

Military Glass Capacitors



Glass/Glass-K Capacitors

GLASS CAPACITOR MIL-PRF-23269 ESTABLISHED RELIABILITY

M AND S FAILURE RATE LEVEL

100V, 300V, 500V

Style CYR10, CYR15, CYR20, CYR30
CYR51, CYR52, CYR53

Slash Sheets

/01, 3001-3126, 7001-7126
/02, 3001-3057, 7001-7057
/03, 3001-3072, 7001-7057
/04, 3001-3036, 7001-7021
/10, 3001-3150, 3201-3218, 3301-3327

MIL-PRF-11272

300V, 500V

Style CY10, CY15, CY20, CY30, CY06, CY07, CY08

Slash Sheets /01, /02, /03, /04, /13, /14, /15

GLASS-K CAPACITOR MIL-PRF-11015

50V

Style CK31, CK32

Slash Sheet /25

MIL-PRF-39014

50V

Style CKR31, CKR32

Slash Sheet /21

Glass dielectric capacitors have been the capacitors of choice for extreme long-term stability and reliability for almost fifty years. They are available in glass or glass composition, and are covered by MIL-PRF-11272 and MIL-PRF-23269 or MIL-PRF-11015 and MIL-PRF-39014, respectively.

- **CY Series Glass Dielectric capacitors**, available in both axial and radial configurations, offer the industry's highest performance and maximum stability for aerospace, military and satellite applications which require "S" level reliability, radiation hardness and operating temperatures up to +200°C. Capacitance values range from 0.5 pF to 10,000 pF with tolerances to ±0.5%. Rated voltage is from 50 to 2,000 VDC, with a temperature coefficient of 140±25 ppm/°C. Operating temperature range is -75°C to +200°C.

- **CK Series Glass-K capacitors**, available in axial configurations, offer low noise and low dielectric absorption rate (<0.1%), for digital systems and sensor applications where low loss and stability are required. The Glass-K technology features "M" level reliability, radiation resistance and operating temperatures up to +200°C. Capacitance values range from 270 pF to 100,000 pF (0.1 µF) with tolerances to ±5%. Rated voltage is from 25 to 50 VDC, with three temperature characteristics: +2, -10%; +2, -15% and +20, -45%. Operating temperature range is -75°C to +200°C.

CAPACITORS – MILITARY SPECIFICATION CROSS-REFERENCE

Military Specification	Military Part No.	AVX Part No.	Military Specification	Military Part No.	AVX Part No.
MIL-PRF-11015 (Ceramic Capacitors)	CK31	CK31	MIL-PRF-39014 (Established Reliability) (Ceramic Capacitors)	CKR31	CKR31
	CK32	CK32		CKR32	CKR32
MIL-PRF-11272 (Glass Capacitors)	CY06	CY06	MIL-PRF-23269 (Established Reliability)	CYR10	CYR10
	CY07	CY07		CYR15	CYR15
	CY08	CY08		CYR20	CYR20
	CY10	CY10		CYR30	CYR30
	CY15	CY15		CYR51	CYR51
	CY20	CY20		CYR52	CYR52
	CY30	CY30		CYR53	CYR53

Military Glass Capacitors

MIL-PRF-11272/01, /02, /03, /04
CY10, 15, 20, 30



APPLICATIONS

These extremely stable glass capacitors, AVX style CY, meet or exceed all requirements of MIL-PRF-11272. With glass dielectric, fused monolithic construction, and true glass-to-metal seals at the leads, they have very low losses and are virtually immune to severe environmental stresses.

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 ±25 ppm/°C at 100 kHz. TC will track and retrace to within ±5 ppm. Capacitance drift is less than 0.1% or 0.1 pF, whichever is greater.

Voltage Coefficient: Zero.

Losses: Extremely low, and remain relatively low at elevated temperatures. Dissipation factor is not more than 0.001 at 1.0 kHz and 25°C.

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, whichever is greater.

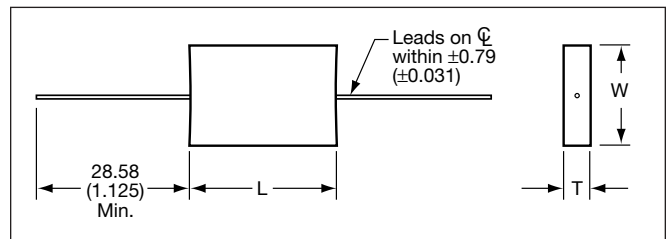
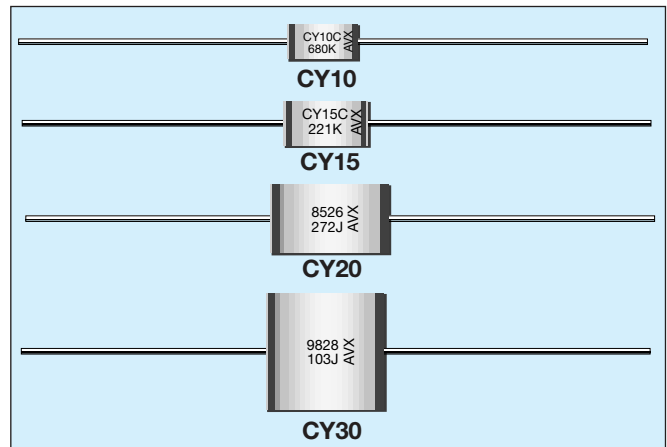
Insulation Resistance: Greater than 100,000 megohms at 25°C; greater than 10,000 megohms at 125°C.

Voltage/Temperature Rating: Voltage ratings are shown in the ordering information table. The operating temperature range is -55°C to +125°C with no derating required.

Moisture Resistance: Meets or exceeds all requirements of MIL-PRF-11272 and MIL-STD-202, Method 106.

Radiation Resistance: The unique materials and construction techniques involved with glass capacitors make them ideal for use in radiation environments. After a total dose of nearly 10⁸ rads (H₂O) glass capacitors exhibit only a minor change in capacitance (.5%) and an 8% change in dissipation factor. Furthermore, glass capacitors can operate in fast neutron flux environments of 10¹⁵ N cm⁻²sec⁻¹ and experience little or no damage in component parameters.

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



DIMENSIONS:

millimeters (inches)

Case Size	L	W	T	Lead Dia. +0.1 (+0.004) -0.03 (-0.001)	Weight (Grams)
CY10	8.74 ± 1.19 (0.344 ± 0.047)	4.37 ± .79 (0.172 ± 0.031)	1.98 ± .79 (0.078 ± 0.031)	.51 (0.020)	25 – 50
CY15	11.91 ± 1.19 (0.469 ± 0.047)	6.76 ± .79 (0.266 ± 0.031)	2.77 ± 1.19 (0.109 ± 0.047)	.51 (0.020)	75 – 1.25
CY20	18.64 ± 1.57 (0.734 ± 0.062)	10.72 ± 1.19 (0.422 ± 0.047)	3.58 ± 1.19 (0.141 ± 0.047)	.63 (0.025)	2.50 – 4.00
CY30	19.46 ± 1.57 (0.766 ± 0.062)	19.05 ± 1.98 (0.750 ± 0.078)	3.58 ± 1.19 (0.141 ± 0.047)	.63 (0.025)	5.00 – 7.00

Note: Standard leads are solder-coated Dumet.

Military Glass Capacitors

MIL-PRF-11272/01, /02, /03, /04
CY10, 15, 20, 30



HOW TO ORDER

Military Type Designation: Styles CY10, CY15, CY20, CY30

Dash Number Option: MIL-PRF-11272/01, 02, 03, 04 (Add Appropriate Dash Number)

CY	10	C	101	J
Style Glass Capacitor	Case Size 10 15 20 30	Operating Temperature Range -55°C to +125°C	Capacitance Code 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. 101 indicates 100 pF. For values below 10 pF, R = decimal point; i.e. 1R5 indicates 1.5 pF.	Capacitance Tolerance C = ±.25 pF D = ±.50 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%

MARKING

CY10C
101J

AVX

AVX = AVX Corporation
 CY = Glass Capacitor
 10 = Case Size
 C = Operating Temperature Range
 101 = Capacitance, Coded in pF
 J = Tolerance

MILITARY PART NUMBER IDENTIFICATION (Standard Values)

Military Type Designation	Cap. (pF)	Cap. Tol.	WVDC
CY10			
CY10C0R5_	0.5	C	500
CY10C1R0_	1.0	C, D	500
CY10C1R5_	1.5	C, D	500
CY10C2R2_	2.2	C, D	500
CY10C2R7_	2.7	C, D	500
CY10C3R0_	3.0	C, D	500
CY10C3R3_	3.3	C, D	500
CY10C3R6_	3.6	C, D	500
CY10C3R9_	3.9	C, D	500
CY10C4R3_	4.3	C, D	500
CY10C4R7_	4.7	C, K	500
CY10C5R1_	5.1	C, J, K	500
CY10C5R6_	5.6	C, J, K	500
CY10C6R2_	6.2	C, J, K	500
CY10C6R8_	6.8	C, J, K	500
CY10C7R5_	7.5	C, J, K	500
CY10C8R2_	8.2	C, J, K	500
CY10C9R1_	9.1	C, J, K	500
CY10C100_	10	C, J, K, M	500
CY10C110_	11	C, J, K, M	500
CY10C120_	12	C, J, K, M	500
CY10C130_	13	C, G, J, K, M	500
CY10C150_	15	C, G, J, K, M	500
CY10C160_	16	C, G, J, K, M	500
CY10C180_	18	C, G, J, K, M	500
CY10C200_	20	C, G, J, K, M	500
CY10C220_	22	C, G, J, K, M	500
CY10C240_	24	C, G, J, K, M	500
CY10C270_	27	F, G, J, K, M	500
CY10C300_	30	F, G, J, K, M	500
CY10C330_	33	F, G, J, K, M	500
CY10C360_	36	F, G, J, K, M	500
CY10C390_	39	F, G, J, K, M	500
CY10C430_	43	F, G, J, K, M	500
CY10C470_	47	F, G, J, K, M	500
CY10C510_	51	F, G, J, K, M	500
CY10C560_	56	F, G, J, K, M	500
CY10C620_	62	F, G, J, K, M	500
CY10C680_	68	F, G, J, K, M	500
CY10C750_	75	F, G, J, K, M	500
CY10C820_	82	F, G, J, K, M	500
CY10C910_	91	F, G, J, K, M	500
CY10C101_	100	F, G, J, K, M	500
CY10C111_	110	F, G, J, K, M	500
CY10C121_	120	F, G, J, K, M	500
CY10C131_	130	F, G, J, K, M	500
CY10C151_	150	F, G, J, K, M	500
CY10C161_	160	F, G, J, K, M	500
CY10C181_	180	F, G, J, K, M	500
CY10C201_	200	F, G, J, K, M	500
CY10C221_	220	F, G, J, K, M	300
CY10C241_	240	F, G, J, K, M	300
CY10C271_	270	F, G, J, K, M	300
CY10C301_	300	F, G, J, K, M	300

—Add letter for tolerance code above lines.

Military Type Designation	Cap. (pF)	Cap. Tol.	WVDC
CY15			
CY15C221_	220	F, G, J, K, M	500
CY15C241_	240	F, G, J, K, M	500
CY15C271_	270	F, G, J, K, M	500
CY15C301_	300	F, G, J, K, M	500
CY15C331_	330	F, G, J, K, M	500
CY15C361_	360	F, G, J, K, M	500
CY15C391_	390	F, G, J, K, M	500
CY15C431_	430	F, G, J, K, M	500
CY15C471_	470	F, G, J, K, M	500
CY15C511_	510	F, G, J, K, M	500
CY15C561_	560	F, G, J, K, M	300
CY15C621_	620	F, G, J, K, M	300
CY15C681_	680	F, G, J, K, M	300
CY15C751_	750	F, G, J, K, M	300
CY15C821_	820	F, G, J, K, M	300
CY15C911_	910	F, G, J, K, M	300
CY15C102_	1,000	F, G, J, K, M	300
CY15C112_	1,100	F, G, J, K, M	300
CY15C122_	1,200	F, G, J, K, M	300
CY20			
CY20C561_	560	F, G, J, K, M	500
CY20C621_	620	F, G, J, K, M	500
CY20C681_	680	F, G, J, K, M	500
CY20C751_	750	F, G, J, K, M	500
CY20C821_	820	F, G, J, K, M	500
CY20C911_	910	F, G, J, K, M	500
CY20C102_	1,000	F, G, J, K, M	500
CY20C112_	1,100	F, G, J, K, M	500
CY20C122_	1,200	F, G, J, K, M	500
CY20C132_	1,300	F, G, J, K, M	500
CY20C152_	1,500	F, G, J, K, M	500
CY20C162_	1,600	F, G, J, K, M	500
CY20C182_	1,800	F, G, J, K, M	500
CY20C202_	2,000	F, G, J, K, M	500
CY20C222_	2,200	F, G, J, K, M	500
CY20C242_	2,400	F, G, J, K, M	500
CY20C272_	2,700	F, G, J, K, M	500
CY20C302_	3,000	F, G, J, K, M	500
CY20C332_	3,300	F, G, J, K, M	500
CY20C362_	3,600	F, G, J, K, M	300
CY20C392_	3,900	F, G, J, K, M	300
CY20C432_	4,300	F, G, J, K, M	300
CY20C472_	4,700	F, G, J, K, M	300
CY20C512_	5,100	F, G, J, K, M	300

—Add letter for tolerance code above lines.

Military Type Designation	Cap. (pF)	Cap. Tol.	WVDC
CY30			
CY30C362_	3,600	F, G, J, K, M	500
CY30C392_	3,900	F, G, J, K, M	500
CY30C432_	4,300	F, G, J, K, M	500
CY30C472_	4,700	F, G, J, K, M	500
CY30C512_	5,100	F, G, J, K, M	500
CY30C562_	5,600	F, G, J, K, M	500
CY30C622_	6,200	F, G, J, K, M	500
CY30C682_	6,800	F, G, J, K, M	300
CY30C752_	7,500	F, G, J, K, M	300
CY30C822_	8,200	F, G, J, K, M	300
CY30C912_	9,100	F, G, J, K, M	300
CY30C103_	10,000	F, G, J, K, M	300

—Add letter for tolerance code above lines.