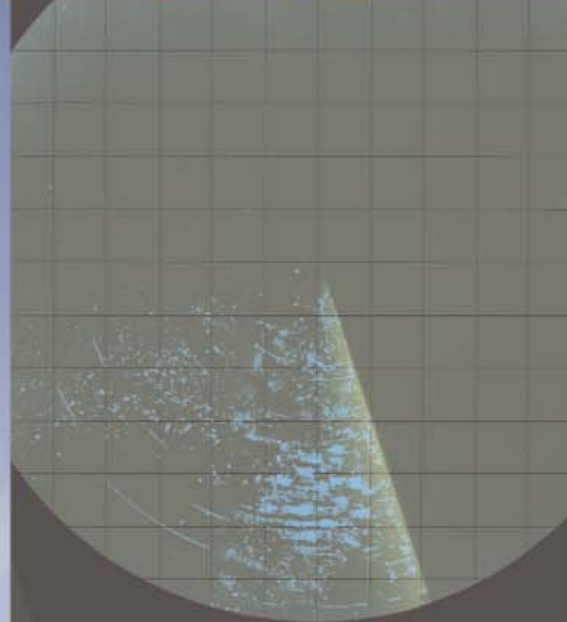
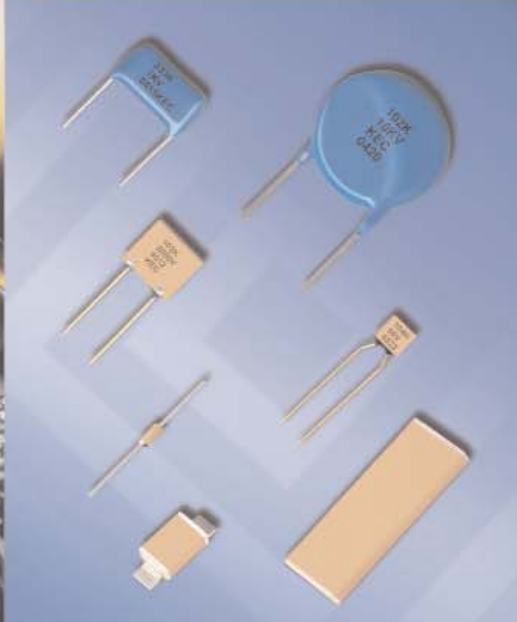
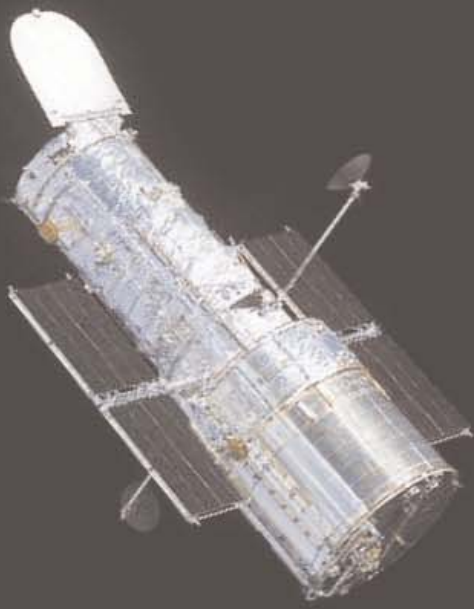




High Temperature
High Voltage
Ceramic Capacitors

www.kemet.com

F-3106F 2/08

The Capacitance Company
KEMET
CHARGED.™

General Performance Characteristics	3-6
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HIGH TEMPERATURE CERAMIC CAPACITORS

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High Temperature, High Voltage Performance Characteristics

GENERAL SPECIFICATIONS

Working Voltage:

C0G	50, 100, 200, 500, 1k, 2k, 3k, 4k, 5k, 7.5k, 10k, 15k, 20k
X7R	50, 100, 200, 500, 1k, 2k, 3k, 4k, 5k, 7.5k, 10k, 15k, 20k, 30k, 40k, 50k
X5U	3k, 4k, 5k, 7.5k, 10k, 15k, 20k

Temperature Characteristics:

C0G	0 + 30 PPM / °C from -55°C to +125°C (1)
X7R	+15% from -55°C to +125°C
X5U	+22%, -56% from -55°C to +85°C

Capacitance Tolerance:

C0G	+0.5pF, +1%, +2%, +5%, +10%
X7R	±5%, ±10%, ±20%, +80% / -20%, +100% / -0%
X5U	±5%, ±10%, ±20%, +80% / -20%, +100% / -0%

Construction:

- Epoxy encapsulated - meets flame test requirements of UL Standard 94V-0.
- High-temperature solder - meets EIA RS-198, Method 302, Condition B (260°C for 10 seconds)

Termination Material:

- Check individual Series: Part Number and Ordering Information for Termination Materials offered in each series.

Solderability:

- MIL-STD 202, Method 208
- (Test Method: ANSI/J-STD-002)
- Test A for through-hole mount and surface mount leaded.
- Test B for surface mount leadless components.

Terminal Strength:

- MIL-STD 202, Method 208, Condition A (2.3kg or 5 lbs)

Resistance to Solvents:

- MIL-STD 202, Method 215

Resistance to Soldering Heat:

- MIL-STD 202, Method 210, Test Condition C

ELECTRICAL

Capacitance @ 25°C:

- Within specified tolerance and following test conditions per MIL-STD 202, Method 305.
- C0G, X7R & X5U
- > 100pF with 1.0 vrms @ 1 kHz with 1.0 vrms
- < 100pF with 1.0 vrms @ 1 MHz with 1.0 vrms

Dissipation Factor @ 25°C:

- Same test conditions as capacitance.
- C0G - 0.15% maximum
- X7R - 2.5% maximum
- X5U - 2.5% maximum

Insulation Resistance @25°C:

- MIL-STD 202, Method 302
- C0G & X7R:
100 gigohm or 1 gigohm x uF, whichever is less.
<500V test @ rated voltage, >1kV test @ 500V.
- X5U:
10 gigohm or 100 megohm x uF, whichever is less.
<500V test @ rated voltage, >1kV test @ 500V.

Dielectric Withstanding Voltage:

- MIL-STD 202, Method 301
- <200V test @ 250% of rated voltage
- 500V to 1250V test @ 150% of rated voltage
- >1251V test @ 120% of rated voltage

ENVIRONMENTAL

Vibration:

- MIL-STD 202, Method 204, Condition D (20g)

Shock:

- MIL-STD 202, Method 213, Condition I (100g)

Life Test:

- MIL-STD 202, Method 108

<200V

- C0G - 200% rated voltage @ +125°C
- X7R - 200% rated voltage @ +125°C

>500V

- C0G - rated voltage @ +125°C
- X7R - rated voltage @ +125°C
- X5U - rated voltage @ +85°C

Post Test Limits @ 25°C are:

- Capacitance Change:
C0G (< 200V) - +3% or 0.25pF, whichever is greater.
C0G (> 500V) - +3% or 0.50pF, whichever is greater.
X7R - +20% of initial value (2)
- Dissipation Factor:
C0G - 0.25% maximum
X7R & X5U - 3.0% maximum
- Insulation Resistance:
C0G & X7R:
100 gigohm or 1 gigohm x uF, whichever is less.
<500V test @ rated voltage, >1kV test @ 500V.
- X5U:
10 gigohm or 100 megohm x uF, whichever is less.
<500V test @ rated voltage, >1kV test @ 500V.

Moisture Resistance:

- MIL-STD 202, Method 106
- Post Test Limits @ 25°C are:
Capacitance Change:
C0G (< 200V) - +3% or 0.25pF, whichever is greater.
C0G (> 500V) - +3% or 0.50pF, whichever is greater.
X7R - +20% of initial value (2)
- Dissipation Factor:
C0G - 0.25% maximum
X7R & X5U - 3.0% maximum
- Insulation Resistance:
C0G & X7R:
100 gigohm or 1 gigohm x uF, whichever is less.
<500V test @ rated voltage, >1kV test @ 500V.
- X5U:
10 gigohm or 100 megohm x uF, whichever is less.
<500V test @ rated voltage, >1kV test @ 500V.

Thermal Shock:

- MIL-STD 202, Method 107, Condition A
- C0G & X7R: -55°C to 125°C
- X5U: -55°C to 85°C

- (1) +53 PPM -30 PPM/ °C from +25°C to -55°C, +60 PPM below 10pF.
- (2) X7R & X5U dielectrics exhibit aging characteristics; therefore, it is highly recommended that capacitors be deaged for 2 hours at 150°C and stabilized at room temperature for 48 hours before capacitance measurements are made.

	HIGH TEMPERATURE	HIGH VOLTAGE
MILITARY & AEROSPACE		
Avionics	X	X
Radar Systems	X	X
Telemetry, Data Tx/Rx		X
Control Systems	X	
MEDICAL		
.5 to 1.5 Tesla MR1 &		X
NM1 Tuning Coils		X
1 to 3 Tesla MR1 Gradient		X
Coils & Magnetic Rings		X
CT-Scanner		X
Medical MRI		X
X-Ray Generator	X	X
SEMICONDUCTOR		
RF Tuning Networks		X
RF Power Supplies		X
Semiconductor Manufacturing	X	
SECURITY		
Handheld Scanners		X
Intruder Detection Systems		X
Luggage Scanners		X
Metal/Explosive Detector		X
OTHER		
LCD Backlight Inverter		X
Electric Ballast for CFL	X	X
Electric Ballast for Fluorescent Lamp	X	X
Measurement Equipment	X	X
Microwave/Convection Ovens	X	X
POWER SUPPLY		
HV Power Supply	X	X
Power Station Equipment		X
Power Supply for Air Conditioner, Washing Machine		X
Inverter Power Supply-AC	X	
TELECOM		
Base Station Power amps		X
Broadcasting Equipment		X
MODEM		
DAA Modem		X
xDSL Modem		X
LAN, Router, HUB, Switches		X
RF Power Amplifiers		X
INDUSTRIAL		
Oil Rigging, Down Hole, Mining	X	X

KEMET High Voltage Technical Summary

	ELECTRICAL			ENVIRONMENTAL	MECHANICAL
	Voltage Range	Capacitance Range	Dissipation Factor	Operating Temperature Range	Configuration

HIGH VOLTAGE

Radial Conformally Coated					
Std	C0G/X7R: 500 to 10k VDC	C0G: 12 pF - .330µF X7R: 220 pF - 5.6 µF	C0G: 0.15% max X7R: 2.5% max	C0G: -55°C to + 125°C X7R: -55°C to + 125°C	Radial
Mil-PRF-49467 Equivalent	C0G/X7R: 600 to 5k VDC	C0G: 12 pF - .68 µF X7R: 27 pF - .47 µF	C0G: 0.15% max X7R: 2.5% max	C0G/X7R: -55°C to + 125°C	Radial
Space Quality	C0G/X7R: 500 to 10k VDC	C0G/X7R: 560 pF - 2.20µF	C0G: 0.15% max X7R: 2.5% max	C0G/X7R: -55°C to + 125°C	Radial
Ceramic Surface Mount Chip					
Military	C0G/X7R: 500 to 5k VDC	C0G: 12 pF - .10 µF X7R: 270 pF - 2.50 µF	C0G: 0.15% max X7R: 2.5% max	C0G/X7R: -55°C to + 125°C	Chip
Leaded Chips J or L lead	C0G/X7R: 500 to 10k VDC	C0G: 12 pF - .330 µF X7R: 220 pF - 5.6 µF	C0G: 0.15% max X7R: 2.5% max	C0G/X7R: -55°C to + 125°C	Leaded Chip J or L Lead
Disc	C0G/X5U: 3k to 20k VDC, X7R: 3k to 50k VDC	C0G: 1.2 pF - 236 pF X7R: 10 p - 7400 pF X5U: 80 pF - 17300 pF	C0G: 0.15% max X7R: 2.5% max X5U: 2.5% max	C0G/X7R: -55°C to + 125°C X5U: -55°C to + 85°C	Disc
Disc Stack	C0G/X7R/X5U: 5k to 20k VDC	C0G: 1.2 pF - 141 pF X7R: 37 pF - 4400 pF X5U: 80 pF - 10400 pF	C0G: 0.15% max X7R: 2.5% max X5U: 2.5% max	C0G/X7R: -55°C to + 125°C X5U: -55°C to + 85°C	Disc Stack

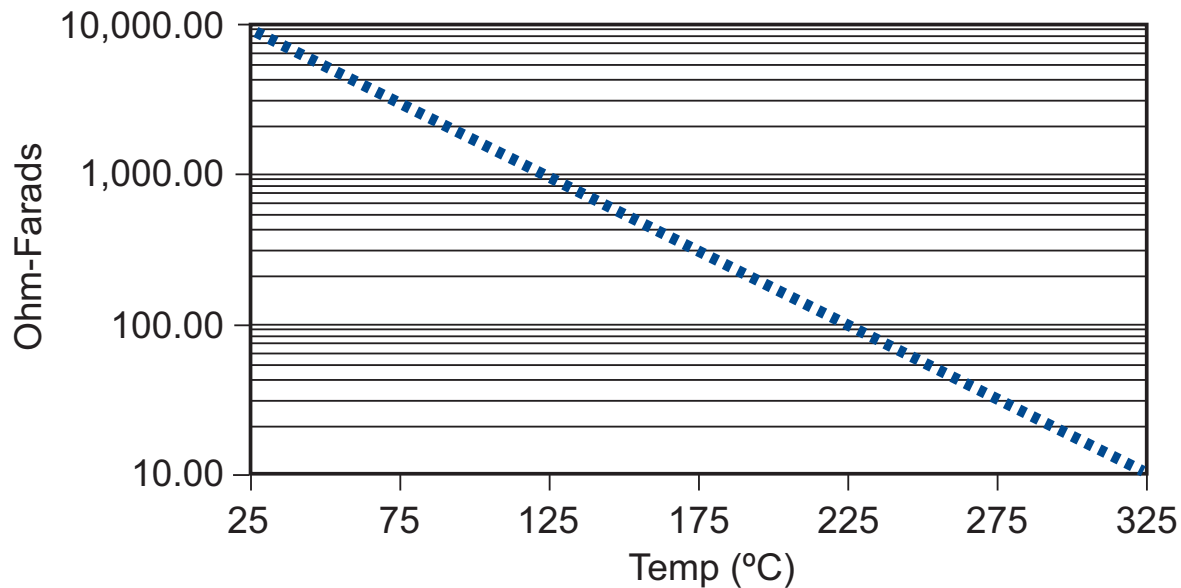
HIGH TEMPERATURE

Hi Temp (HT/HP)	100 to 200 VDC	-C0G: 22 pF - .100 µF X7R: 1000 pF - 1.0µF	C0G 0.15% X7R Type 2.0% X7R 2.50%	-55°C to + 200°C	Axial/Radial
Hi Temp Hi Volt (HV)	500 to 4000 VDC	C0G: 390 pF - .015 µF X7R: 1400 pF - .270 µF	C0G 0.15% X7R Type 2.0% X7R 2.50%	-55°C to + 200°C	Radial
Ceramic Cased Capacitor					
Std 125°C (SCR/SRR/SCA/SRA)	50 to 200 VDC	C0G: 1.0 pF - .12 µF X7R: 100 pF - 6.8 µF	C0G 0.15% X7R 2.50%	-55°C to + 125°C	Axial/Radial
200°C (ACR/ARR/ACA/ARA)	50 to 100 VDC	C0G: 1.0 pF - .12 µF X7R: 100 pF - 3.3 µF	C0G 0.15% X7R 2.50%	-55°C to + 200°C	Axial/Radial
260°C (TCR/TRR/TCA/TRA)	50 to 100 VDC	C0G: 1.0 pF - .12 µF X7R: 100 pF - 3.3 µF	C0G 0.15% X7R 2.50%	-55°C to + 260°C	Axial/Radial
Hi Temp Hi Volt (VCR/VRR)	500 to 5000 VDC	C0G: 10 pF - .056 µF X7R: 330 pF - 1.2µF	C0G 0.15% X7R 2.50%	-55°C to + 200°C	Radial

DIELECTRIC COMPARISONS

Features	Ultra Stable	Semi-Stable High Voltage	Semi-Stable Hi-Temp	Temp/Volt Dependent
Dielectric Type	C0G (NP0)	X7R	X7R type	X5U
Temperature Coefficient	0 ±30ppm/°C	±15%	+15/-40%	+22-56%
Operating Temp. Range	-55 to +200°C	-55 to +125°C	-55 to +200°C	-55 to +125°C
Dissipation Factor	0.1% max.	2.5% max.	2.0% max.	2.5% max.
Aging Rate	None	-2.0% max/dec. hour	-2.0% max/dec. hour	-2.0% max/dec. hour
Voltage Range	25 to 20k VDC	50 to 50k VDC	25 to 4k VDC	Up to 20K VDC
Standard Tolerance	J, K, M	K, M, P, Z	K, M, P, Z	M, P, Z
Coefficient of Thermal Expansion @ 25°C	9 X 10-6 IN/IN °C	11 X 10-6 IN/IN °C	11 X 10-6 IN/IN °C	11 X 10-6 IN/IN °C

**TYPICAL INSULATION RESISTANCE VS. TEMP (°C)
FOR C0G, NP0 & X7R DIELECTRICS**



High Temperature (+200°C), High Voltage Radial Ceramic Cased Capacitors (C³) VCR/VRR Series

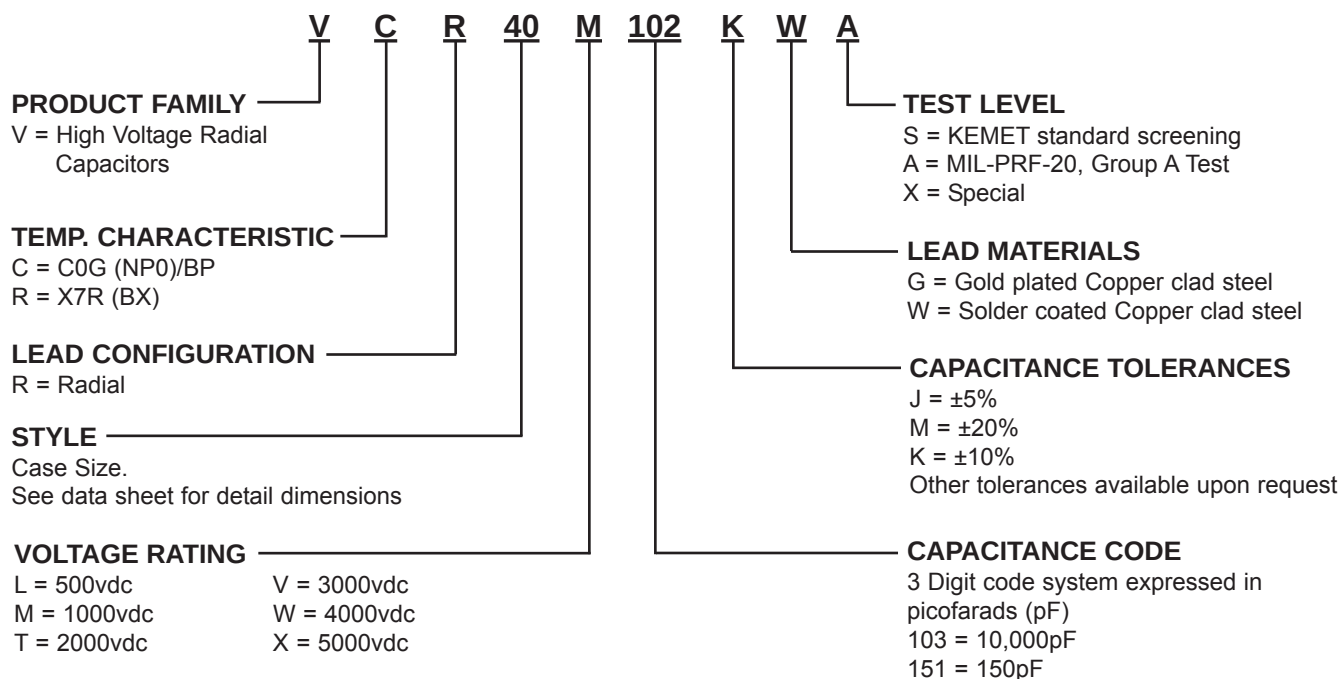
Ceramic cased capacitors, with a new, unique design concept which eliminates potential problems associated with conventional epoxy cased epoxy potted capacitors.

Major application is high voltage power supplies. High voltage capacitors are also utilized on high voltage meter multiplier and RF circuits.

INSTALLATION:

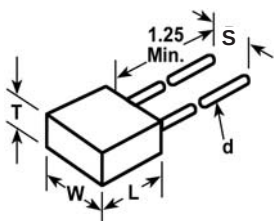
Parts should be soldered using a heat sink between the soldering point and the part using a soldering iron rated 18-30 watts. Remove all traces of flux or other contamination resulting from the soldering operation. An intermittent conducting path between the leads, at high voltage, could cause breakdown. Soldering temperature should not exceed +300°C.

PART NUMBER AND ORDERING INFORMATION



MARKING	EXAMPLE
Manufacturer's ID	KEC
Capacitance	106J
Voltage	500V
Date Code	123

All Dimensions
in Inches (mm)

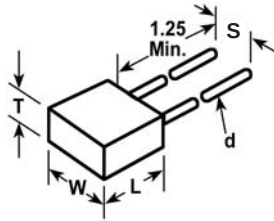
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High Temperature (+200°C), High Voltage Axial and Radial Ceramic Cased Capacitors (C³)

VRR Series

RADIAL

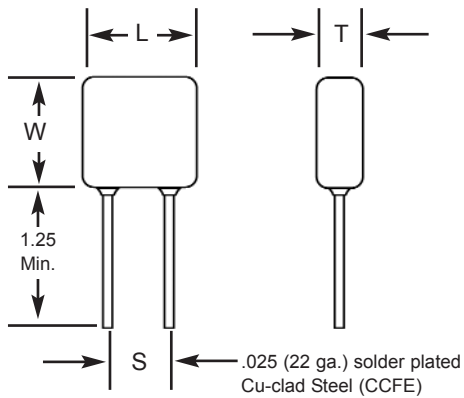
All Dimensions
in Inches (mm)



X7R DIELECTRIC

STYLE		07			40					50						60						70						80					
L _{MAX}		.300 (7.62)			.350 (8.89)					.450 (11.43)						.550 (13.97)						.650 (16.51)						.750 (19.05)					
W _{MAX}		.300 (7.62)			.400 (10.16)					.500 (12.70)						.600 (15.24)						.700 (17.78)						.800 (20.32)					
T _{MAX}		.150 (3.81)			.275 (6.98)					.300 (7.62)						.375 (9.52)						.375 (9.52)						.375 (9.52)					
S		.200 ± .015 (5.08 ± .38)			.300 ± .015 (7.62 ± .38)					.400 ± .015 (10.16 ± .38)						.500 ± .015 (12.70 ± .38)						.600 ± .015 (15.24 ± .38)						.600 ± .015 (15.24 ± .38)					
d		.025 ± .002 (.635 ±.051)			.032 ± .004 (.813 ± .102)					.032 ± .004 (.813 ± .102)						.032 ± .004 (.813 ± .102)						.032 ± .004 (.813 ± .102)						.032 ± .004 (.813 ± .102)					
Cap	Cap Code	WVDC			WVDC					WVDC						WVDC						WVDC						WVDC					
		500	1k	2k	500	1k	2k	3k	4k	500	1k	2k	3k	4k	5k	500	1k	2k	3k	4k	5k	500	1k	2k	3k	4k	5k	500	1k	2k	3k	4k	5k
330pF	331																																
390	391																																
470	471																																
560	561																																
680	681																																
820	821																																
1000	102																																
1200	122																																
1500	152																																
1800	182																																
2200	222																																
2700	272																																
3300	332																																
3900	392																																
4700	472																																
5600	562																																
6800	682																																
8200	822																																
0.01 μF	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																																
0.10	104																																
0.12	124																																
0.15	154																																
0.18	184																																
0.22	224																																
0.27	274																																
0.33	334																																
0.39	394																																
0.47	474																																
0.56	564																																
0.68	684																																
0.82	824																																
1.0	105																																
1.2	125																																

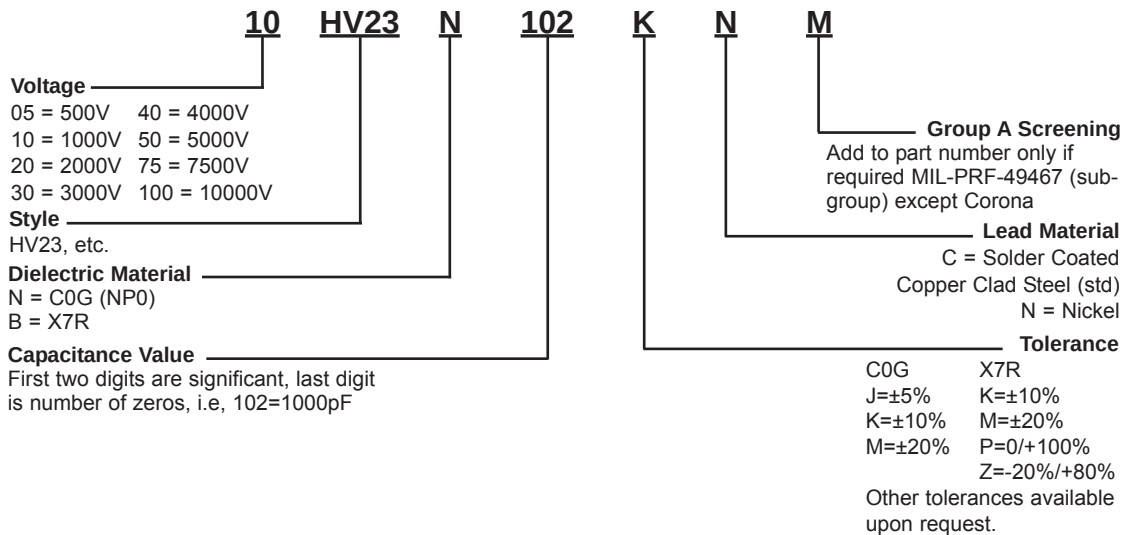
CAPACITOR OUTLINE DRAWING



DIMENSIONS

Style	Sizes in Inches (mm) max.			Lead Spacing ±0.030 (S)
	Length (L)	Width (W)	Thickness (T)	
HV20	.250 (6.35)	.220 (5.59)	.200 (5.08)	.170 (4.32)
HV21	.320 (8.13)	.280 (7.11)	.250 (6.35)	.220 (5.59)
HV22	.370 (9.40)	.300 (7.62)	.250 (6.35)	.275 (6.98)
HV23	.470 (11.94)	.400 (10.16)	.270 (6.89)	.375 (9.52)
HV24	.570 (14.48)	.500 (12.70)	.270 (6.89)	.475 (12.06)
HV25	.670 (17.02)	.600 (15.24)	.270 (6.89)	.575 (14.60)
HV26	.770 (19.56)	.720 (18.29)	.270 (6.89)	.675 (17.14)
HV30	.450 (11.43)	.220 (5.59)	.200 (5.08)	.300 (7.62)
HV31	.550 (13.97)	.280 (7.11)	.250 (6.35)	.400 (10.16)
HV33	.850 (21.59)	.400 (10.16)	.270 (6.89)	.700 (17.78)
HV34	1.050 (26.67)	.500 (12.70)	.270 (6.89)	.975 (24.76)
HV35	1.250 (31.75)	.600 (15.24)	.270 (6.89)	1.175 (29.84)
HV36	1.450 (36.83)	.720 (18.29)	.270 (6.89)	1.375 (34.92)

PART NUMBER AND ORDERING INFORMATION



MARKING

(HV20, HV21)	(All Other Sizes)
103K	HV24A103K
1 kV	1 kV
KEC	KEC
Date Code	Date Code

COG DIELECTRIC

27

COG DIELECTRIC

[illegible]

X7R DIELECTRIC

29

X7R DIELECTRIC

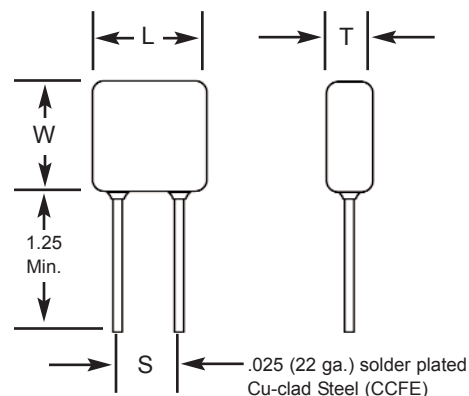
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High Voltage MIL-PRF-49467 (Equivalent) HV Series

FEATURES

1. Electrical characteristics and environmental information on these parts may be obtained by referring to MIL-PRF-49467.
2. All parts are conformal coated multilayer ceramic.
3. Designed to provide excellent long-term reliability.
4. Parts are Group A screened per MIL-PRF-49467 which includes 100% Corona testing and meet all other specification requirements.
5. Designed for surface, sea and airborne military and commercial high-reliability applications.
6. No IR degradation over life.
7. BR (X7R) V/TC is -40% at rated voltage and BZ (X7R) V/TC is -40% at 60% rated voltage.
8. BX characteristic (-25%) on BR parts is approximately 52% rated voltage.
9. 100% Non-destructive test by means of CSAM inspection available.

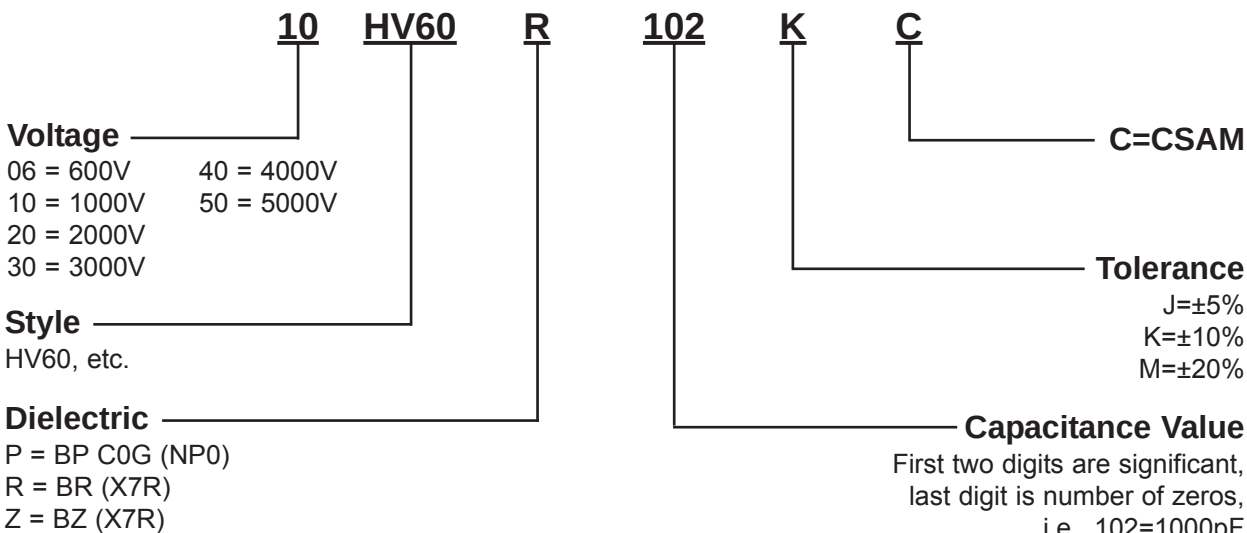
CAPACITOR OUTLINE DRAWING



DIMENSIONS

Style	Sizes in Inches (mm) max.			Lead Spacing ±0.030 (S)
	Length (L)	Width (W)	Thickness (T)	
HV60	.250 (6.35)	.220 (5.59)	.200 (5.08)	.170 (4.32)
HV61	.320 (8.13)	.280 (7.11)	.250 (6.35)	.220 (5.59)
HV62	.370 (9.40)	.300 (7.62)	.250 (6.35)	.275 (6.98)
HV63	.470 (11.94)	.400 (10.16)	.270 (6.86)	.375 (9.52)
HV64	.570 (14.48)	.500 (12.70)	.270 (6.86)	.475 (12.06)
HV65	.670 (17.02)	.600 (15.24)	.270 (6.86)	.575 (14.60)
HV66	.770 (19.56)	.720 (18.29)	.270 (6.86)	.675 (17.14)
HV68	1.300 (33.02)	.600 (15.24)	.270 (6.86)	1.175 (29.84)
HV69	1.500 (38.10)	.720 (18.29)	.270 (6.86)	1.375 (34.92)

PART NUMBER AND ORDERING INFORMATION



MARKING

(HV60, HV61)	(All Other Sizes)
102K	HV63R102K
1 kV	1 kV
KEC	KEC
Date Code	Date Code

C0G DIELECTRIC

STYLE		HV60			HV61				HV62				HV63					HV64					HV65					HV66				
Cap	L MAX	.250 (6.35)			.320 (8.13)				.370 (9.40)				.470 (11.94)					.570 (14.48)					.670 (17.02)					.770 (19.56)				
	W MAX	.220 (5.59)			0.280 (7.11)				.300 (7.62)				.400 (10.16)					.500 (12.70)					.600 (15.24)					.720 (18.29)				
	T MAX	.200 (5.08)			.250 (6.35)				.250 (6.35)				.270 (6.86)					.270 (6.86)					.270 (6.86)					.270 (6.86)				
	S± .030	.170 (4.32)			.220 (5.59)				.275 (6.98)				.375 (9.52)					.475 (12.06)					.575 (14.60)					.675 (17.14)				
	Lead Dia. +0.004/-0.002	.025 (.635)			.025 (.635)				.025 (.635)				.025 (.635)					.025 (.635)					.025 (.635)					.025 (.635)				
		WVDC			WVDC				WVDC				WVDC					WVDC					WVDC					WVDC				
Cap Code	600	1k	2k	600	1k	2k	3k	600	1k	2k	3k	600	1k	2k	3k	4k	600	1k	2k	3k	4k	5k	1k	2k	3k	4k	5k	1k	2k	3k	4k	5k
12pF	120																															
15	150																															
18	180																															
22	220																															
27	270																															
33	330																															
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2700	272																															
3300	332																															
3900	392																															
4700	472																															
5600	562																															
6800	682																															
8200	822																															
0.01uF	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																															

High Voltage MIL-PRF-49467 (Equivalent) HV Series

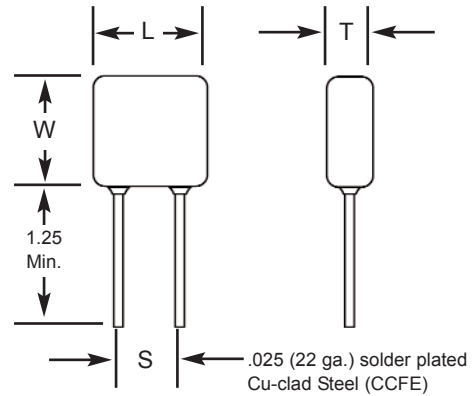
X7R DIELECTRIC

STYLE		HV60			HV61			HV62			HV63			HV64					HV65					HV66					HV 68			HV 69					
Cap	L MAX	.250 (6.35)			.320 (8.13)			.370 (9.40)			.470 (11.94)			.570 (14.48)					.670 (17.02)					.770 (19.56)					1.300 (33.02)			1.500 (38.10)					
	W MAX	.220 (5.59)			.280 (7.11)			.300 (7.62)			.400 (10.16)			.500 (12.70)					.600 (15.24)					.720 (18.29)					.600 (15.24)			.720 (18.29)					
	T MAX	.200 (5.08)			.250 (6.35)			.250 (6.35)			.270 (6.86)			.270 (6.86)					.270 (6.86)					.270 (6.86)					.270 (6.86)			.270 (6.86)					
	S± .030	.170 (4.32)			.220 (5.59)			.275 (6.98)			.375 (9.52)			.475 (12.06)					.575 (14.60)					.675 (17.14)					1.175 (29.84)			1.375 (34.92)					
	Lead Dia. +0.004/-0.002	.025 (.635)			.025 (.635)			.025 (.635)			.025 (.635)			.025 (.635)					.025 (.635)					.025 (.635)					0.025 (.635)			0.025 (.635)					
			WVDC			WVDC			WVDC			WVDC			WVDC					WVDC					WVDC					WVDC			WVDC				
Cap Code		600	1k	2k	600	1k	2k	3k	600	1k	2k	3k	4k	600	1k	2k	3k	4k	5k	1k	2k	3k	4k	5k	1k	2k	3k	4k	5k	3k	4k	5k	3k	4k	5k		
270pF	271																																				
330	331																																				
390	391																																				
470	471																																				
560	561																																				
680	681																																				
820	821																																				
1000	102																																				
1200	122																																				
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5600	562																																				
6800	682																																				
8200	822																																				
0.01uF	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																																				

FEATURES

1. Conforms to MIL-PRF-49467. (Group A Screening, Subgroup 1)
2. 100% Corona tested.
3. No IR degradation over life.
4. High density, low DF ceramic.
5. Conservative and proven design is recommended for non-repairable applications such as spacecraft.
6. CSAM inspection is available and is recommended for space applications.
7. Burn-in in a non-contaminating inert fluid is standard for $\geq 2\text{KV}$; optional for 500V or 1 KV parts.

CAPACITOR OUTLINE DRAWING



DIMENSIONS

Style	Sizes in Inches (mm) max.			Lead Spacing ± 0.030 (S)
	Length (L)	Width (W)	Thickness (T)	
HS20	.250 (6.35)	.220 (5.59)	.200 (5.08)	.170 (4.32)
HS21	.320 (8.13)	.280 (7.11)	.250 (6.35)	.220 (5.59)
HS22	.370 (9.40)	.300 (7.62)	.250 (6.35)	.275 (6.98)
HS30	.450 (11.43)	.220 (5.59)	.200 (5.08)	.300 (7.62)
HS23	.470 (11.94)	.400 (10.16)	.270 (6.89)	.375 (9.52)
HS31	.550 (13.97)	.280 (7.11)	.250 (6.35)	.400 (10.16)
HS24	.570 (14.48)	.500 (12.70)	.270 (6.89)	.475 (12.06)
HS25	.670 (17.02)	.600 (15.24)	.270 (6.89)	.575 (14.60)
HS26	.770 (19.56)	.720 (18.29)	.270 (6.89)	.675 (17.14)
HS33	.850 (21.59)	.400 (10.16)	.270 (6.89)	.700 (17.78)
HS34	1.050 (26.67)	.500 (12.70)	.270 (6.89)	.975 (24.76)
HS35	1.250 (31.75)	.600 (15.24)	.270 (6.89)	1.175 (29.84)
HS36	1.450 (36.83)	.720 (18.29)	.270 (6.89)	1.375 (34.92)

PART NUMBER AND ORDERING INFORMATION

VOLTAGE 10 HS24 B 103 K C F

05 = 500V 40 = 4000V
 10 = 1000V 50 = 5000V
 20 = 2000V 75 = 7500V
 30 = 3000V 100 = 10,000V

STYLE _____
 HS24, etc.

DIELECTRIC _____
 B = X7R
 N = BP C0G (NP0)

CAPACITANCE VALUE _____
 First two digits are significant,
 last digit is number of zeros,
 i.e., 103=10000pF

INERT LIQUID (BURN-IN)
 Std. for $\geq 2\text{kV}$;
 Add "F" if required
 for 500V or 1kV parts

C=CSAM

TOLERANCE
 J = $\pm 5\%$
 K = $\pm 10\%$
 M = $\pm 20\%$
 P = 0/+100%
 Z = -20%/+80%

MARKING

(HS20, HV21)	(All Other Sizes)
103K	HS24B103K
1 kV	1 kV
KEC	KEC
Date Code	Date Code

High Voltage Space Quality MLC (-55° to +125°C) HS Series

C0G DIELECTRIC

STYLE		HS 20			HS 21			HS 22			HS 23				HS 24					HS 25					HS 26							
	L MAX	.250 (6.35)			.320 (8.13)			.370 (9.40)			.470 (11.94)				.570 (14.48)					.670 (17.02)					.770 (19.56)							
	W MAX	.220 (5.59)			.280 (7.11)			.300 (7.62)			.400 (10.16)				.500 (12.70)					.600 (15.24)					.720 (18.29)							
	T MAX	.200 (5.08)			.250 (6.35)			.250 (6.35)			.270 (6.86)				.270 (6.86)					.270 (6.86)					.270 (6.86)							
	S± .030	.170 (4.32)			.220 (5.59)			.275 (6.98)			.375 (9.52)				.475 (12.06)					.575 (14.60)					.675 (17.14)							
	Lead Dia. +0.004/-0.002	.025 (.635)			.025 (.635)			.025 (.635)			.025 (.635)				.025 (.635)					.025 (.635)					.025 (.635)							
Cap		WVDC			WVDC			WVDC			WVDC				WVDC					WVDC					WVDC							
	Cap Code	500	1k	2k	500	1k	2k	500	1k	2K	500	1k	2k	3k	500	1k	2k	3k	4k	5k	500	1K	2k	3k	4k	5k	500	1K	2k	3k	4k	5k
12pF	120																															
15	150																															
18	180																															
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4700	472																															
5600	562																															
6800	682																															
8200	822																															
0.010uF	103																															
	0.012																															
	0.015																															
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	0.033																															
	0.039																															
	0.047																															
	0.056																															
	0.068																															
	0.082																															
	0.10																															
	0.12																															
	0.15																															

COG DIELECTRIC

[illegible]

X7R DIELECTRIC

STYLE		HS 20			HS 21			HS 22			HS 23				HS 24					HS 25						HS 26					
Cap	L MAX	.250 (.635)			.320 (8.13)			.370 (9.40)			.470 (11.94)				.570 (14.48)					.670 (17.02)						.770 (19.56)					
	W MAX	.220 (5.59)			.280 (7.11)			.300 (7.62)			.400 (10.16)				.500 (12.70)					.600 (15.24)						.720 (18.29)					
	T MAX	.200 (5.08)			.250 (6.35)			.250 (6.35)			.270 (6.86)				.270 (6.86)					.270 (6.86)						.270 (6.86)					
	S± .030	.170 (4.32)			.220 (5.59)			.275 (6.98)			.375 (9.52)				.475 (12.06)					.575 (14.60)						.675 (17.14)					
	Lead Dia. +0.004/-0.002	.025 (.635)			.025 (.635)			.025 (.635)			.025 (.635)				.025 (.635)					.025 (.635)						.025 (.635)					
		WVDC			WVDC			WVDC			WVDC				WVDC					WVDC						WVDC					
	Cap Code	500	1k	2k	500	1k	2k	500	1k	2k	500	1k	2k	3k	500	1k	2k	3k	4k	500	1k	2k	3k	4k	5k	500	1k	2k	3k	4k	5k
270pF	271																														
330	331																														
390	391																														
470	471																														
560	561																														
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5600	562																														
6800	682																														
8200	822																														
0.010uF	103																														
0.012	123																														
0.015	153																														
0.018	183																														
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0.047	473																														
0.056	563																														
0.068	683																														
0.082	823																														
0.10	104																														
0.12	124																														
0.15	154																														
0.18	184																														
0.22	224																														
0.27	274																														
0.33	334																														
0.39	394																														
0.47	474																														
0.56	564																														
0.68	684																														
0.82	824																														
1.0	105																														
1.2	125																														
1.5	155																														
1.8	185																														
2.2	225																														
2.7	275																														

X7R DIELECTRIC

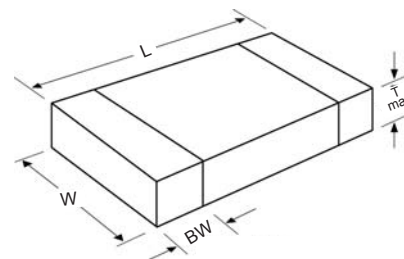
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High Voltage Ceramic Chip (+125°C) Military Equivalent

FEATURES

1. The ceramic chip capacitors described in this section are the types used in our other high voltage ceramic multilayer product lines.
2. Types BP available as described in MIL-PRF-49467.
3. Group A and B screening per MIL-PRF-49467 available. - TCVC exceptions apply.
4. Ceramic chip capacitors are extremely sensitive to thermal shock damage during installation. Wherever possible, processes involving infrared or vapor phase soldering systems should be utilized.
5. Higher voltages available upon request.
6. Where nickel barrier termination is required, bandwidth dimensions may exceed the standard dimension listed.

CERAMIC CHIP OUTLINE DRAWING

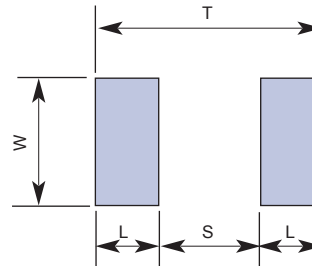


DIMENSIONS

Style	Length (L) Inches (mm)	Width (W) Inches (mm)	Thickness (T) max Inches (mm)	Bandwidth (BW) Inches
1515	.150 ±.015 (3.81 ±.38)	.150 ±.015 (3.81 ±.38)	.140 (3.55)	.010 - .030"
1812	.180 ±.020 (4.57 ±.51)	.120 ±.015 (3.05 ±.38)	.100 (2.54)	.010 - .040"
1825	.180 ±.020 (4.57 ±.51)	.250 ±.020 (6.35 ±.51)	.160 (4.07)	.010 - .040"
2020	.200 ±.020 (5.08 ±.51)	.200 ±.020 (5.08 ±.51)	.180 (3.55)	.010 - .040"
2225	.220 ±.020 (5.59 ±.51)	.250 ±.020 (6.35 ±.51)	.200 (5.08)	.010 - .040"
2520	.250 ±.020 (6.35 ±.51)	.200 ±.020 (5.08 ±.51)	.180 (4.57)	.030 - .060"
3333	.330 ±.030 (8.38 ±.76)	.330 ±.030 (8.38 ±.76)	.220 (5.59)	.030 - .060"
3530	.350 ±.030 (8.89 ±.76)	.300 ±.030 (7.62 ±.76)	.220 (5.59)	.030 - .060"
4040	.400 ±.030 (10.2 ±.76)	.400 ±.030 (10.2 ±.76)	.220 (5.59)	.030 - .060"
4540	.450 ±.030 (11.43 ±.76)	.400 ±.030 (10.2 ±.76)	.220 (5.59)	.030 - .060"
5440	.540 ±.030 (13.7 ±.76)	.400 ±.030 (10.2 ±.76)	.220 (5.59)	.030 - .060"
5550	.550 ±.030 (14.0 ±.76)	.500 ±.030 (12.7 ±.76)	.220 (5.59)	.030 - .060"
6560	.650 ±.030 (16.5 ±.76)	.600 ±.030 (15.2 ±.76)	.220 (5.59)	.030 - .060"

RECOMMENDED SOLDER PAD PATTERN DIMENSIONS

Chip Size	T (Total Length)		S (Separation)		W (Pad Width)		L (Pad Length)	
	mm	in.	mm	in.	mm	in.	mm	in.
1515	5.20	0.205	1.90	0.075	4.34	0.171	1.65	0.065
1812	5.390	0.232	2.30	0.091	3.70	0.146	1.80	0.071
1825	5.90	0.232	2.30	0.091	6.90	0.272	1.80	0.071
2020	6.50	0.256	2.80	0.110	5.62	0.221	1.85	0.073
2225	7.00	0.276	3.30	0.130	6.80	0.268	1.85	0.073
2520	8.68	0.342	4.98	0.196	5.62	0.221	1.85	0.073
3333	10.91	0.430	7.11	0.280	9.27	0.365	1.90	0.075
3530	11.51	0.453	7.61	0.300	8.51	0.335	1.95	0.077
4040	12.88	0.507	8.88	0.350	11.05	0.435	2.00	0.079
4540	14.21	0.559	10.15	0.400	11.05	0.435	2.03	0.080
5440	16.51	0.650	10.41	0.410	11.05	0.435	3.05	0.120
5550	18.92	0.745	12.82	0.505	13.59	0.535	3.05	0.120
6560	19.80	0.780	13.20	0.520	16.13	0.635	3.30	0.130



PART NUMBER AND ORDERING INFORMATION

4540 B 472 M 202 P M

Style
1515, 2020, etc.

Dielectric
B or R = X7R
N = C0G (NP0)

Capacitance Value
First two digits are significant,
last digit is number of zeros,
i.e., 472=4700pF

Tolerance
J = ±5% C0G (NP0)
K = ±10%
M = ±20%
P = 0/+100%
Z = -20%/+80%

Group A Screening*
Add to part number if required
*MIL-PRF-49467
(subgroup 1)
except Corona

Terminal Material
P = PdAg
S = Ag
E = Ag/Ni/SnPb Plate
C = Ag/Ni/Sn Plate

Voltage
First two digits are significant,
last digit is number of zeros,
i.e., 202=2000V

MARKING
Not applicable
As required by customer only.

C0G DIELECTRIC

STYLE		1515	1812	1825	2020	2225	2520	3333	3530
Cap	L	.150 ± .015 (3.81 ± .38)	.180 ± .020 (4.57 ± .51)	.180 ± .020 (4.57 ± .51)	.200 ± .020 (5.08 ± .51)	.220 ± 0.020 (5.59 ± .51)	.250 ± .020 (6.35 ± .51)	.330 ± .030 (8.38 ± .76)	.350 ± .030 (8.89 ± .76)
	W	.150 ± .015 (3.81 ± .38)	.120 ± .015 (3.05 ± .38)	.250 ± .020 (6.35 ± .51)	.200 ± .020 (5.08 ± .51)	.250 ± .020 (6.35 ± .51)	.200 ± .020 (5.08 ± .51)	.330 ± .030 (8.38 ± .76)	.300 ± .030 (7.62 ± .76)
	T MAX	.140 (3.55)	.100 (2.54)	.160 (4.07)	.180 (4.57)	.200 (5.08)	.180(4.57)	.220 (5.59)	.220 (5.59)
	Band Width	0.010-0.030	0.010-0.040	0.010-0.040	0.010-0.040	0.010-0.040	0.030-0.060	0.030-0.060	0.030-0.060
	Cap Code	WVDC				WVDC			
		500 1k 2k 3k	500 1k 2k 3k	500 1k 2k 3k	500 1k 2k 3k	500 1k 2k 3k	500 1k 2k 3k	500 1k 2k 3k 4k	500 1k 2k 3k 4k
12pF	120								
15	150								
18	180								
22	220								
27	270								
33	330								
39	390								
47	470								
56	560								
68	680								
82	820								
100	101								
120	121								
150	151								
180	181								
220	221								
270	271								
330	331								
390	391								
470	471								
560	561								
680	681								
820	821								
1000	102								
1200	122								
1500	152								
1800	182								
2200	222								
2700	272								
3300	332								
3900	392								
4700	472								
5600	562								
6800	682								
8200	822								
0.010uF	103								
0.012	123								
0.015	153								
0.018	183								
0.022	223								

High Voltage Ceramic Chip (+125°C) Military Equivalent

COG DIELECTRIC

STYLE		4040					4540					5440					5550					6560							
Cap	L	.400 ± .030 (10.16 ± .76)					.450 ± .030 (11.43 ± .76)					0.540 ± .030 (13.72 ± .76)					.550 ± .030 (13.97 ± .76)					.650 ± .030 (16.51 ± .76)							
	W	.400 ± .030 (10.16 ± .76)					.400 ± .030 (10.16 ± .76)					.400 ± .030 (10.16 ± .76)					.500 ± .030 (12.70 ± .76)					.600 ± .030 (15.20 ± .76)							
	T MAX	.220 (5.59)					.220 (5.59)					.220 (5.59)					.220 (5.59)					.220 (5.59)							
	Band Width	0.030 - 0.060					0.030 - 0.060					0.030 - 0.060					0.030 - 0.060					0.030 - 0.060							
	Cap Code	WVDC					WVDC					WVDC					WVDC					WVDC							
		500	1k	2k	3k	4k	500	1k	2k	3k	4k	5k	500	1k	2k	3k	4k	500	1k	2k	3k	4k	5k	500	1k	2k	3k	4k	5k
15pF	150																												
18	180																												
22	220																												
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33	330																												
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X7R DIELECTRIC

[illegible]

X7R DIELECTRIC

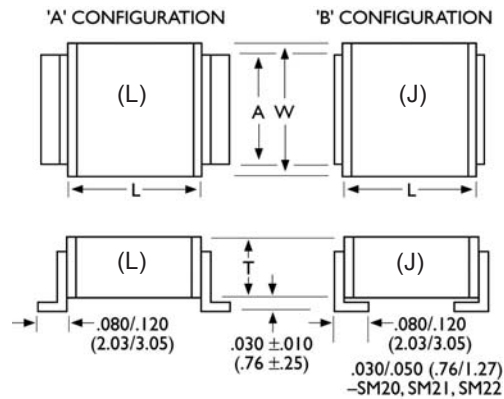
43

FEATURES

1. Silver plated copper alloy terminal for easy soldering.
2. Mounting tabs are designed to minimize the effect of thermal stress introduced by the differences in coefficient of thermal expansion between the capacitor and the mounting surface.
3. Low ESR.
4. High current discharge capability.
5. Group A and B screening per MIL-PRF-49467 available .
6. Standard lead configuration is 'B'.(J) If lead configuration is left out of part number the lead style is assumed to be 'B'.

CAPACITOR OUTLINE DRAWING

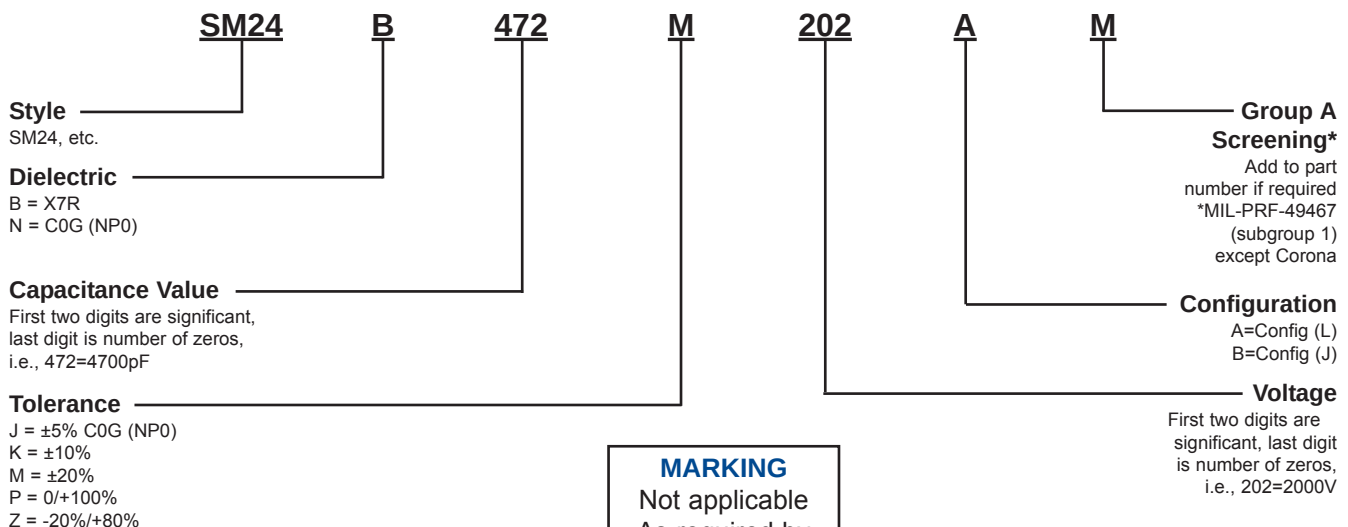
STANDARD



DIMENSIONS

Style	Length (L) Inches (mm)	Width (W) Inches (mm)	Thickness (T) max Inches (mm)	Tab (A) max Inches (mm)
SM20	.150 ± .015 (3.81 ± .38)	.150 ± .015 (3.81 ± .38)	.130 (3.30)	.100 (2.54)
SM21	.200 ± .020 (5.08 ± .51)	.200 ± .020 (5.08 ± .51)	.180 (4.57)	.100 (2.54)
SM22	.250 ± .020 (6.35 ± .51)	.200 ± .020 (5.08 ± .51)	.180 (4.57)	.100 (2.54)
SM23	.350 ± .030 (8.89 ± .76)	.300 ± .030 (7.62 ± .76)	.220 (5.59)	.200 (5.08)
SM24	.450 ± .030 (11.43 ± .76)	.400 ± .030 (10.20 ± .76)	.220 (5.59)	.300 (7.62)
SM25	.550 ± .030 (14.00 ± .76)	.500 ± .030 (12.70 ± .76)	.220 (5.59)	.400 (10.2)
SM26	.650 ± .030 (16.50 ± .76)	.600 ± .030 (15.20 ± .76)	.220 (5.59)	.500 (12.7)
SM30	.300 ± .030 (7.62 ± .76)	.150 ± .015 (3.81 ± .38)	.140 (3.55)	.100 (2.54)
SM31	.400 ± .030 (10.20 ± .76)	.200 ± .020 (5.08 ± .51)	.130 (3.30)	.100 (2.54)
SM33	.700 ± .030 (17.08 ± .76)	.300 ± .030 (7.62 ± .76)	.180 (4.57)	.200 (5.08)
SM34	.900 ± .030 (22.90 ± .76)	.400 ± .030 (10.20 ± .76)	.220 (5.59)	.300 (7.62)
SM35	1.100 ± .030 (27.90 ± .76)	.500 ± .030 (12.70 ± .76)	.220 (5.59)	.400 (10.2)
SM36	1.350 ± .030 (33.00 ± .76)	.600 ± .030 (15.20 ± .76)	.220 (5.59)	.500 (12.7)

PART NUMBER AND ORDERING INFORMATION



C0G DIELECTRIC

45

COG DIELECTRIC

[illegible]

High Voltage L and J Leaded Ceramic Capacitor SM Series

X7R DIELECTRIC

STYLE		SM20			SM21			SM22			SM23			SM24			SM25			SM26										
Cap	L	.150 ± .015 (3.31 ± .38)			.200 ± .020 (5.08 ± .51)			.250 ± .020 (6.35 ± .51)			.350 ± .030 (8.89 ± .76)			.450 ± .030 (11.43 ± .76)			.550 ± .030 (14.00 ± .76)			.650 ± .030 (16.50 ± .76)										
	W	.150 ± .015 (3.31 ± .38)			.200 ± .020 (5.08 ± .51)			.200 ± .020 (5.08 ± .51)			.300 ± .030 (7.62 ± .76)			.400 ± .030 (10.20 ± .76)			.500 ± .030 (12.70 ± .76)			.600 ± .030 (15.20 ± .76)										
	T _{MAX}	.130 (3.30)			.180 (4.57)			.180 (4.57)			.220 (5.59)			.220 (5.59)			.220 (5.59)			.220 (5.59)										
	Tab A max	.100 (2.54)			.100 (2.54)			.100 (2.54)			.200 (5.08)			.300 (7.62)			.400 (10.20)			.500 (12.70)										
	Cap Code	WVDC			WVDC			WVDC			WVDC			WVDC			WVDC			WVDC										
		500	1k	2k	500	1k	2k	3k	500	1k	2k	3k	500	1k	2k	3k	4k	5k	500	1k	2k	3k	4k	5k	500	1k	2k	3k	4k	5k
270pF	271																													
330	331																													
390	391																													
470	471																													
560	561																													
680	681																													
820	821																													
1000	102																													
1200	122																													
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0.047	473																													
0.056	563																													
0.068	683																													
0.082	823																													
0.10	104																													
0.12	124																													
0.15	154																													
0.18	184																													

X7R DIELECTRIC

STYLE	SM30	SM31	SM33	SM34	SM35	SM36
L	.300 ± .030 (7.62 ± .76)	.400 ± .030 (10.20 ± .76)	.700 ± .030 (17.08 ± .76)	.900 ± .030 (22.90 ± .76)	1.100 ± .030 (27.90 ± .76)	1.350 ± .030 (33.00 ± .76)
W	.150 ± .015 (3.31 ± .38)	.200 ± .020 (5.08 ± .51)	.300 ± .030 (10.20 ± .76)	.400 ± .030 (10.20 ± .76)	.500 ± .030 (12.70 ± .76)	.600 ± .030 (15.20 ± .76)
T _{MAX}	.140 (3.55)	.130 (3.30)	.180 (4.57)	.220 (5.59)	.220 (5.59)	.220 (5.59)
Tab A max	.100 (2.54)	.100 (2.54)	.200 (5.08)	.300 (7.62)	.400 (10.20)	.500 (12.70)
Cap Code	WVDC	WVDC	WVDC	WVDC	WVDC	WVDC
	500 1k 2k 3k 4k	500 1k 2k 3k 4k 5k	500 1k 2k 3k 4k 5k 7.5k	500 1k 2k 3k 4k 5k 7.5k 10k	500 1k 2k 3k 4k 5k 7.5k 10k	500 1k 2k 3k 4k 5k 7.5k 10k
150pF	151					
180	181					
220	221					
270	271					
330	331					
390	391					
470	471					
560	561					
680	681					
820	821					
1000	102					
1200	122					
1500	152					
1800	182					
2200	222					
2700	272					
3300	332					
3900	392					
4700	472					
5600	562					
6800	682					
8200	822					
0.01uF	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					
0.10	104					
0.12	124					
0.15	154					
0.18	184					
0.22	224					
0.27	274					
0.33	334					
0.39	394					
0.47	474					
0.56	564					
0.68	684					
0.82	824					
1.0	105					
1.2	125					
1.5	155					
1.8	185					
2.2	225					
2.7	275					
3.3	335					
3.9	395					
4.7	475					
5.6	565					

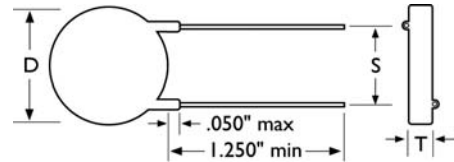
High Voltage Disc Ceramic Capacitor D Series

FEATURES

Disc ceramic capacitors made under strict quality control procedures are a reliable component. Special attention is given to the ceramic pressing operation to assure high and uniform ceramic density.

These parts are manufactured for the quality conscious customer. Parts are available screened to MIL-PRF-49467 established reliability specification.

CAPACITOR OUTLINE DRAWING



INSTALLATION

Higher-voltage parts may require further encapsulation to prevent surface breakdown. Parts should be cleaned and oven dried at 85°C before further encapsulation. Silicone rubbers or an epoxy may be used. De-airing of encapsulants is recommended. We recommend that a heat sink be attached to the lead between the soldering iron and the capacitor during installation soldering. Testing of higher-voltage parts before encapsulation may be done in a suitable dielectric fluid such as Freon.

DIELECTRIC COMPARISON

CERAMIC TYPE	C0G (NP0)	X7R	X5U
Dissipation Factor	0.1%	2.5%	2.5%
Temperature Coefficient	±30ppm/°C	±15%	+22% -56%
Voltage Coefficient	0	-20%	N/A
Dielectric Withstanding Voltage Test	3 to 15kV at 1.5x rated, 20 to 50kV at rated +10kV	3 to 15kV at 1.5x rated, 20 to 50kV at rated +10kV	3 to 15kV at 1.5x rated, 20 to 50kV at rated +10kV
Insulation Resistance (25°C)	100k megohms or 1k megohms-μF, whichever is less	100k megohms or 1k megohms-μF, whichever is less	10k megohms or 100 megohms-μF, whichever is less
Operating Temperature Range (rated voltage)	-55°C to +125°C	-55°C to +125°C	-55°C to +85°C

Thickness:
Inches (mm) max.

3kV = 0.15 (3.81)
5kV = 0.20 (5.08)
7.5kV = 0.28 (7.11)
10kV = 0.35 (8.89)
15kV = 0.45 (11.43)
20kV = 0.55 (13.97)
30kV = 0.95 (24.13)
40kV = 1.20 (30.48)
50kV = 1.50 (38.10)

Lead Type: Solder plated, copper-clad steel (CCFE)-
D30, D40: 0.025" (22GA)
D50 & Larger: 0.032" (20GA)

PART NUMBER AND ORDERING INFORMATION

30

D50

W

122

M

M

Q

Voltage
30 = 3000V
100 = 10,000V
etc.

Style
D50, etc.

Dielectric
N = C0G (NP0)
W = X7R
Y = X5U

No Leads
Add to part number if required

Group A Screening*
Add to part number if required
*MIL-PRF-49467 (subgroup 1) except Corona

Tolerance
J = ±5% C0G (NP0)
K = ±10%
M = ±20%
P = 0/+100%
Z = -20%/+80%

Capacitance Value
First two digits are significant, last digit is number of zeroes, i.e., 472=4700pF

MARKING

(D30)	(All Other Sizes)
301M	D50W122M
3kV	3kV
KEC	KEC
Date Code	Date Code

3K VDC

Disc Style	D Max.	S ±.030	C0G (NP0)		X7R		X5U	
			Min.	Max.	Min.	Max.	Min.	Max.
D30	.30	.250	7.8pF	9.6pF	250pF	300pF	520pF	700pF
D40	.40	.250	20pF	25pF	630pF	770pF	1300pF	1800pF
D50	.50	.375	36pF	44pF	1100pF	1400pF	2400pF	3200pF
D75	.75	.375	80pF	98pF	2500pF	3100pF	5300pF	7200pF
D90	.90	.500	123pF	150pF	3800pF	4700pF	8200pF	11000pF
D100	1.00	.500	145pF	178pF	4600pF	5600pF	9700pF	13000pF
D120	1.20	.500	193pF	236pF	6000pF	7400pF	12900pF	17300pF

5K VDC

D30	.30	.250	4.7pF	5.7pF	150pF	180pF	310pF	420pF
D40	.40	.250	12pF	15pF	380pF	460pF	810pF	1100pF
D50	.50	.375	21pF	26pF	670pF	820pF	1400pF	1900pF
D75	.75	.375	48pF	59pF	1500pF	1800pF	3200pF	4300pF
D90	.90	.500	74pF	90pF	2300pF	2800pF	4900pF	6600pF
D100	1.00	.500	87pF	107pF	2700pF	3300pF	5800pF	7800pF
D120	1.20	.500	116pF	141pF	3600pF	4400pF	7700pF	10400pF

7.5K VDC

D30	.30	.250	3.1pF	3.8pF	100pF	120pF	210pF	280pF
D40	.40	.250	8.1pF	9.9pF	250pF	310pF	540pF	720pF
D50	.50	.375	14pF	17pF	450pF	550pF	950pF	1300pF
D75	.75	.375	32pF	39pF	1000pF	1200pF	2100pF	2900pF
D90	.90	.500	49pF	60pF	1500pF	1900pF	3300pF	4400pF
D100	1.00	.500	58pF	71pF	1800pF	2200pF	3900pF	5200pF
D120	1.20	.500	77pF	94pF	2400pF	3000pF	5100pF	6900pF

10K VDC

D30	.30	.250	2.4pF	2.9pF	70pF	90pF	160pF	210pF
D40	.40	.250	6.1pF	7.4pF	190pF	230pF	400pF	540pF
D50	.50	.375	10.7pF	13.1pF	330pF	410pF	710pF	960pF
D75	.75	.375	24pF	29pF	750pF	920pF	1600pF	2200pF
D90	.90	.500	37pF	45pF	1200pF	1400pF	2500pF	3300pF
D100	1.00	.500	44pF	53pF	1400pF	1700pF	2900pF	3900pF
D120	1.20	.500	58pF	71pF	1800pF	2200pF	3900pF	5200pF

15K VDC

D30	.30	.250	1.6pF	1.9pF	50pF	60pF	100pF	140pF
D40	.40	.250	4.0pF	4.9pF	130pF	150pF	270pF	360pF
D50	.50	.375	7.1pF	8.7pF	220pF	270pF	480pF	640pF
D75	.75	.375	16pF	20pF	500pF	610pF	1100pF	1400pF
D90	.90	.500	25pF	30pF	770pF	940pF	1600pF	2200pF
D100	1.00	.500	29pF	36pF	910pF	1100pF	1900pF	2600pF
D120	1.20	.500	39pF	47pF	1200pF	1500pF	2600pF	3500pF

20K VDC

D30	.30	.250	1.2pF	1.4pF	37pF	45pF	80pF	110pF
D40	.40	.250	3.0pF	3.7pF	100pF	120pF	200pF	270pF
D50	.50	.375	5.3pF	6.5pF	170pF	200pF	360pF	480pF
D75	.75	.375	12pF	15pF	380pF	460pF	800pF	1100pF
D90	.90	.500	18pF	22pF	580pF	700pF	1200pF	1600pF
D100	1.00	.500	22pF	27pF	680pF	830pF	1500pF	2000pF
D120	1.20	.500	29pF	35pF	910pF	1100pF	1900pF	2600pF

30K, 40K & 50K VDC

Disc Style	D Max.	S ±.030	30kVDC		40kVDC		50kVDC	
			X7R		X7R		X7R	
			Min.	Max.	Min.	Max.	Min.	Max.
D30	.30	.250	20pF	30pF	18pF	22pF	10pF	20pF
D40	.40	.250	60pF	80pF	50pF	60pF	40pF	50pF
D50	.50	.375	110pF	140pF	80pF	100pF	70pF	80pF
D75	.75	.375	250pF	310pF	190pF	230pF	150pF	180pF
D90	.90	.500	380pF	470pF	290pF	350pF	230pF	280pF
D100	1.00	.500	460pF	560pF	340pF	420pF	270pF	330pF
D120	1.20	.500	600pF	740pF	450pF	550pF	360pF	440pF



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