, G, J, K, M	300
CY08C162_	1,600	F, G, J, K, M	300
CY08C182_	1,800	F, G, J, K, M	300
CY08C202_	2,000	F, G, J, K, M	300
CY08C222_	2,200	F, G, J, K, M	300
CY08C242_	2,400	F, G, J, K, M	300

—Add letter for tolerance code above lines.



Glass Capacitors

CYR51, 52, 53 (Established Reliability)

M23269/10 (QPL to MIL-C-23269)



FAILURE RATE LEVEL M

APPLICATIONS

These precision glass dielectric capacitors are QPL to Established Reliability specification MIL-C-23269. Fused monolithic construction provides excellent electrical performance, environmental immunity, stability and retraceability. These capacitors have radial leads.

PERFORMANCE CHARACTERISTICS

Temperature Coefficient: +140 ±25 ppm/°C from -55°C to +125°C. TC of all units will track and retrace to within ±5 ppm.

Life: At rated conditions (100% rated voltage, 125°C), capacitance change is less than:

- ±0.5% after 2,000 hours
- ±2.0% after 30,000 hours

At accelerated conditions (150% rated voltage, 125°C), capacitance change is less than:

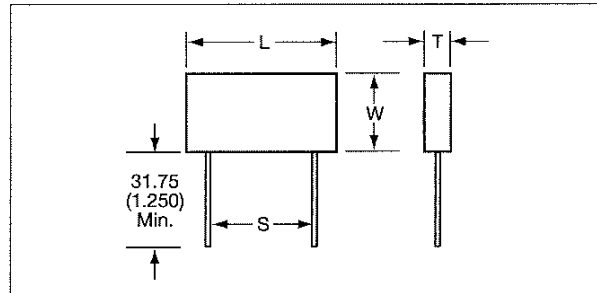
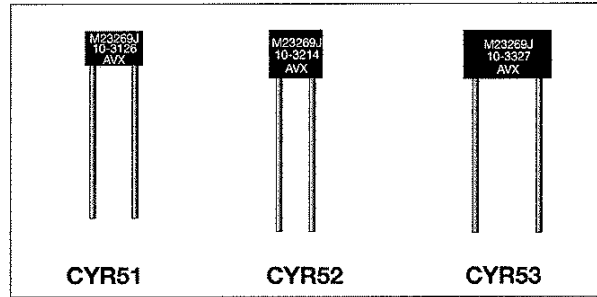
- ±0.5% after 2,000 hours
- ±2.0% after 6,000 hours

Insulation Resistance: A minimum of 100,000 megohms at 25°C and 10,000 megohms at 125°C.

Voltage/Temperature Rating: Voltage ratings are shown in the part number tables. The operating temperature range is -55°C to +125°C.

Voltage Coefficient: Zero

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)	Lead Dia. ±0.051 (±0.002)
CYR51	7.62 (0.300)	5.08 (0.200)	2.92 (0.115)	5.08 (0.200)	.51 (0.020)
CYR52	7.62 (0.300)	7.62 (0.300)	2.92 (0.115)	5.08 (0.200)	.51 (0.020)
CYR53	12.70 (0.500)	7.62 (0.300)	2.92 (0.115)	10.16 (0.400)	.51 (0.020)

Note: Leads are solderable and weldable gold-plated Dumet, per MIL-STD-1276, Type D.



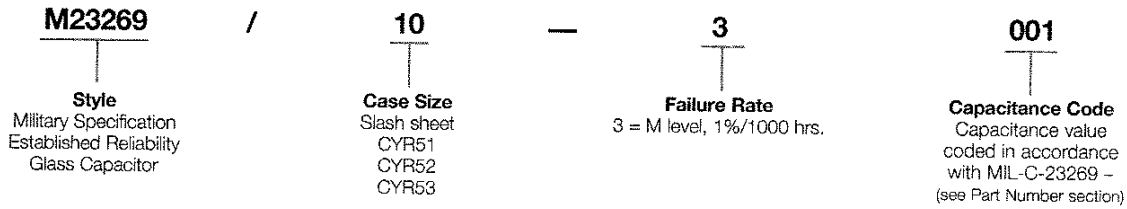
Datasheet from www.33audio.com

Glass Capacitors

Part Numbers and Ordering Information



HOW TO ORDER



MARKING

CYR51, 52, 53 M23269 = Military specification established reliability glass capacitor
 J = JAN Trademark
 10 = Slash sheet for case sizes – CYR51, CYR52, CYR53
 3 = Failure rate (M level)
 001 = Capacitance value coded in accordance with MIL-C-23269
 AVX = AVX Corporation
 05 = Year
 B = Lot Code

M23269J
10-3001
AVX 05 B

CROSS REFERENCE

MIL-C-23269 Style	MIL-C-11272 Style
CYR10	CY10
CYR15	CY15
CYR20	CY20
CYR30	CY30
CYR51	CY06
CYR52	CY07
CYR53	CY08

RATINGS & PART NUMBER REFERENCE

Cap. Value (pF)	Part Number Capacitance Tolerance		
	CYR51 M23269/10-		
300 Volts	±.25pF	±2%	±5%
1	3001	—	—
1.5	3002	—	—
2.2	3003	—	—
2.7	3004	—	—
3.0	3005	—	—
3.3	3006	—	—
3.6	3007	—	—
3.9	3008	—	—
4.3	3009	—	—
4.7	3010	—	—
5.1	3011	—	3012
5.6	3013	—	3014
6.2	3015	—	3016
6.8	3017	—	3018
7.5	3019	—	3020
8.2	3021	—	3022
9.1	3023	—	3024
10	3025	—	3026
11	3027	—	3028
12	3029	—	3030
13	3031	3032	3033
15	3034	3035	3036
16	3037	3038	3039
18	3040	3041	3042
20	3043	3044	3045
22	3046	3047	3048
24	3049	3050	3051

*Add first digit to indicate failure rate.

Cap. Value (pF)	Part Number Capacitance Tolerance		
	CYR51 M23269/10- (cont'd)		
300 Volts	±1%	±2%	±5%
27	3052	3053	3054
30	3055	3056	3057
33	3058	3059	3060
36	3061	3062	3063
39	3064	3065	3066
43	3067	3068	3069
47	3070	3071	3072
51	3073	3074	3075
56	3076	3077	3078
62	3079	3080	3081
68	3082	3083	3084
75	3085	3086	3087
82	3088	3089	3090
91	3091	3092	3093
100	3094	3095	3096
110	3097	3098	3099
120	3100	3101	3102
130	3103	3104	3105
150	3106	3107	3108
160	3109	3110	3111
180	3112	3113	3114
200	3115	3116	3117
220	3118	3119	3120
240	3121	3122	3123
270	3124	3125	3126
300	3127	3128	3129
330	3130	3131	3132
360	3133	3134	3135
390	3136	3137	3138
430	3139	3140	3141
470	3142	3143	3144
510	3145	3146	3147
560	3148	3149	3150

*Add first digit to indicate failure rate.

Cap. Value (pF)	Part Number Capacitance Tolerance		
	CYR52 M23269/10-		
300 Volts	±1%	±2%	±5%
620	3201	3202	3203
680	3204	3205	3206
750	3207	3208	3209
820	3210	3211	3212
910	3213	3214	3215
1,000	3216	3217	3218
CYR53 M23269/10-			
Cap. Value (pF)	±1%	±2%	±5%
1,100	3301	3302	3303
1,200	3304	3305	3306
1,300	3307	3308	3309
1,500	3310	3311	3312
1,600	3313	3314	3315
1,800	3316	3317	3318
2,000	3319	3320	3321
2,200	3322	3323	3324
2,400	3325	3326	3327

*Add first digit to indicate failure rate.



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.

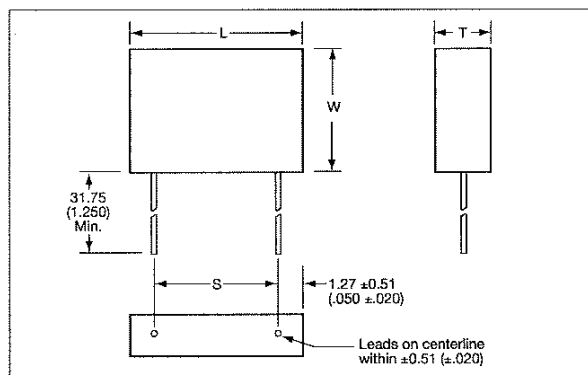
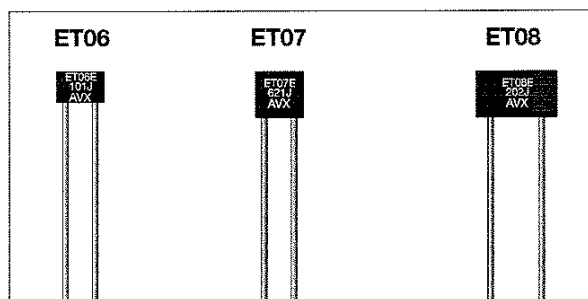
Insulation Resistance: 100,000 megohms or greater at 25°C; 100 megohms or greater at 200°C. More than 10 megohms after 1000 hour life-test.

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

ET 06E
561J
9725
AVX

AVX = AVX Corporation
 ET = Glass Capacitor
 ETR = Glass Capacitor with "burn in"
 06 = Case Size
 E = Operating Temperature Range
 561 = Capacitance, Coded in pF
 J = Tolerance
 0525 = Date Code

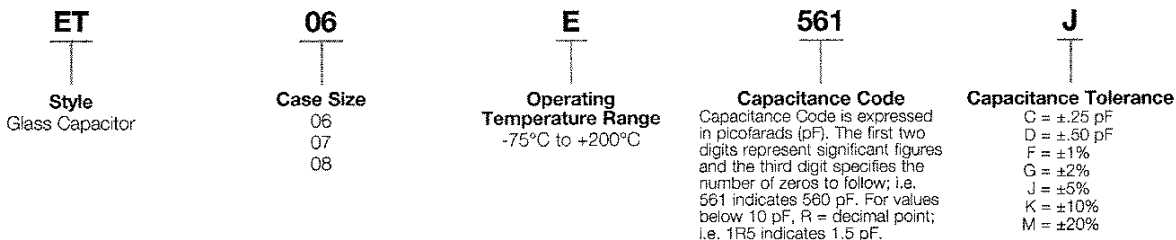


Glass/ET Series Caps

Part Numbers and Ordering Information



HOW TO ORDER



RATINGS & PART NUMBER REFERENCE (Standard Values)

ET Part No.	ETR Part No.	Cap (pF)	Tolerances Available Voltage	DC Working
ET06, ETR06				
ET06E1R0	ETR06E1R0	1.0	C, D	50
ET06E1R5	ETR06E1R5	1.5	C, D	50
ET06E2R2	ETR06E2R2	2.2	C, D	50
ET06E2R7	ETR06E2R7	2.7	C, D	50
ET06E3R0	ETR06E3R0	3.0	C, D	50
ET06E3R3	ETR06E3R3	3.3	C, D	50
ET06E3R6	ETR06E3R6	3.6	C, D	50
ET06E3R9	ETR06E3R9	3.9	C, D	50
ET06E4R3	ETR06E4R3	4.3	C, D	50
ET06E4R7	ETR06E4R7	4.7	C, K	50
ET06E5R1	ETR06E5R1	5.1	C, J, K	50
ET06E5R6	ETR06E5R6	5.6	C, J, K	50
ET06E6R2	ETR06E6R2	6.2	C, J, K	50
ET06E6R8	ETR06E6R8	6.8	C, J, K	50
ET06E7R5	ETR06E7R5	7.5	C, J, K	50
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

ET Part No.	ETR Part No.	Cap (pF)	Tolerances Available Voltage	DC Working
ET06, ETR06 (cont'd)				
ET06E910	ETR06E910	91	F, G, J, K, M	50
ET06E101	ETR06E101	100	F, G, J, K, M	50
ET06E111	ETR06E111	110	F, G, J, K, M	50
ET06E121	ETR06E121	120	F, G, J, K, M	50
ET06E131	ETR06E131	130	F, G, J, K, M	50
ET06E151	ETR06E151	150	F, G, J, K, M	50
ET06E161	ETR06E161	160	F, G, J, K, M	50
ET06E181	ETR06E181	180	F, G, J, K, M	50
ET06E201	ETR06E201	200	F, G, J, K, M	50
ET06E221	ETR06E221	220	F, G, J, K, M	50
ET06E241	ETR06E241	240	F, G, J, K, M	50
ET06E271	ETR06E271	270	F, G, J, K, M	50
ET06E301	ETR06E301	300	F, G, J, K, M	50
ET06E331	ETR06E331	330	F, G, J, K, M	50
ET06E361	ETR06E361	360	F, G, J, K, M	50
ET06E391	ETR06E391	390	F, G, J, K, M	50
ET06E431	ETR06E431	430	F, G, J, K, M	50
ET06E471	ETR06E471	470	F, G, J, K, M	50
ET06E511	ETR06E511	510	F, G, J, K, M	50
ET06E561	ETR06E561	560	F, G, J, K, M	50
ET07, ETR07				
ET07E621	ETR07E621	620	F, G, J, K, M	50
ET07E681	ETR07E681	680	F, G, J, K, M	50
ET07E751	ETR07E751	750	F, G, J, K, M	50
ET07E821	ETR07E821	820	F, G, J, K, M	50
ET07E911	ETR07E911	910	F, G, J, K, M	50
ET07E102	ETR07E102	1000	F, G, J, K, M	50
ET08, ETR08				
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

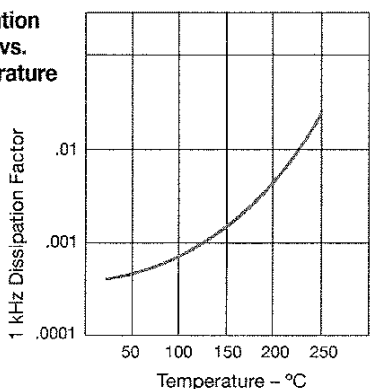
Add letter for tolerance code above lines.

These capacitors include a "burn in", see page 22 High Voltage Stabilization Screening.

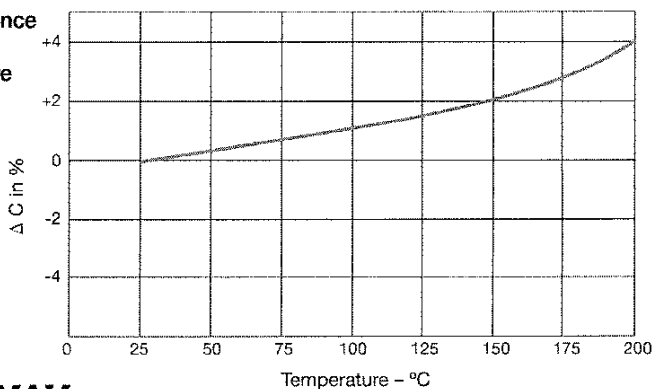
Add letter for tolerance code above lines.

These capacitors include a "burn in", see page 22 High Voltage Stabilization Screening.

Dissipation Factor vs. Temperature
Radial



% Capacitance Change vs. Temperature
Radial



Glass-K Capacitors



Introduction

INTRODUCTION

The Glass-K capacitor is a miniature stable device that exhibits a high capacitance-to-volume ratio. It offers the size advantages of ceramic capacitors and the consistent performance associated with glass dielectrics made possible by development of a proprietary dielectric material.

Glass-K capacitors' physical size and value range meet the requirements of both military and commercial applications. The larger capacitance values are ideally suited for point-of-use filtering in military combat hardened computers, while the smaller capacitors are typically utilized in low loss, high speed circuitry. Applications such as jet engine monitoring circuitry, military instrumentation, and elevated temperature burn-in ovens are typical Glass-K applications.

RELIABILITY

AVX Glass-K capacitors are qualified to MIL-C-11015/25 and MIL-C-39014/21, failure rate level M.

The reasons for the miniature size, high electrical performance, and high reliability of Glass-K capacitors are as follows:

- Superior Dielectric – The Glass-K capacitors' dielectric is formed by ceraming a specially prepared glass.
- Proven Construction Techniques – AVX utilizes a stable, closely controlled process to construct Glass-K capacitors. Additionally, tight incoming material QC requirements add to the consistent performance of the product.
- Quality Assurance – Each lot of Glass-K capacitors is required to meet rigorous visual inspection criteria. Production inspection includes 100% testing for capacitance, dissipation factor, insulation resistance, and dielectric strength.

General performance guidelines are as follows:

Construction – The following materials are utilized in Glass-K capacitors: Glass-K dielectric, gold electrodes, silver termination, lead attach solder, lead wire, and silicone encapsulant. Tight requirements are placed upon all incoming materials.

Performance – The following Glass-K capacitors are described in this catalog:

Product style CK31, CK32	Qualified to MIL-C-11015/25, standard military specification and used in industrial applications.
Product style CKR31, CKR32	Qualified to MIL-C-39014/21, established reliability specification and also used in high reliability commercial applications.
Product style ET31, ET32	Qualified to AVX elevated temperature internal specification, used primarily for high temperature circuitry up to +200°C.

Capacitance Change vs. Temperature – The change in capacitance over temperatures from -55°C to +125°C is as follows:

BT Dielectric:	+2%, -10%
BU Dielectric:	+2%, -15%
BV Dielectric:	+20%, -45%

See Graphs 1 and 2 for further details.

Capacitance Change vs. Voltage – The change in capacitance over operating temperatures from -55°C to +125°C with rated voltage is as follows:

BT Dielectric:	+2%, -10%
BU Dielectric:	+2%, -15%
BV Dielectric:	+20%, -50%

See Graphs 3 and 4 for further details.

Losses vs. Temperature – The maximum dissipation factor for CK and CKR series at 25°C:

BT Dielectric	≤ 1.0%
BU Dielectric	≤ 1.5%
BV Dielectric	≤ 3.0%

See Graph 5 for further details.

Insulation Resistance – CKR series – at 25°C, 100,000 megohms or 1000 megohm-microfarads. At 125°C, 10,000 megohms or 100 megohm-microfarads.

CK series – at 25°C, 100,000 megohms or 1000 megohm-microfarads, whichever is less.

ET Series – 200°C Insulation Resistance is as follows:

K250 Dielectric:	1 × 10 ⁹ Ω
K380 Dielectric:	1 × 10 ⁹ Ω
K888 Dielectric:	1 × 10 ⁹ Ω

Resonant Frequency vs. Capacitance – Resonant Frequency vs. Capacitance as shown in Figure 6; Impedance vs. Frequency as shown in Figure 7.

Temperature Range – The operating temperature range for all Glass-K CK, CKR capacitors is -55°C to +125°C. The Elevated Temperature (ET) series operating temperature range is -75°C to +200°C with no voltage derating required.

Life – CKR Life: Meets or exceeds requirements of MIL-C-39014. At 200% of rated voltage, 125°C, at 4000 hours, the capacitance change for each stability characteristic is as follows:

BT:	±2%
BU:	±10%
BV:	±20%

CK Life: Meets or exceeds requirements of MIL-C-11015. At 200% of rated voltage, 125°C, the maximum capacitance change for each stability characteristic is as follows:

BT:	±2%
BU:	±5%
BV:	±20%

ET Life: Meets or exceeds requirements of internal AVX ET specification for 250 hour life performance at 200°C.

Packaging –

- Bulk – 25 pieces strip
- 125 pieces compartment
- Taped – N/A

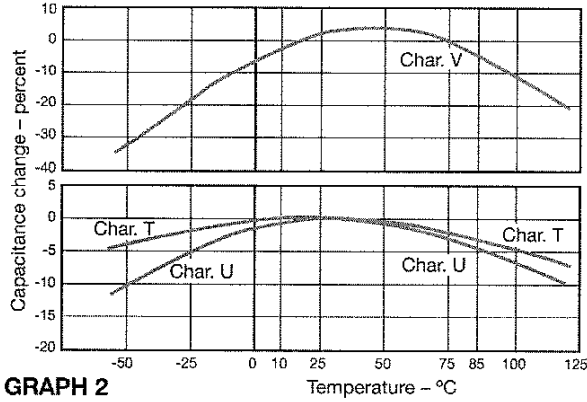


Glass-K Capacitors

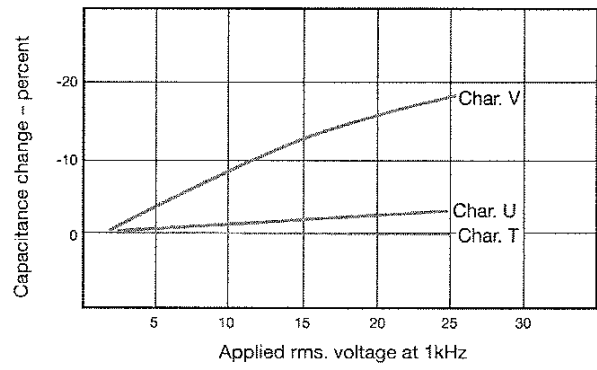
Performance Curves



GRAPH 1
% Capacitance Change vs. Temperature

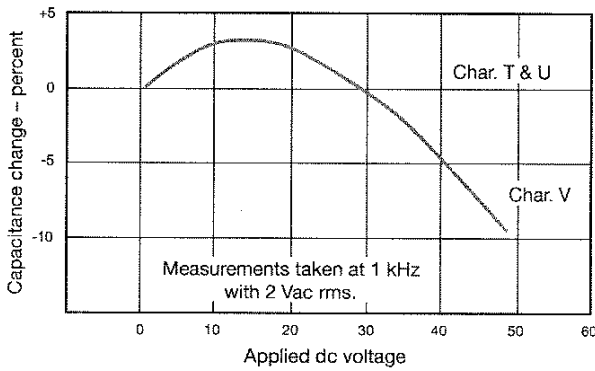


GRAPH 3
% Capacitance Change vs. ac Voltage

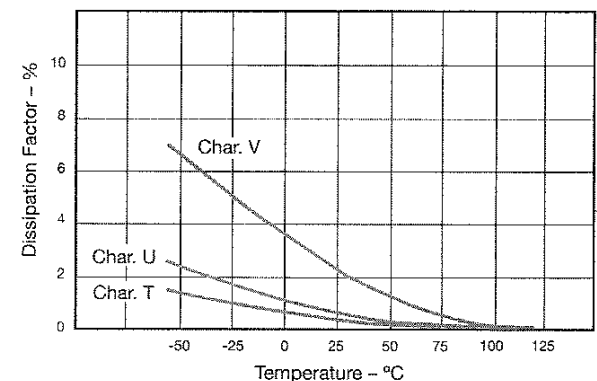


GRAPH 2
Temperature - °C

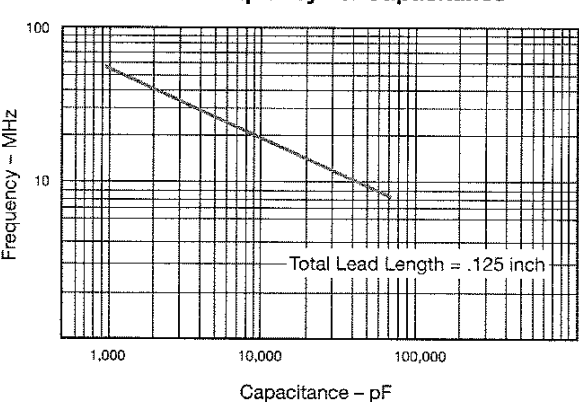
GRAPH 4
% Capacitance Change vs. dc Voltage



GRAPH 5
Dissipation Factor vs. Temperature



GRAPH 6
Resonant Frequency vs. Capacitance



GRAPH 7
Impedance vs. Frequency

