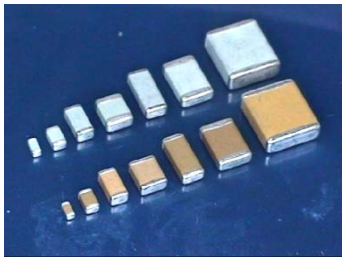
HVC Series

High Voltage NP0 and X7R Capacitors Up to 5KV



Holy Stone high voltage products are designed and manufactured to meet the general requirements of international standards. This product offering is well suited for commercial and industrial applications and includes NP0 (C0G) and X7R characteristics in sizes 0603 to 2225 and with working voltages up to 5KV.

◆ Features

- ❑ Special internal electrode design offer the highest voltage rating.
- ❑ Surface mount suited for solder wave and reflow soldering.
- ❑ High reliability.
- ❑ RoHS compliant.

◆ Applications.

- ❑ Suitable for LAN/WLAN interface, Back-Lighting Inverter, DC-DC Converters, Ballast, Modems & Power Supplies.

◆ Summary of Specifications

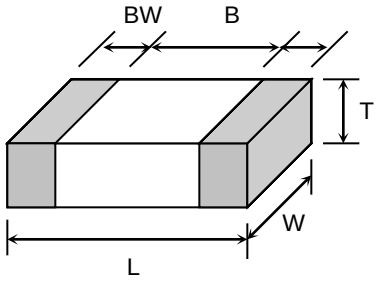
Operating Temperature	-55~+125 ℃
Rated Voltage	100Vdc to 5000Vdc
Temperature Coefficient	NP0 : ≤ ± 30ppm/ ℃ , -55~+125 ℃ (EIA Class I)
	X7R : ≤ ± 15% , -55~+125 ℃ (EIA Class Ⅱ)
Dissipation Factor	NP0: Q≧1000 ; X7R : D.F.≦2.5%
Insulation Resistance	10GΩ or 500/C Ω whichever is smaller
Ageing	NP0:0% ; X7R: Typically 1.0% per decade of time
Dielectric Strength	100V ≦ V < 500V : 200% Rated Voltage
	500V ≦ V < 1000V : 150% Rated Voltage
	1000V≦ V : 120% Rated Voltage

◆ How To Order

C	1210	X	103	K	102	T	X

Product Code	Chip Size	Dielectric	Capacitance Unit : pF	Tolerance	Rated Voltage	Packaging	Special Requirement
C : MLCC Multilayer Ceramic Capacitor	EX. : 0603, 0805, 1206, 1210, 1808, 1812, 2220, 2225	Ex. : N : NP0, X : X7R	Ex. : 2R0 : 2.0pF, 100 : 10×10^0, 471 : 47×10^1, 102 : 10×10^2	Ex. : C : +/-0.25pF, D : +/-0.50pF, J : +/- 5%, K : +/-10%, M : +/-20%	Ex. : 101 : 100Vdc, 251 : 250Vdc, 501 : 500Vdc, 631 : 630Vdc, 102 : 1000Vdc, 202 : 2000Vdc, 302 : 3000Vdc, 402 : 4000Vdc, 502 : 5000Vdc	T : Tape & Reel, B : Bulk	Ex. : O : Arc Prevention Coating, X : Polymer Termination (Super Term)

◆ Dimensions



Unit : mm [inches]

TYPE	L	W	T (max)	B (min)	BW (min)
0603	1.60±0.1 [.063±.004]	0.80±0.1 [.031 ±.004]	0.90 [.039]	0.40 [.016]	0.15 [.006]
0805	2.00±0.20 [.079±.008]	1.25±0.20 [.049±.008]	1.45 [.057]	0.70 [.028]	0.20 [.008]
1206	3.20±0.30 [.126±.012]	1.60±0.20 [.063±.008]	1.80 [.071]	1.50 [.059]	0.30 [.012]
1210	3.20±0.30 [.126±.012]	2.50±0.20 [.098±.008]	2.60 [.102]	1.60 [.063]	0.30 [.012]
1808	4.60±0.30 [.181±.012]	2.00±0.20 [.079±.008]	2.20 [.087]	2.50 [.098]	0.30 [.012]
1812	4.60±0.30 [.181±.012]	3.20±0.30 [.126±.012]	3.00 [.118]	2.50 [.098]	0.30 [.012]
1825	4.6±0.30 [.181±.012]	6.35±0.40 [.250±.016]	3.00 [.118]	2.50 [.098]	0.30 [.012]
2220	5.7±0.40 [.220±.016]	5.00±0.40 [.197±.016]	3.00 [.118]	3.50 [.137]	0.30 [.012]
2225	5.7±0.40 [.220±.016]	6.35±0.40 [.250±.016]	3.00 [.118]	3.50 [.137]	0.30 [.012]

◆ Capacitance Range – NP0 100Vdc to 1KVdc

Capacitance Range (pF)

Temperature Characteristic	Size	Rated Voltage	2R0	3R3	3R9	5R0	8R2	100	120	150	180	220	270	330	390	470	560	680	820	101	121	151	181	221	271	331	391	471	561	681	821	102	122	152	182	222	272	332	392	472	562	682	822	103	123	153	183	223	273	333	393	473	563	683
NP0	0603	50V															B	B	B	B	B	B	B	B	B	B	B	B	B	B																								
		100V	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B																														
		200V	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B																														
		250V	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B																														
	0805	100V	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	C	C	D																					
		200V	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	C	C	D																					
		250V	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C	C	C	D																					
		500V	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C																								
	1206	100V																																																				
		200V	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/D	B/D	B/D	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	E											
		250V									B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/D	B/D	B/D	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	E											
		500V									C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	D	D	D	D/E	D/E	D/E	D/E	D/E																		
		630V									C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	D	D	D	D/E	D/E	D/E	D/E	D/E																		
		1KV						D	D	D	D	D	D	D	D	D	D	D	D	D	E	E	E	E	E	E	E	E	E	E	E																							
	1210	100V																																																				
		200V						B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	C	D	D	D	D	D/E	D/E	D/E	D/E	D/E	E	E										
		250V														C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	D	D	D	D	D/E	D/E	D/E	D/E	D/E	E	E										
		500V														C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	D	D	D	E	E	F	F	F	F													
		630V														C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	D	D	D	E	E	F	F	F	F													
		1KV																D	D	D	D	D	D	D	D/E	D/E	D/E	D/E	D/E	D/E	D/E																						
	1808	500V	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E																		
		630V																																																				
		1KV	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	E	E	E	E	E	E	E	E	E	E	E	F																					
	1812	100V																																																				
		200V																																																				
		250V																																																				
		500V																D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D/E	D/E	D/E	D/E	D/E	E	E	E										
		630V																																																				
		1KV																D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	E	F	F	E/F	E/F	E/F	F	F/G	F/G	G											
	2220	100V																																																				
		200V																																																				
		250V																																			D	D	D	D	D	D	D	D	D	D	D	D	E					
		500V																														D	D	D	D	D	D	D	D	D	D	E	E										
		630V																																																				
		1KV																																																				
	1825	100V																																																				
		200V																																																				
		250V																																					D	D	D	D	D	D	D	D	D	D	D/E	E	F		
		500V																																									D	E	E	E	F	F	G	G			
		630V																																																				
		1KV																																																				

■ **Consult HEC for thickness information**

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◆ Capacitance Range – NP0 100Vdc to 1KVdc cont.

Temperature Characteristic	Size	Rated Voltage	Capacitance Range (pF)																																																	
			2R0	3R3	3R9	5R0	8R2	100	120	150	180	220	270	330	390	470	560	680	820	101	121	151	181	221	271	331	391	471	561	681	821	102	122	152	182	222	272	332	392	472	562	682	822	103	123	153	183	223	273	333	393	473	563	683
NP0	2225	100V																														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
		200V																														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	D	D	D	■	■	■	
		250V																														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
		500V																														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
		630V																														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
		1KV																														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■							

◆ Capacitance Range – X7R 100Vdc to 1KVdc

Temperature Characteristic	Size	Rated Voltage	Capacitance Range (pF)																																													
			151	181	221	271	331	391	471	561	681	821	102	122	152	182	222	272	332	392	472	562	682	822	103	123	153	183	223	273	333	393	473	563	683	823	104	124	154	184	224	274	334	394	474	564	684	824	105	155	225
X7R	0603	100V	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B																							
	0805	100V	■	■	■	■	■	■	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	C														
		200V	■	■	■	■	■	■	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	D	D	D	D																		
		250V	■	■	■	■	■	■	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	D	D	D	D																		
		500V	■	■	■	■	■	■	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	C	C	C	C	C	C	C	C	C																						
		1KV							C	C	C	C	C																																				
	1206	100V		B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	C	C	C	D	E	E	E						
		200V		B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	C/D	D/E	D/E	D/E														
		250V		B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	B/C	C/D	D/E	D/E	D/E														
		500V		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	D																	
		630V		■	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	E																				
		1KV		■	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D																								
	1210	100V			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	D	E	E	F	G	G
		200V			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	C	C	C	C	C	C	C	C	C	C	C	C	D	D	D	D	D	E	E	E	F						
		250V			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	C	C	C	C	C	C	C	C	C	C	C	C	D	D	D	D	D	E	E	E	F						
		500V			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	D	D	D	D	D	D	E	E	E	F	F	F	F														
		1KV			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	D	D	D	D	D	E																					
	1808	500V			■	■	■	■	■	■	■	■	■	■	■	■	■	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D																			
		1KV			■	■	■	■	■	■	■	■	■	■	■	■	■	D	D	D	D	E	E	E	F	F	F																								
	1812	100V			D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	E	E	E	E	E	F	G
		200V			D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	E	E	E	F	G		
		250V			D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	D/E	E	E	E	F	G		
		500V			D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	E	E	E	E	F	F/G	H	H										
		1KV			D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	E	E	E	E	E	F	F/G	F/G	F/G	F/G																		
	2220	200V																							■	■	■	■	■	■	■	■	■	■	■	■	D	D	D	D	D	D	D	D	D	D	D	E	E	F	H
		250V																							■	■	■	■	■	■	■	■	■	■	■	■	D	D	D	D	D	D	D	D	D	D	D	E	E	F	H
		500V																							■	■	■	■	■	■	■	■	■	■	■	■	E	E	E	E	E	F	G	G	H						
		1KV																							E	E	E	E	E	E	E/F	F	F	G	G	H	H														
	1825	200V																							D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	E	E	E	E	■	
		250V																							D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	E	E	E	E	■	
		500V																							D	D	D	D	D	D	D	D	D	D	D	E	E	■	■	■	■	■									
		1KV																							D	D	D	E	E	F	F	F	F	F	F	F	F														
	2225	200V																							■	■	■	■	■	■	■	■	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	G
		250V																							■	■	■	■	■	■	■	■	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	G
		500V																							■	■	■	■	■	■	■	■	E	E	E	E	E	E	E	E	E	F	F								
		1KV																							■	■	■	■	■	■	■	■	E	E	E	E	E														

■ **Consult HEC for thickness information**

◆ Thickness Specification

Symbol Code	S	O	A	B	C	D	E	F	G	H
Thickness(mm)	0.3±0.03	0.5±0.05	0.6±0.1	0.85±0.1	1.0±0.1	1.25±0.15	1.6±0.2	2.0±0.2	2.4±0.2	2.8±0.2

▪ ***Other dimensions, capacitance values and voltage ratings are available on request. Please contact your local HEC office.***

◆ Capacitance Range 2KV

Temperature Characteristic	Size	Rated Voltage	Capacitance Range (pF)																																		
			2R0	3R3	3R9	5R0	8R2	100	120	150	180	220	270	330	390	470	560	680	820	101	121	151	181	221	271	331	391	471	561	681	821	102	122	152	182	222	272
NP0	1206	2KV						D	D	D	D	D	D	D	D	D	D	D	D	D	D	D/E	D/E	D/E	E	E	E										
	1808	2KV	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E/F	E/F	E/F	E/F	E/F	E/F	E/F										
	1812	2KV																D	D	D	D	D	D	D	E	E	F	F	F	F	F	F	F	F			

Temperature Characteristic	Size	Rated Voltage	Capacitance Range (pF)																																		
			151	181	221	271	331	391	471	561	681	821	102	122	152	182	222	272	332	392	472	562	682	822	103	123	153	183	223	273	333	393	473	563	683	823	104
X7R	1206	2KV			D	D	D	D	D	D	D	D	D/E	E	E																						
	1210	2KV			D	D	D	D	D	D	D	D	D	E	E	E	F	G																			
	1808	2KV	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	F	F																		
	1812	2KV				D	D	D	D	D	D	D	D	D	D	E	E	F	F	F	F	F	F	G	H												
	1825	2KV																	E	E	E	E	F	F	F												
	2220	2KV											D	D	D	D	D	D	E	E	F	F	F	F	F												
	2225	2KV																						E/F	E/F												

◆ Thickness Specification

Symbol Code	S	O	A	B	C	D	E	F	G	H
Thickness(mm)	0.3±0.03	0.5±0.05	0.6±0.1	0.85±0.1	1.0±0.1	1.25±0.15	1.6±0.2	2.0±0.2	2.4±0.2	2.8±0.2

▪ ***Other dimensions, capacitance values and voltage ratings are available on request. Please contact your local HEC office.***

◆ Capacitance Range 3KVdc to 5KVdc

Temperature Characteristic	Size	Rated Voltage	Capacitance Range (pF)																																		
			2R0	3R3	3R9	5R0	8R0	8R2	100	120	150	180	220	270	330	390	470	560	680	820	101	121	151	181	221	271	331	391	471	561	681	821	102	122	152	182	222
NP0	1206	3KV	D	D	D	D	D	D	D	D	D	D	D	E	E	E																					
	1808	3KV	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	E	E	E/F	E/F	E/F	E/F	E/F	F	F	F	F	F				
		5KV	F	F	F	F	F	F	F	F	F	F	F	F																							
	1812	3KV							D	D	D	D	D	D	D	D	D	D	D	D	E/F	E/F	E/F	E/F	E/F	E/F	E/F	E/F	E/F	E/F	F	F	G				
	2208	5KV	F	F	F	F	F	F	F	F	F	F	F	F	F	F																					
	2211	5KV	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F																		
	2220	5KV	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F														

Temperature Characteristic	Size	Rated Voltage	Capacitance Range (pF)																																		
			151	181	221	271	331	391	471	561	681	821	102	122	152	182	222	272	332	392	472	562	682	822	103	123	153	183	223	273	333	393	473	563	683	823	104
X7R	1808	3KV	D	D	D	D	D	D	D	D	D	D	D	F	F	F																					
		4KV	D	D	D	D	D/E	D/E	D/E	D/F	D/F	D/F	D/F																								
	1812	3KV									E	F	F	F	F	F	F	F																			

■ **Consult HEC for thickness information**

◆ Thickness Specification

Symbol Code	S	O	A	B	C	D	E	F	G	H
Thickness(mm)	0.3±0.03	0.5±0.05	0.6±0.1	0.85±0.1	1.0±0.1	1.25±0.15	1.6±0.2	2.0±0.2	2.4±0.2	2.8±0.2

▪ ***Other dimensions, capacitance values and voltage ratings are available on request. Please contact your local HEC office.***