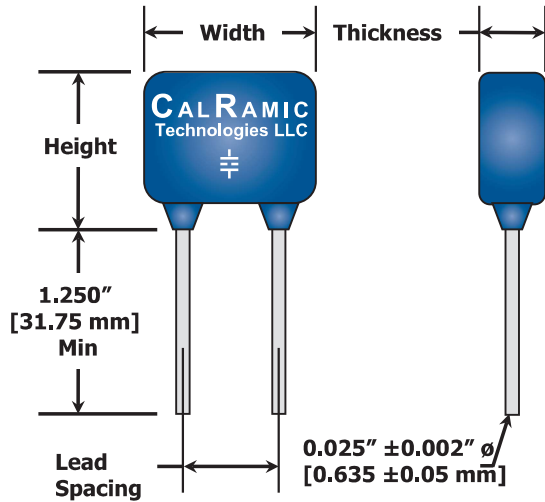


High Voltage Radial Leaded Capacitors

Military & Commercial Level NPO & X7R – 500 Vdc to 10 kVdc



Lead Type: #22 AWG, CCFE / Solder plate
RoHS Option – 100% Tin plate

CalRamic Technologies LLC manufactures a series of highly reliable, military / commercial grade high voltage, radial leaded ceramic capacitors that are designed specifically for those conditions where the assembly may be exposed to high levels of thermal and / or mechanical shock. In addition, these assemblies are packaged in a high resistance conformal coating that provides enhanced electrical isolation and added environmental protection.

Intended for continuous operation at full rated voltage and across the entire operating temperature range, these capacitors utilize a special internal design specifically intended to reduce electric field stresses, thereby providing a device that exhibits very low ESR characteristics and no reduction in insulation resistance with life.

Available with ultra-stable Class I, NPO and stable Class II, X7R dielectric materials, these capacitors are ideally suited for timing / precision circuitry, energy storage, DC blocking, snubbers, transient suppression, decoupling, resonators and EMI filtering applications.

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Performance Characteristics

Specification	Dielectric Type (EIA Designation)	
	NPO (COG)	X7R
Material Classification	Type I, Ultra Stable, K90	Type II, Stable, K2500
Coefficient of Thermal Expansion	$9 \times 10^{-6} / ^\circ\text{C}$	$11 \times 10^{-6} / ^\circ\text{C}$
Density	67 g / in ³	
Operating Temperature Range	-55 to +125°C	
Aging Rate	0	-2% Max per decade hour
Temperature Coefficient	±30 PPM / °C	±15%
Voltage Coefficient	Negligible	Range -35% to -55% Max @ WVDC
Capacitance Range	10 pF to 0.33 µF	150 pF to 5.6 µF
Voltage Range	500 VDC to 10 kVDC	
Insulation Resistance @ +25°C	100,000 MΩ or 1000 MΩ - µF, W/E is less	
Insulation Resistance @ +125°C	10,000 MΩ or 100 MΩ - µF, W/E is less	
Dissipation Factor	0.1% Max	2.5% Max
DWV	1.5 X WVDC ≤ 1250 Vdc or 1.2 X WVDC > 1250 Vdc	

Mechanical Dimensions

Dimensions inches [mm]	Product Style												
	HV01	HV02	HV03	HV10	HV04	HV11	HV05	HV06	HV07	HV13	HV14	HV15	HV16
Width - Max	0.250 [6.35]	0.320 [8.13]	0.370 [9.40]	0.450 [11.43]	0.470 [11.94]	0.550 [13.97]	0.570 [14.48]	0.670 [17.02]	0.770 [19.56]	0.850 [21.59]	1.050 [26.67]	1.250 [31.75]	1.450 [36.83]
Height - Max	0.220 [5.59]	0.280 [7.11]	0.300 [7.62]	0.220 [5.59]	0.400 [10.16]	0.280 [7.11]	0.500 [12.70]	0.600 [15.24]	0.720 [18.29]	0.400 [10.16]	0.500 [12.70]	0.600 [15.24]	0.720 [18.29]
Thickness - Max	0.200 [5.08]	0.250 [6.35]	0.250 [6.35]	0.200 [5.08]	0.270 [6.86]	0.270 [6.86]	0.270 [6.86]	0.270 [6.86]	0.270 [6.86]	0.270 [6.86]	0.270 [6.86]	0.270 [6.86]	0.270 [6.86]
Lead Spacing ±0.030 [0.762]	0.170 [4.32]	0.220 [5.59]	0.275 [6.99]	0.300 [7.62]	0.375 [9.53]	0.400 [10.16]	0.475 [12.07]	0.575 [14.61]	0.675 [17.15]	0.700 [17.78]	0.975 [24.77]	1.175 [29.85]	1.300 [33.02]

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Electrical Characteristics

NPO Capacitance Range														
Style	HV01	HV02	HV03	HV04	HV05	HV06	HV07	HV10	HV11	HV13	HV14	HV15	HV16	
Min Cap	120	220	270	270	180	270	470	100	100	120	180	330	560	
WVDC	500	472	822	103	223	563	823	104	153	273	124	154	224	334
	1000	152	392	682	183	333	473	683	472	103	683	563	104	154
	2000	681	821	122	332	682	103	223	102	222	103	153	223	253
	3000	151	561	681	152	392	682	822	391	821	472	562	153	183
	4000	•	•	•	681	152	222	392	221	561	152	332	562	822
	5000	•	•	•	•	102	222	272	•	391	122	222	392	562
	7000	•	•	•	•	•	•	•	•	•	471	102	182	272
	10000	•	•	•	•	•	•	•	•	•	•	821	122	222

*Voltages >10kVdc available – Contact Factory

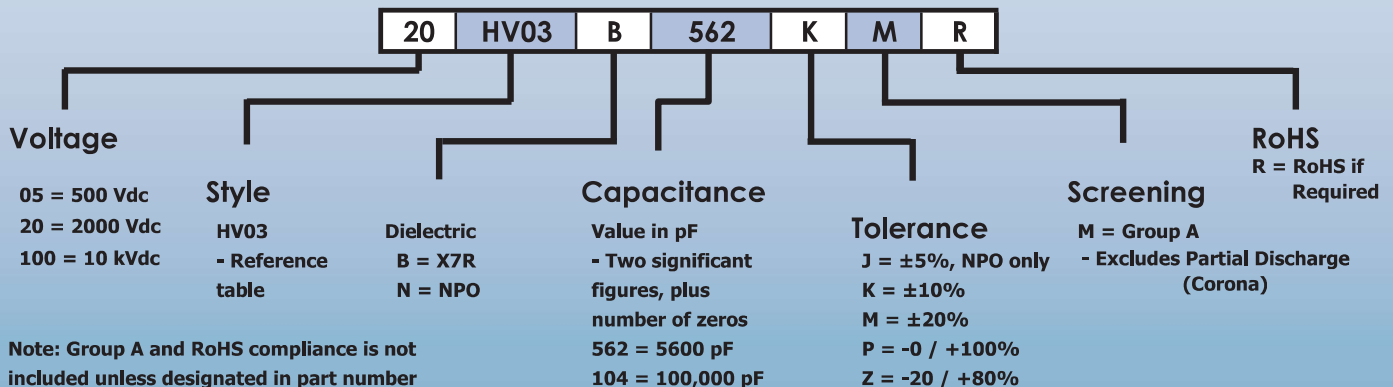
X7R Capacitance Range														
Style	HV01	HV02	HV03	HV04	HV05	HV06	HV07	HV10	HV11	HV13	HV14	HV15	HV16	
Min Cap	271	561	681	271	471	681	122	151	271	221	471	821	122	
WVDC	500	823	184	224	564	125	185	255	224	394	155	225	395	565
	1000	223	683	823	274	474	684	105	563	154	684	105	155	225
	2000	392	123	183	333	683	104	184	822	223	823	154	254	334
	3000	•	392	562	153	333	393	823	222	822	273	563	823	124
	4000	•	•	•	682	103	153	273	122	472	123	273	473	683
	5000	•	•	•	•	682	103	153	•	272	822	223	273	393
	7000	•	•	•	•	•	•	•	•	•	332	682	103	183
	10000	•	•	•	•	•	•	•	•	•	•	392	562	103

*Voltages >10kVdc available – Contact Factory

Notes

1. Product designed and manufactured to be drop-in replacements for DSCC HV designs.
2. Group A screening available to MIL-PRF-49467.
3. Special testing including Ultrasound (C-SAM) and Partial Discharge (Corona) is available. See Space Level HS catalog CRT-0009 for more information.
4. Custom voltages, package sizes and capacitance values available. Contact factory.
5. X7R dielectrics are not intended for AC line filtering applications.
6. Large ceramic capacitors, even leaded devices are susceptible to damage when exposed to thermal and / or mechanical shock. Refer to Technical Bulletin AN103/AN112 for handling and installation recommendations.
7. High voltage products may require additional conformal coating to prevent possible arc over.

Part Number / Ordering Information



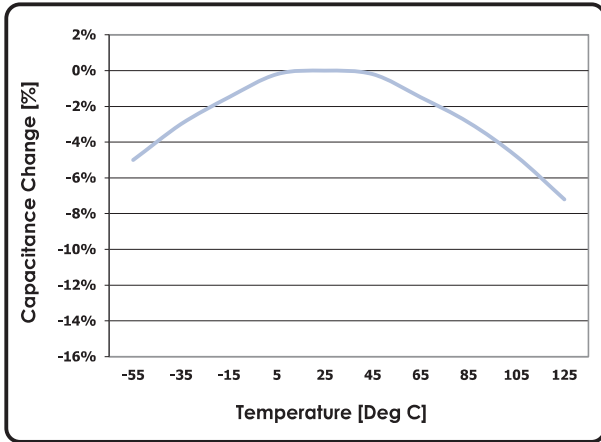
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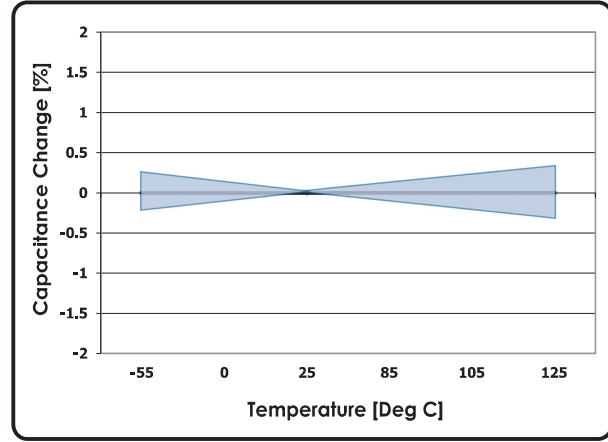


Performance Charts (Typical)

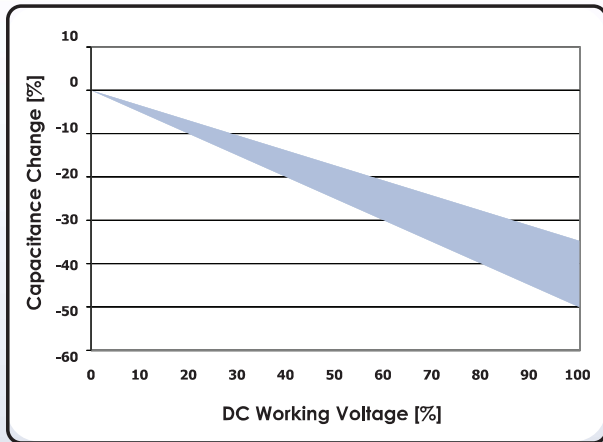
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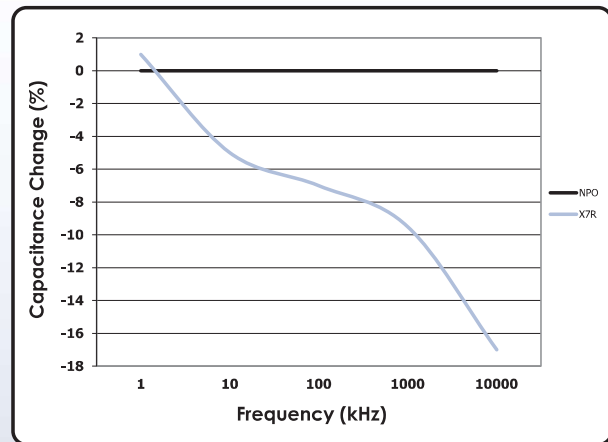
X7R Temperature Coefficient



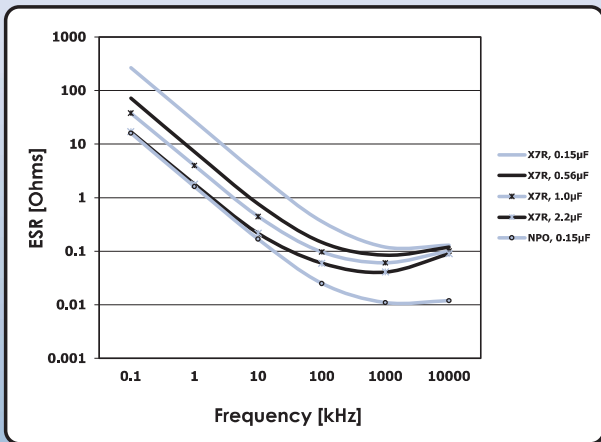
NPO Temperature Coefficient



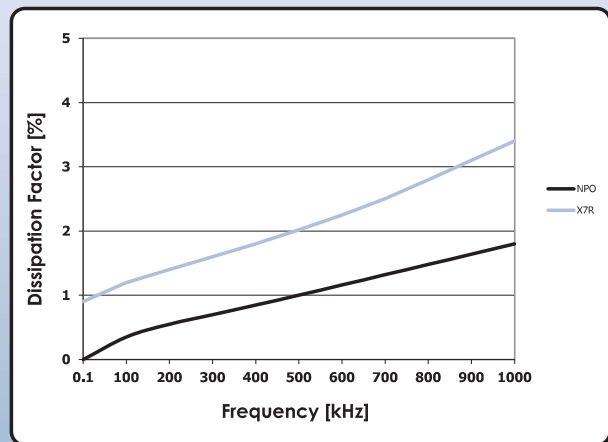
X7R Voltage Coefficient



Capacitance Vs Frequency



ESR Vs Frequency



DF Vs Frequency