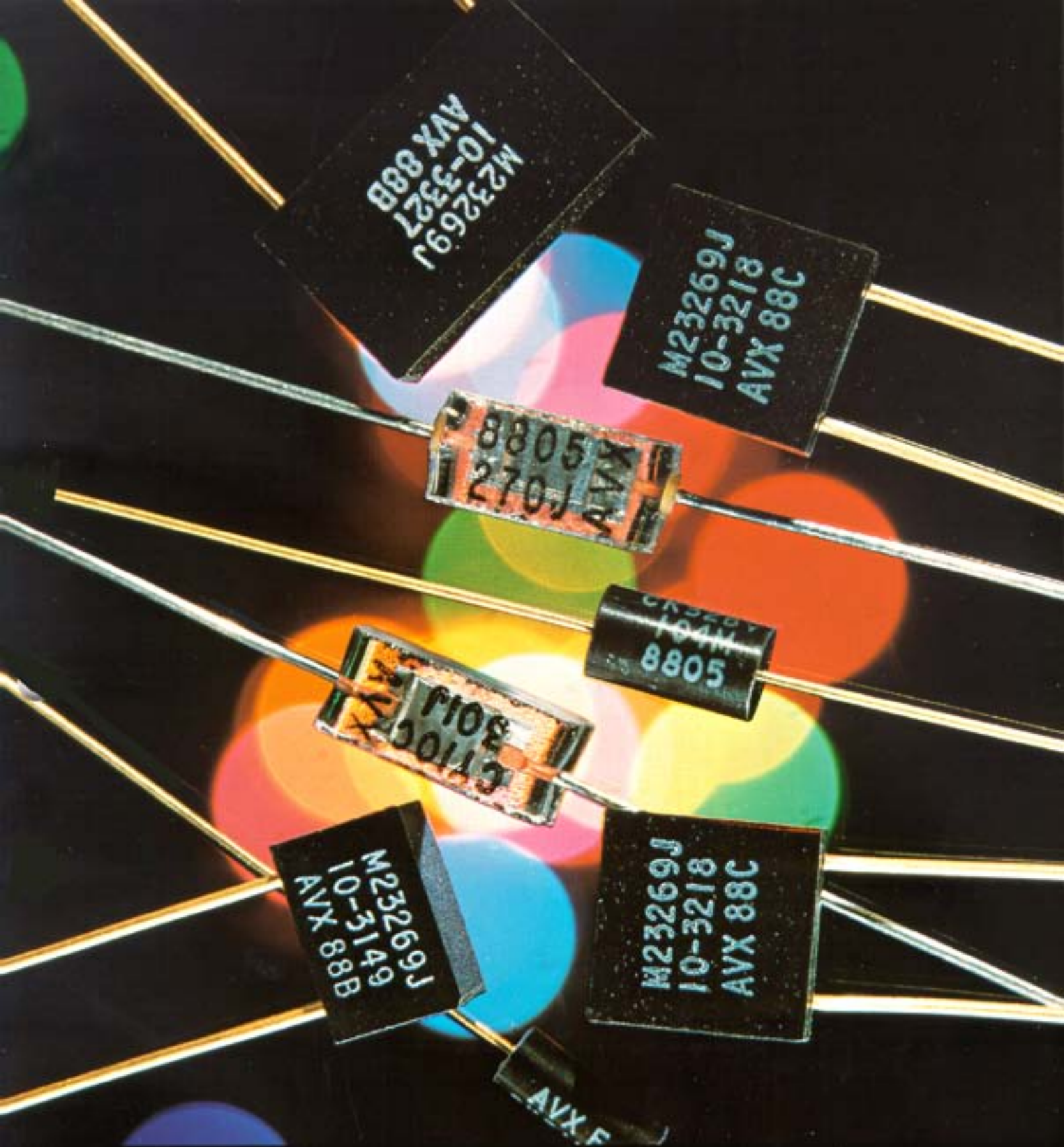




AVX

Glass Dielectric Capacitors

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 $\pm 0.5\%$. 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 μ F) with tolerances to $\pm 5\%$. 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-11272/13, /14, /15
CY06, 07, 08



APPLICATIONS

These precision miniature glass capacitors, AVX style CY0, meet or exceed all requirements of MIL-PRF-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/°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.

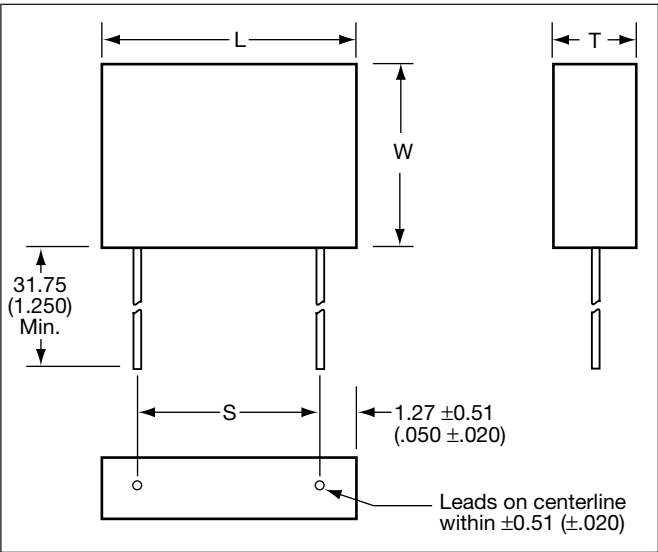
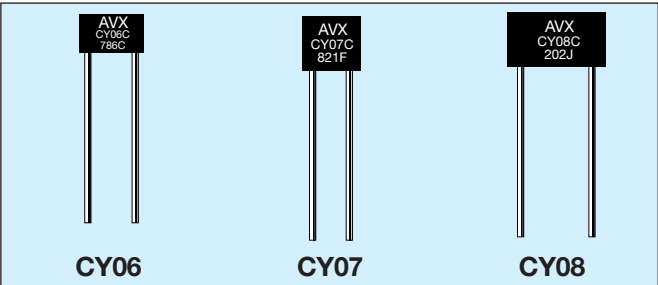
Losses: Extremely low, and remain relatively low at elevated temperatures. Dissipation factor at 1 kHz and 25°C is less than 0.001 for values greater than 100 pF and less than 0.002 for values of 100 pF and below.

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°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.

Military Glass Capacitors

MIL-PRF-11272/13, /14, /15

CY06, 07, 08



HOW TO ORDER

Military Type Designation: Styles CY06, CY07, CY08

Dash Number Option: MIL-PRF-11272/13, 14, 15 (Add Appropriate Dash Number)

CY
Style
Glass Capacitor

06
Case Size
06
07
08

C
Operating
Temperature Range
-55°C to +125°C

561
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. 561 indicates 560 pF.
For values below 10 pF,
R = decimal point;
i.e. 1R5 indicates 1.5 pF.

J
Capacitance Tolerance
C = ±.25 pF
D = ±.50 pF
F = ±1%
G = ±2%
J = ±5%
K = ±10%
M = ±20%

MARKING

AVX
CY06C
561J

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

MILITARY PART NUMBER IDENTIFICATION (Standard Values)

Military Type Designation	Capacitance (pF)	Capacitance Tolerance	WVDC
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)	Capacitance Tolerance	WVDC
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.

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 $\pm$ 25 ppm/ $^{\circ}$ C at 100 kHz. TC will track and retrace to within $\pm$ 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 $^{\circ}$ C.

Life: After 2,000 hours at 125 $^{\circ}$ C with 150% of rated voltage applied, capacitance change is less than 0.5% or 0.5 pF, whichever is greater.

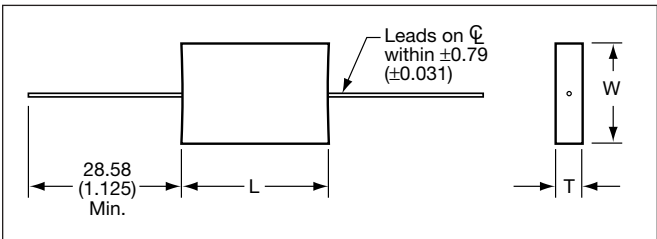
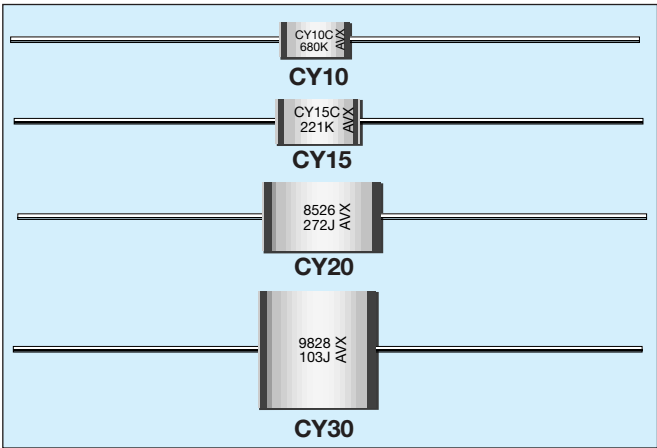
Insulation Resistance: Greater than 100,000 megohms at 25 $^{\circ}$ C; greater than 10,000 megohms at 125 $^{\circ}$ C.

Voltage/Temperature Rating: Voltage ratings are shown in the ordering information table. The operating temperature range is -55 $^{\circ}$ C to +125 $^{\circ}$ 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 $\pm$ 1.19 (0.344 $\pm$ 0.047)	4.37 $\pm$.79 (0.172 $\pm$ 0.031)	1.98 $\pm$.79 (0.078 $\pm$ 0.031)	.51 (0.020)	25 – 50
CY15	11.91 $\pm$ 1.19 (0.469 $\pm$ 0.047)	6.76 $\pm$.79 (0.266 $\pm$ 0.031)	2.77 $\pm$ 1.19 (0.109 $\pm$ 0.047)	.51 (0.020)	75 – 1.25
CY20	18.64 $\pm$ 1.57 (0.734 $\pm$ 0.062)	10.72 $\pm$ 1.19 (0.422 $\pm$ 0.047)	3.58 $\pm$ 1.19 (0.141 $\pm$ 0.047)	.63 (0.025)	2.50 – 4.00
CY30	19.46 $\pm$ 1.57 (0.766 $\pm$ 0.062)	19.05 $\pm$ 1.98 (0.750 $\pm$ 0.078)	3.58 $\pm$ 1.19 (0.141 $\pm$ 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
Style
Glass Capacitor

10
Case Size
10
15
20
30

C
Operating
Temperature Range
-55°C to +125°C

101
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.

J
Capacitance Tolerance
C = ±.25 pF
D = ±.50 pF
F = ±1%
G = ±2%
J = ±5%
K = ±10%
M = ±20%

MARKING

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

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

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.

—Add letter for tolerance code above lines.

Military Glass Capacitors

MIL-PRF-23269/10

CYR51, 52, 53



APPLICATIONS

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

PERFORMANCE CHARACTERISTICS

Temperature Coefficient: $+140 \pm 25$ 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:

- $\pm 0.5\%$ after 2,000 hours
- $\pm 2.0\%$ after 30,000 hours

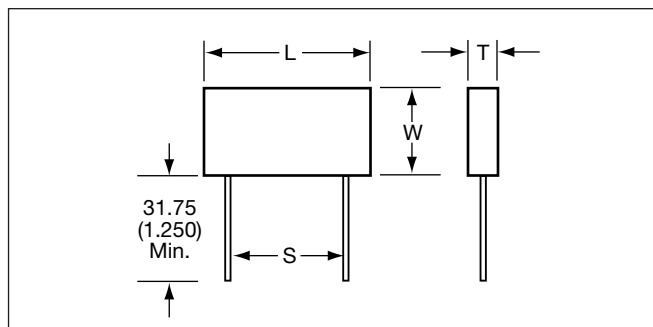
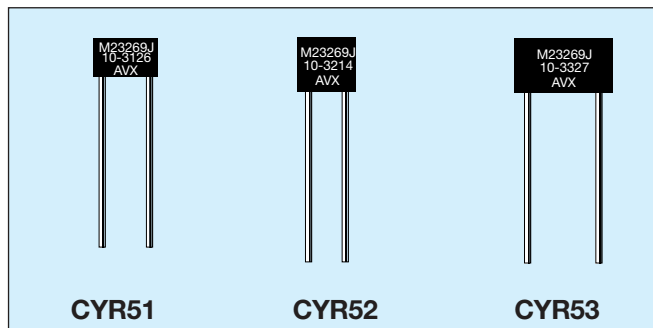
At accelerated conditions (150% rated voltage, 125°C), capacitance change is less than:

- $\pm 0.5\%$ after 2,000 hours
- $\pm 2.0\%$ 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.

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.

Military Glass Capacitors

MIL-PRF-23269/10

CYR51, 52, 53



HOW TO ORDER

Military Type Designation: Styles CYR51, CYR52, CYR53

Dash Number Option: MIL-PRF-23269/10 (Add Appropriate Dash Number)

M23269

Style

Military Specification
Established Reliability
Glass Capacitor

10

Case Size

Slash sheet
CYR51
CYR52
CYR53

3

Failure Rate

3 = M level, 1%/1000 hrs.

001

Capacitance Code

Capacitance value
coded in accordance
with MIL-PRF-23269 –
(see Part Number section)

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-PRF-23269

AVX = AVX Corporation

03 = Year

B = Lot Code

M23269J

10-3001

AVX 03 B

CROSS REFERENCE

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

MILITARY PART NUMBER IDENTIFICATION

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-			
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-			
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.

Military Glass Capacitors

MIL-PRF-23269/01, /02, /03, /04

CYR10, 15, 20, 30



APPLICATIONS

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

PERFORMANCE CHARACTERISTICS

Temperature Coefficient: $+140 \pm 25$ 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:

- $\pm 0.5\%$ after 2,000 hours
- $\pm 2.0\%$ after 30,000 hours

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

- $\pm 0.5\%$ after 2,000 hours
- $\pm 2.0\%$ after 6,000 hours

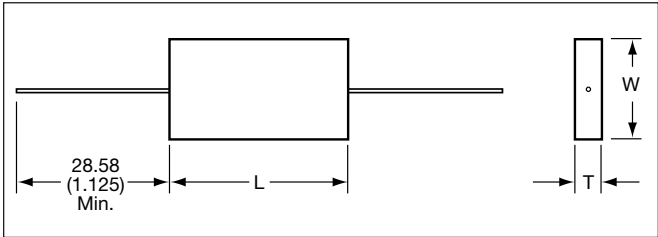
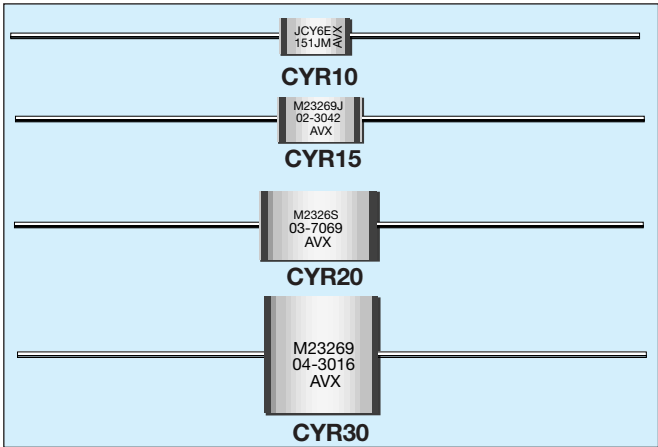
Insulation Resistance: A minimum of 100,000 megohms at 25°C and 10,000 megohms at 125°C.

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

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 10^8 rads (H_2O) 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 10^{15} N cm⁻²sec⁻¹ and experience little or no damage in component parameters.

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	W	T	Lead Dia. +0.1(+0.004) -0.03(±0.001)
CYR10	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)
CYR15	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)
CYR20	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)
CYR30	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)

Note: Standard leads are solder-coated Dumet.

Military Glass Capacitors

MIL-PRF-23269/01, /02, /03, /04

CYR10, 15, 20, 30



HOW TO ORDER

Military Type Designation: Styles CYR10, CYR15, CYR20, CYR30

Dash Number Option: MIL-PRF-23269/01, 02, 03, 04 (Add Appropriate Dash Number)

M23269

Style

Military Specification
Established Reliability
Glass Capacitor

01

Case Size

01 = CYR10
02 = CYR15
03 = CYR20
04 = CYR30

3

Failure Rate

3 = M level 1%/1000 hrs.
7 = S level .001%/1000 hrs.
(100 volt rating only)

001

Capacitance Code

Capacitance value
coded in accordance
with MIL-PRF-23269 –
(see Part Number section)

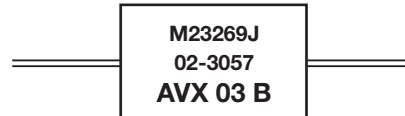
MARKING

CYR10



J = JAN Trademark
C = Capacitor
Y = Glass Dielectric
3 = Last digit of year
A = 4 week lot code
OR5 = Capacitance code –
OR5 = 0.5pF
J = Capacitance tolerance –
J = $\pm 5\%$, G = $\pm 2\%$, F = $\pm 1\%$
M = Failure level
AVX = AVX Corporation

CYR15-30



M23269 = Military specification
established reliability
glass capacitor
J = JAN Trademark
02 = Case size (CYR15)
3 = Failure rate (M level)
057 = Dash Number –
(capacitance in pF and
capacitance tolerance)
AVX = AVX Corporation
03 = Year
B = Lot Code

MILITARY PART NUMBER IDENTIFICATION

Cap. Value (pF)	Part Number* Capacitance Tolerance		
CYR10 M23269/01-			
500 Volts**	±.25pF	±.5pF	±5%
.5	* 001	—	—
1.0	002	—	—
1.5	003	—	—
2.2	004	* 005	—
2.7	006	—	—
3.0	007	008	—
3.3	009	—	—
3.6	010	011	—
3.9	012	—	—
4.3	013	014	—
4.7	015	—	—
5.1	016	—	—
5.6	017	—	* 018
6.2	019	—	020
6.8	021	—	022
7.5	023	—	024
8.2	025	—	026
9.1	027	—	028
10	029	—	030
11	031	—	032
12	033	—	034
	±1%	±2%	±5%
13	—	* 035	* 036
15	—	037	038
16	—	039	040
18	—	041	042
20	—	043	044
22	—	045	046
24	—	047	048
27	* 049	050	051
30	052	053	054
33	055	056	057
36	058	059	060
39	061	062	063
43	064	065	066
47	067	068	069
51	070	071	072
56	073	074	075
62	076	077	078

* Add first digit to indicate failure rate.

** S LEVEL = 100V rating for all values.

Cap. Value (pF)	Part Number* Capacitance Tolerance		
CYR10 M23269/01- (cont'd.)			
500 Volts**	±1%	±2%	±5%
68	* 079	* 080	* 081
75	082	083	084
82	085	086	087
91	088	089	090
100	091	092	093
110	094	095	096
120	097	098	099
130	100	101	102
150	103	104	105
160	106	107	108
180	109	110	111
200	112	113	114
300 Volts**	±1%	±2%	±5%
220	115	116	117
240	118	119	120
270	121	122	123
300	124	125	126
CYR15 M23269/02-			
500 Volts**	±1%	±2%	±5%
220	* 001	* 002	* 003
240	004	005	006
270	007	008	009
300	010	011	012
330	013	014	015
360	016	017	018
390	019	020	021
430	022	023	024
470	025	026	027
510	028	029	030
300 Volts**	±1%	±2%	±5%
560	031	032	033
620	034	035	036
680	037	038	039
750	040	041	042
820	043	044	045
910	046	047	048
1,000	049	050	051
1,100	052	053	054
1,200	055	056	057

* Add first digit to indicate failure rate.

** S LEVEL = 100V rating for all values.

Cap. Value (pF)	Part Number* Capacitance Tolerance		
CYR20 M23269/03-			
500 Volts**	±1%	±2%	±5%
560	* 001	* 002	* 003
620	004	005	006
680	007	008	009
750	010	011	012
820	013	014	015
910	016	017	018
1,000	019	020	021
1,100	022	023	024
1,200	025	026	027
1,300	028	029	030
1,500	031	032	033
1,600	034	035	036
1,800	037	038	039
2,000	040	041	042
2,200	043	044	045
2,400	046	047	048
2,700	049	050	051
3,000	052	053	054
3,300	055	056	057
300 Volts**	±1%	±2%	±5%
3,600	3058	3059	3060
3,900	3061	3062	3063
4,300	3064	3065	3066
4,700	3067	3068	3069
5,100	3070	3071	3072
CYR30 M23269/04-			
500 Volts**	±1%	±2%	±5%
3,600	* 001	* 002	* 003
3,900	004	005	006
4,300	007	008	009
4,700	010	011	012
5,100	013	014	015
5,600	016	017	018
6,200	019	020	021
300 Volts**	±1%	±2%	±5%
6,800	3022	3023	3024
7,500	3025	3026	3027
8,200	3028	3029	3030
9,100	3031	3032	3033
10,000	3034	3035	3036

* Add first digit to indicate failure rate.

** S LEVEL = 100V rating for all values.

Military Glass-K Capacitors

MIL-PRF-11015/25

CK31, 32



APPLICATIONS

These miniature multilayer ceramic capacitors, style CK31 and CK32, meet or exceed all requirements of MIL-PRF-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: $\pm 20\%$ and $\pm 10\%$ in characteristics "U" and "V", and $\pm 10\%$ and $\pm 5\%$ 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-PRF-11015. At 200% of rated voltage, 125°C, the maximum capacitance change for each stability characteristic is as follows:

BT: $\pm 2\%$

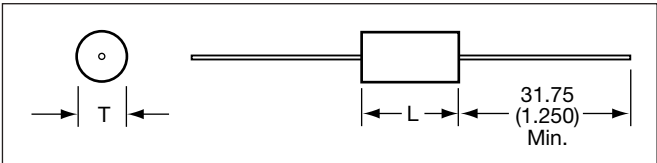
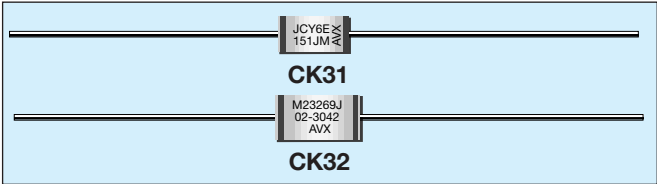
BU: $\pm 5\%$

BV: $\pm 20\%$

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

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

Moisture Resistance: Meets or exceeds requirements of MIL-PRF-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:

millimeters (inches)

Case Size	L $\pm .254$ (0.010)	D $\pm .254$ (0.010)	Lead Dia. $+0.1(+0.004)$ $-0.03(\pm 0.001)$	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

Military Glass-K Capacitors



MIL-PRF-11015/25

CK31, 32

HOW TO ORDER

Military Type Designation: Styles CK31, CK32

CK

Style

31

Case Size

31
32

B

Operating
Temperature Range
-55°C to +125°C

T

Stability
Characteristic
T = +2% -10%
U = +2% -15%
V = +20% -45%

103

Capacitance Code

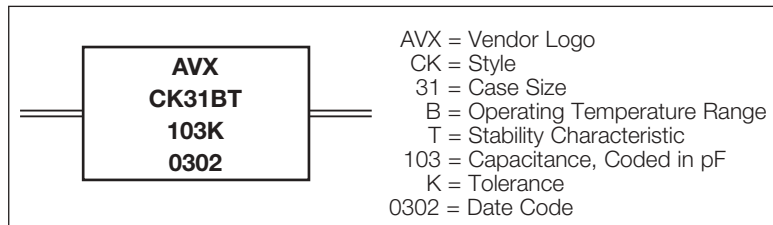
Capacitance Code expressed in picofarads (pF). The first two digits represent significant figures and the third digit specifies the number of zeros to follow; i.e. 103 indicates 10,000 pF.

K

Capacitance
Tolerance

J = ±5% (T char. only)
K = ±10%
M = ±20%

MARKING



MILITARY PART NUMBER IDENTIFICATION (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, M	50
CK32BT153	15,000	J, M	50
CK32BT183	18,000	J, M	50
CK32BT203	20,000	J, M	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%

Military Glass-K Capacitors

MIL-PRF-39014/21

CKR31, 32



APPLICATIONS

These miniature multilayer ceramic capacitors, style CKR31 and CKR32, are qualified to Established Reliability specification MIL-PRF-39014/21. High volumetric efficiency and reliable performance result from the special GLASS-K dielectric, which is fused into a compact monolithic structure. These capacitors are available in three different stability characteristics.

PERFORMANCE CHARACTERISTICS

Tolerance: $\pm 20\%$ and $\pm 10\%$ in characteristics "U" and "V", and $\pm 10\%$ and $\pm 5\%$ 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-PRF-39014. At 200% of rated voltage, 125°C , at 4,000 hours, the capacitance change for each stability characteristic is as follows:

BT: $\pm 5\%$

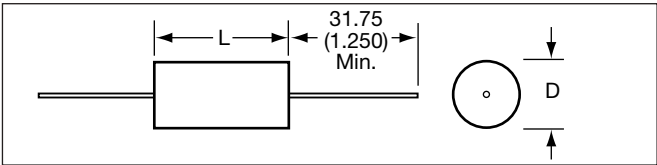
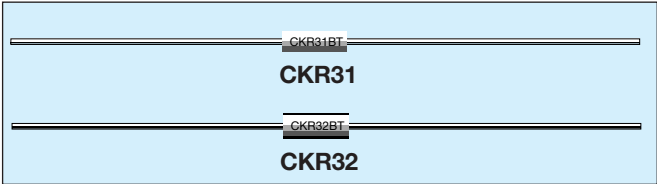
BU: $\pm 10\%$

BV: $\pm 20\%$

Insulation Resistance: At 25°C , 100,000 megohms or 1,000 megohm-microfarads. At 125°C , 10,000 megohms or 100 megohm-microfarads.

Voltage/Temperature Rating: Rated voltage is 50 Vdc. The operating temperature range is -55°C to $+125^{\circ}\text{C}$.

Moisture Resistance: Meets or exceeds requirements of MIL-PRF-39014 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:

millimeters (inches)

Case Size	L $\pm .254$ (0.010)	D $\pm .254$ (0.010)	Lead Dia. $+0.1(+0.004)$ $-0.03(\pm 0.001)$	Weight (Grams) (Typ.)
CKR31	6.09 (0.240)	2.29 (0.090)	.41 (0.016)	.2
CKR32	6.09 (0.240)	3.30 (0.130)	.41 (0.016)	.3

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

QUICK SELECTION GUIDE

Capacitance – pF	Style CKR	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

Military Glass-K Capacitors

MIL-PRF-39014/21

CKR31, 32



MARKING

JCK31 103KM 0302B AVX	J = JAN Trademark
	CK = Style
	31 = Case Size
	103 = Capacitance, Coded in pF
	K = Tolerance
	M = Failure Rate Level
	0302 = Date Code
	B = Lot Code
	AVX = Vendor

Part Number Explanation

Part numbers are formed by adding a dash number from the part number table to the basic mil spec number – M39014/21 – (add dash number)

M39014/21 – Example: M39014/21-0040
 CKR31 10,000pF ±10% 50V
 M Failure Rate
 (BT Characteristic)

CROSS REFERENCE

MIL-PRF-39014/21 Style	MIL-PRF-11015/25 Style
CKR31	CK31
CKR32	CK32

M39014/21 (Dash Number) Failure Rate Level (%/1,000 hours) 1.0 (M)	Capacitance Value (pF)	Capacitance Tolerance ± Percent	DC Rated Voltage
CKR31 (BT)			
0001	270	5	50
0002	270	10	50
0003	330	5	50
0004	330	10	50
0005	390	5	50
0006	390	10	50
0007	470	5	50
0008	470	10	50
0009	560	5	50
0010	560	10	50
0011	680	5	50
0012	680	10	50
0013	820	5	50
0014	820	10	50
0015	1,000	5	50
0016	1,000	10	50
0017	1,200	5	50
0018	1,200	10	50
0019	1,500	5	50
0020	1,500	10	50
0021	1,800	5	50
0022	1,800	10	50
0023	2,200	5	50
0024	2,200	10	50
0025	2,700	5	50
0026	2,700	10	50
0027	3,300	5	50
0028	3,300	10	50
0029	3,900	5	50
0030	3,900	10	50
0031	4,700	5	50
0032	4,700	10	50
0033	5,600	5	50
0034	5,600	10	50
0035	6,800	5	50
0036	6,800	10	50
0037	8,200	5	50
0038	8,200	10	50
0039	10,000	5	50
0040	10,000	10	50
CKR31 (BU)			
0041	12,000	10	50
0042	12,000	20	50
0043	15,000	10	50
0044	15,000	20	50
0045	18,000	10	50
0046	18,000	20	50
0047	20,000	10	50
0048	20,000	20	50

M39014/21 (Dash Number) Failure Rate Level (%/1,000 hours) 1.0 (M)	Capacitance Value (pF)	Capacitance Tolerance ± Percent	DC Rated Voltage
CKR31 (BV)			
0049	22,000	10	50
0050	22,000	20	50
0051	27,000	10	50
0052	27,000	20	50
0053	33,000	10	50
0054	33,000	20	50
0055	39,000	10	50
0056	39,000	20	50
0057	47,000	10	50
0058	47,000	20	50
0059	51,000	10	50
0060	51,000	20	50
CKR32 (BT)			
0061	12,000	5	50
0062	12,000	10	50
0063	15,000	5	50
0064	15,000	10	50
0065	18,000	5	50
0066	18,000	10	50
0067	20,000	5	50
0068	20,000	10	50
CKR32 (BU)			
0069	22,000	10	50
0070	22,000	20	50
0071	27,000	10	50
0072	27,000	20	50
0073	33,000	10	50
0074	33,000	20	50
0075	39,000	10	50
0076	39,000	20	50
CKR32 (BV)			
0077	56,000	10	50
0078	56,000	20	50
0079	62,000	10	50
0080	62,000	20	50
0081	68,000	10	50
0082	68,000	20	50
0083	75,000	10	50
0084	75,000	20	50
0085	82,000	10	50
0086	82,000	20	50
0087	91,000	10	50
0088	91,000	20	50
0089	100,000	10	50
0090	100,000	20	50

Glass Composite Capacitors



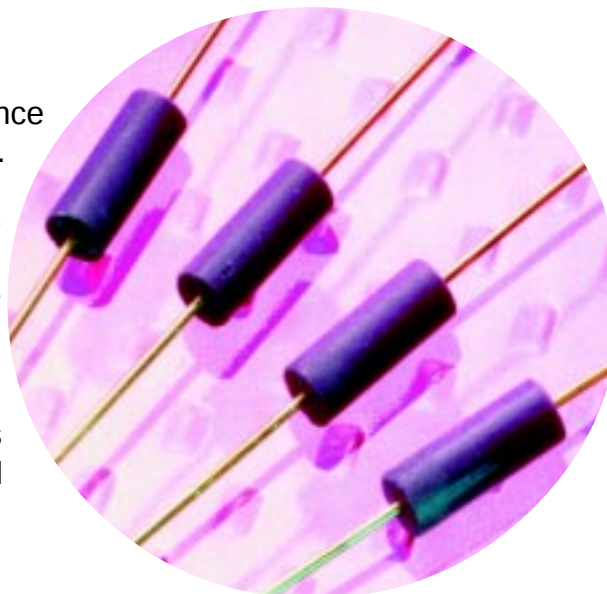
CY 31 Series

GENERAL DESCRIPTION:

AVX has introduced a series of extremely tight tolerance low loss capacitors utilizing a glass composite insert.

The CY31 Series comes in axial configuration and is composed of a low loss glass composite dielectric, gold plated leads and a silicone molded case. These devices exhibit zero piezoelectric noise, low dielectric absorption (<0.01%) and zero aging rate.

The parts are ideally suited for low loss applications such as reference standards, low loss RF filters and sample/hold capacitors.



PERFORMANCE CHARACTERISTICS

Capacitance Range		0.5pF - 33pF						
Standard Capacitance Values	0.5	1	2.2	4.7	8.2	18	33	
	0.6	1.2	2.7	5.6	10	22		
	0.7	1.5	3.3	6.8	12	24		
	0.8	1.8	3.9	7.5	15	27		
TOLERANCES*			0.5pF to 12pF ± 0.25pF 13pF to 24pF ± 2%, ± 5% 27pF to 33pF 1%, 2%, 5%					
VOLTAGE RATING		25 VDC						
INSULATION RESISTANCE		>1X10 ¹¹ OHM						
TEMPERATURE COEFFICIENT		0 ± 30 PPM/°C						
DISSIPATION FACTOR		<0.001						
OPERATING TEMPERATURE RANGE		-55°C to +125°C						
DIELECTRIC ABSORPTION		<0.01%						

* Special tolerances, matched pairs available.

APPLICATIONS:

Sample/Hold Circuits
Capacitor Reference Standards
Low Loss RF Filters
Voltage Controlled Oscillators
Matching Networks

FEATURES:

Molded Case Size
Tight Tolerance
Zero Aging
Low Inductance 16 Mil Leads

CY 31 3 A 100 D

Tolerance Code

C = $\pm 0.25\text{pF}$ D = $\pm 0.5\text{pF}$ F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$

Capacitance Code

2 significant digits + number of zeros.

For values $< 10\text{pF}$, letter R denotes decimal point.

E.g. 100 = 10pF , 5R1 = 5.1pF

Temperature Coefficient

A = $\pm 30\text{ppm}/^\circ\text{C}$ (-55°C to $+125^\circ\text{C}$)

Voltage Code

3 = 25V

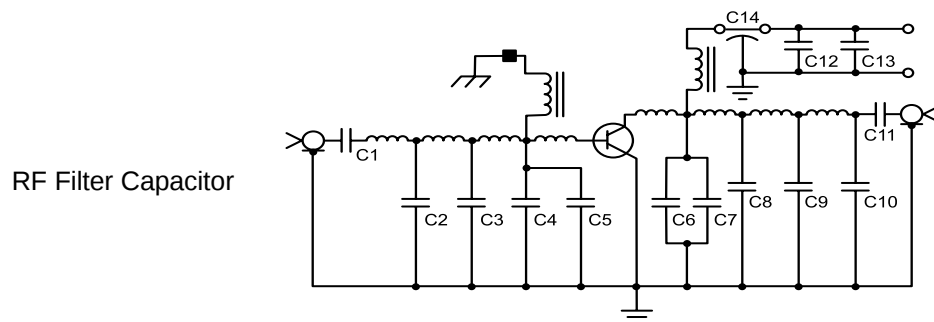
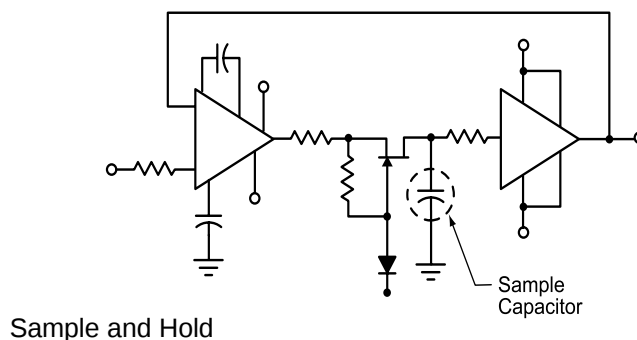
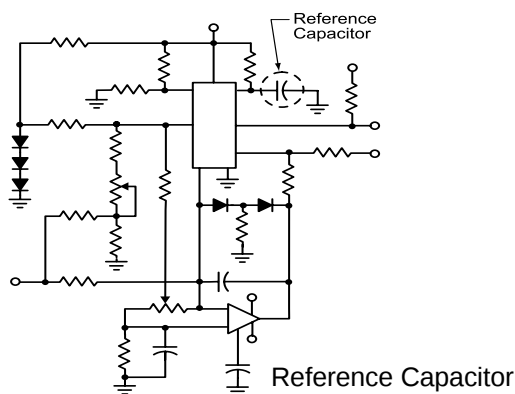
Style/Size

Packaging information: Bulk in groups of 25 pieces. Individual packaging available upon request.

CASE SIZE	L ± 0.010 (.254)	D ± 0.010 (.254)	LEAD DIAMETER +.004 (.10) -.001 (.03)	WEIGHT GRAMS (TYPICAL)
31	0.240 (6.09)	0.090 (2.29)	0.016 (.41)	.2

Dimensions: Inches (millimeters)

TYPICAL APPLICATIONS



NOTICE: All statements, information and data given within this document are believed to be accurate and reliable, but are presented without guarantee, warranty, or responsibility of any kind, expressed or implied. Specifications are typical and may not apply to all applications.