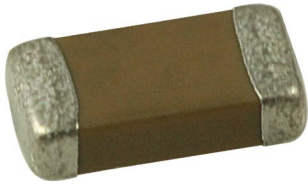


High Voltage Ceramic Capacitors (HVC Series)



Features:

- RoHS Compliant and Halogen Free
- Capacitance range: 0.5pF to 2.2uF
- Voltage range: 200V to 5000V
- Ceramic monolithic structure provides excellent reliability
- High-speed automated placement capabilities

Part Number Structure

C	1808	X7R	202	-	102	K	N	E
Ceramic Capacitor	Size	Temperature Characteristic (Dielectric)	Rated Voltage		Capacitance (pico - Farads)	Tolerance:	Termination	Packaging
	0603		1st two digits are significant		1st two digits are significant,	*C = ± 0.25pF	N = 100% matte Tin (Sn)	P = Paper Tape
	0805		followed by number of zeroes.		followed by number of zeroes.	*D = ± 0.50pF	over nickel.	E = Embossed Tape
	1206	COG				F = ± 1%	P = Palladium Silver	
	1210	X7R				G = ± 2%		
	1808		201 = 200V			J = ± 5%		
	1812		251 = 250V			K = ± 10%		
	1825		501 = 500V			M = ± 20%		
	2220		601 = 600V			N = ± 30%		
	2225		631 = 630V			*For values below 10pF only.		
			102 = 1000V					
			202 = 2000V					
			302 = 3000V					
			402 = 4000V					
			502 = 5000V					

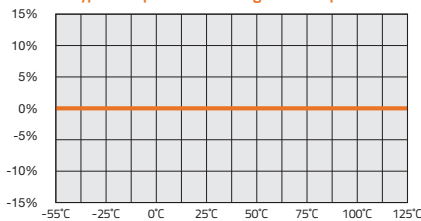
Example P/N: C1808X7R202-102KNE

Standard termination finish is 100% matte Tin (Sn).

Electrical Specifications

COG (NPO)

Typical Capacitance Change vs. Temperature



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

Temperature Coefficient:
0 ±30PPM/°C

Temperature Voltage Coefficient:
0 ±30PPM/°C

Insulation Resistance:
>100 Ω-F or 10 GΩ, whichever is less at 25°C, WDCV.
(The IR at 125°C is 10% of the value at 25°C)

Withstanding Voltage:
See below

Capacitance Tolerance:
C, D, F, G, J, K

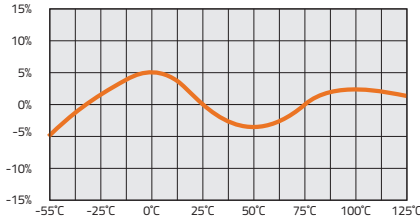
Dielectric Strength is equal to 1.5 times rated voltage (WVDC) for 500 volt capacitors and 1.2 times (WVDC) for 1,000 through 5,000 volt capacitors.
Circuit applications in excess of 1,000 volts may require a surface coating to prevent external arcing.

High Voltage Ceramic Capacitors (HVC Series)

Electrical Specifications

X7R

Typical Capacitance Change vs. Temperature



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

Temperature Coefficient:
0 ±15%Δ°C MAX.

Temperature Voltage Coefficient:
X7R not applicable

Insulation Resistance:
>100 ohms F or 10 G ohms, whichever is less at 25°C, WDCV.
(The IR at 125°C is 10% of the value at 25°C)

Withstanding Voltage:
See below

D.F. Specification:
≥50V, ≤2.5%

Capacitance Tolerance:
J,K,M,N

Test Parameters

Test parameters for Multilayer Ceramic Capacitors - X7R:

1KHz ± 50Hz at 1.0 ± 0.2 Vrms, 25°C

Test parameters for Multilayer Ceramic Capacitors - COG (NP0):

1MHz ± 50KHz at 1.0 ± 0.2 Vrms ≤ 1000pF, 25°C

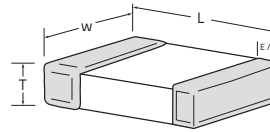
1KHz ± 50Hz at 1.0 ± 0.2 Vrms > 1000pF, 25°C

Note: To ensure proper capacitance readings, the voltage level must be held constant. The HP4284 and Agilent E4980 has a "ALC" (Automatic Level Control) function and should be switched to the "ON" position for accurate capacitance readings.

High Voltage Ceramic Capacitors (HVC Series)

Voltage and Capacitance Range

COG (NPO) Dielectric



Values that are typically available.

(All measurements in inches)

Size	0603		0805			1206					1210			
L	.063 ± .004		.080 ± .008			.125 ± .012					.125 ± .012			
W	.031 ± .004		.050 ± .008			.062 ± .008					.095 ± .008			
T (max)	.039		.065			.080					.085			
Max E/B	.006		.020			.020					.020			
VDCW (MAX)	200V / 250V	200V / 250V	500V	600V / 630V	200V / 250V	500V	600V / 630V	1KV	2KV	3KV	200V / 250V	500V	600V / 630V	1KV
0R5	0.5pF													
1R0	1.0pF													
1R2	1.2pF													
1R5	1.5pF													
1R8	1.8pF													
2R0	2.0pF													
2R2	2.2pF													
2R7	2.7pF													
3R3	3.3pF													
3R9	3.9pF													
5R0	5.0pF													
8R2	8.2pF													
100	10pF													
120	12pF													
150	15pF													
180	18pF													
220	22pF													
270	27pF													
330	33pF													
390	39pF													
470	47pF													
560	56pF													
680	68pF													
820	82pF													
101	100pF													
121	120pF													
151	150pF													
181	180pF													
221	220pF													
271	270pF													
331	330pF													
391	390pF													
471	470pF													
561	560pF													
681	680pF													
821	820pF													
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822	8200pF													
103	0.01uF													
123	0.012uF													
153	0.015uF													
183	0.018uF													
223	0.022uF													
273	0.027uF													
333	0.033uF													
393	0.039uF													
473	0.047uF													
563	0.056uF													
683	0.068uF													
104	0.10uF													
124	0.12uF													

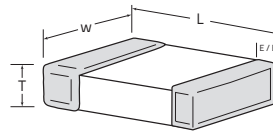
Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.



High Voltage Ceramic Capacitors (HVC Series)

Voltage and Capacitance Range

COG (NPO) Dielectric



Values that are typically available.

(All measurements in inches)

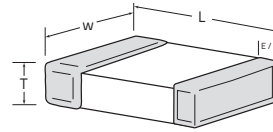
Size		1808					1812					1825					
L		.180 ± .012					.177 ± .012					.180 ± .012					
W		.080 ± .008					.125					.250 ± .016					
T (max)		.095					.118					.128					
Max E/B		.020					.020					.020					
VDCW (MAX)		500V	600V / 630V	1KV	2KV	3KV	5KV	200V / 250V	500V	600V / 630V	1KV	2KV	3KV	200V / 250V	500V	600V / 630V	1KV
0R5	0.5pF																
1R0	1.0pF																
1R2	1.2pF																
1R5	1.5pF																
1R8	1.8pF																
2R0	2.0pF																
2R2	2.2pF																
2R7	2.7pF																
3R3	3.3pF																
3R9	3.9pF																
5R0	5.0pF																
8R2	8.2pF																
100	10pF																
120	12pF																
150	15pF																
180	18pF																
220	22pF																
270	27pF																
330	33pF																
390	39pF																
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560	56pF																
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393	0.039uF																
473	0.047uF																
563	0.056uF																
683	0.068uF																
104	0.10uF																
124	0.12uF																

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

High Voltage Ceramic Capacitors (HVC Series)

Voltage and Capacitance Range

COG (NPO) Dielectric



Values that are typically available.

(All measurements in inches)

Size		2220					2225			
L		.220 ± .016					.225 ± .016			
W		.197 ± .016					.250 ± .016			
T (max)		.118					.145			
Max E/B		.012					.020			
VDCW (MAX)		200V / 250V	500V	600V / 630V	1KV	5KV	200V / 250V	500V	600V / 630V	1KV
↑	0R5	0.5pF								
	1R0	1.0pF								
	1R2	1.2pF								
	1R5	1.5pF								
	1R8	1.8pF								
	2R0	2.0pF								
	2R2	2.2pF								
	2R7	2.7pF								
	3R3	3.3pF								
	3R9	3.9pF								
	5R0	5.0pF								
	8R2	8.2pF								
	100	10pF								
	120	12pF								
	150	15pF								
	180	18pF								
	220	22pF								
	270	27pF								
	330	33pF								
	390	39pF								
	470	47pF								
	560	56pF								
	680	68pF								
	820	82pF								
	101	100pF								
	121	120pF								
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	822	8200pF								
	103	0.01uF								
	123	0.012uF								
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	333	0.033uF								
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	473	0.047uF								
	563	0.056uF								
	683	0.068uF								
	104	0.10uF								
	124	0.12uF								

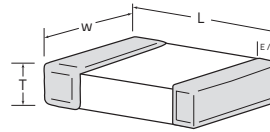
Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.



High Voltage Ceramic Capacitors (HVC Series)

Voltage and Capacitance Range

X7R Dielectric



Values that are typically available.

(All measurements in inches)

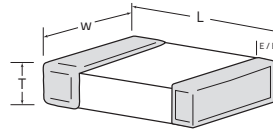
Size		0603					0805					1206					1210														
L		.063 ± .007					.080 ± .008					.125 ± .012					.125 ± .012														
W		.031 ± .007					.050 ± .008					.062 ± .008					.095 ± .008														
T (max)		.031					.065					.080					.085														
Max E/B		.015					.020					.020					.020														
VDCW (MAX)		200V / 250V		200V / 250V		500V		600V / 630V		1KV		200V / 250V		500V		600V / 630V		1KV		2KV		200V / 250V		500V		600V / 630V		1KV		2KV	
101	100pF																														
121	120pF																														
151	150pF																														
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334	0.33uF																														
394	0.39uF																														
474	0.47uF																														
564	0.56uF																														
684	0.68uF																														
824	0.82uF																														
105	1.0uF																														
155	1.5uF																														
225	2.2uF																														

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

High Voltage Ceramic Capacitors (HVC Series)

Voltage and Capacitance Range

X7R Dielectric



Values that are typically available.

(All measurements in inches)

Size		1808						1812						1825			
L		.180 ± .012						.177 ± .012						.180 ± .012			
W		.080 ± .008						.125						.250 ± .016			
T (max)		.095						.118						.128			
Max E/B		.020						.020						.020			
VDCW (MAX)		500V	600V / 630V	1KV	2KV	3KV	4KV	200V / 250V	500V	600V / 630V	1KV	2KV	3KV	200V / 250V	500V	1KV	2KV
101	100pF																
121	120pF																
151	150pF																
181	180pF																
221	220pF																
271	270pF																
331	330pF																
391	390pF																
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682	6800pF																
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334	0.33uF																
394	0.39uF																
474	0.47uF																
564	0.56uF																
684	0.68uF																
824	0.82uF																
105	1.0uF																
155	1.5uF																
225	2.2uF																

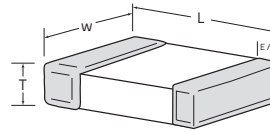
Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.



High Voltage Ceramic Capacitors (HVC Series)

Voltage and Capacitance Range

X7R Dielectric



Values that are typically available.

(All measurements in inches)

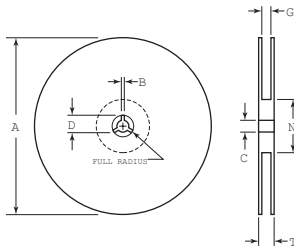
Size		2220				2225			
L		.220 ± .016				.225 ± .016			
W		.197 ± .016				.250 ± .016			
T (max)		.118				.145			
Max E/B		.012				.020			
VDCW (MAX)		200V / 250V	500V	1KV	2KV	200V / 250V	500V	1KV	2KV
151	150pF								
181	180pF								
221	220pF								
271	270pF								
331	330pF								
391	390pF								
471	470pF								
561	560pF								
681	680pF								
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683	0.068uF								
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124	0.12uF								
154	0.15uF								
184	0.18uF								
224	0.22uF								
274	0.27uF								
334	0.33uF								
394	0.39uF								
474	0.47uF								
564	0.56uF								
684	0.68uF								
824	0.82uF								
105	1.0uF								
155	1.5uF								
225	2.2uF								

Note: Additional values may be available. Please contact us for more information. Due to demand and raw material fluctuations, specific values may not be available.

High Voltage Ceramic Capacitors (HVC Series)

Tape and Reel Specifications

All tape and reel specifications must be adhered to per EIA-481-1-A.

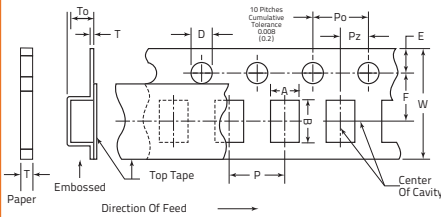


Reel Dimensions

Unit: mm (inch)

TAPE	B min	C	A (7")	A (13")	D min	N min	G	T max
8mm	0.3 (.012)	13 ± .05 (.512 ± .02)	178 ± 2.0 (7 ± .079)	330 ± 2.0 (13 ± .08)	20.2 (.795)	50 (1.97)	10 ± 1.5 (.394 ± .059)	14.9 (.587)
12mm	0.3 (.012)	13 ± .05 (.512 ± .02)	178 ± 2.0 (7 ± .079)	330 ± 2.0 (13 ± .08)	20.2 (.795)	50 (1.97)	10 ± 1.5 (.394 ± .059)	14.9 (.587)

Taping Specifications



7 in. Reel Quantities*

Size	0603	0805	1206	1210	1812	2221
Tape Size	8mm	8mm	8mm	8mm	12mm	12mm
Min Qty Per Reel	3000	2000	2000	1000	1000	1000
Max Qty Per Reel	4000	5000	5000	5000	3000	1000

*Quantity dependent on thickness

Paper Tape Carrier Dimensions (8mm)

Unit: mm (inch)

Size (inches)	A	B	W	F	E	Po	Pz	D	t	P
0603	1.10 ± 0.2 (.043 ± .008)	1.90 ± 0.2 (.075 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 - 0.0 (.039 ± .002) - .000	1.5 ± 0.1 (.064 ± .004)	1.15 MAX (.045 MAX)	4.0 ± 0.1 (.157 ± .004)
0805	1.16 ± 0.2 (.046 ± .008)	2.4 ± 0.2 (.095 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 - 0.0 (.039 ± .002) - .000	1.5 ± 0.1 (.064 ± .004)	1.15 MAX (.045 MAX)	4.0 ± 0.1 (.157 ± .004)
1206	2.0 ± 0.2 (.079 ± .008)	3.6 ± 0.2 (.142 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 - 0.0 (.039 ± .002) - .000	1.5 ± 0.1 (.064 ± .004)	1.15 MAX (.045 MAX)	4.0 ± 0.1 (.157 ± .004)

Embossed Carrier Dimensions (8mm & 12mm)

Size (inches)	A	B	W	F	E	Po	Pz	D	To	T	P
0805	1.48 ± 0.2 (.058 ± .008)	2.3 ± 0.2 (.091 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 ± 0.1 - 0.0 (.06 ± .004) - .000	2.5 MAX (.098 MAX)	0.6 MAX (.024 MAX)	4.0 ± 0.1 (.157 ± .004)
1206	2.0 ± 0.2 (.079 ± .008)	3.6 ± 0.2 (.142 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 ± 0.1 - 0.0 (.06 ± .004) - .000	2.5 MAX (.098 MAX)	0.6 MAX (.024 MAX)	4.0 ± 0.1 (.157 ± .004)
1210	2.9 ± 0.2 (.114 ± .008)	3.6 ± 0.2 (.142 ± .008)	8.0 ± 0.2 (.315 ± .008)	3.5 ± 0.1 (.138 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 ± 0.1 - 0.0 (.06 ± .004) - .000	2.5 MAX (.098 MAX)	0.6 MAX (.024 MAX)	4.0 ± 0.1 (.157 ± .004)
1808	2.5 ± 0.2 (.098 ± .008)	4.9 ± 0.2 (.193 ± .008)	12.0 ± 0.3 (.472 ± .012)	5.5 ± 0.5 (.22 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 ± 0.1 - 0.0 (.06 ± .004) - .000	4.0 MAX (0.16 max)	0.6 MAX (.024 MAX)	4.0 ± 0.1 (.157 ± .004)
1812	3.6 ± 0.2 (.142 ± .008)	4.9 ± 0.2 (.193 ± .008)	12.0 ± 0.3 (.472 ± .012)	5.6 ± 0.1 (.221 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 ± 0.1 - 0.0 (.06 ± .004) - .000	4.0 MAX (0.16 max)	0.6 MAX (.024 MAX)	8.0 ± 0.1 (.315 ± .004)
2220	5.4 ± 0.2 (.21 ± .008)	6.1 ± 0.2 (.193 ± .008)	12.0 ± 0.3 (.472 ± .012)	5.5 ± 0.5 (.22 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 ± 0.1 - 0.0 (.06 ± .004) - .000	4.0 MAX (0.16 max)	0.6 MAX (.024 MAX)	8.0 ± 0.1 (.315 ± .004)
2225	6.9 ± 0.2 (.27 ± .008)	6.1 ± 0.2 (.193 ± .008)	12.0 ± 0.3 (.472 ± .012)	5.5 ± 0.5 (.22 ± .004)	1.75 ± 0.1 (.069 ± .004)	4.0 ± 0.1 (.157 ± .004)	2.0 ± 0.05 (.079 ± .002)	1.5 ± 0.1 - 0.0 (.06 ± .004) - .000	4.0 MAX (0.16 max)	0.6 MAX (.024 MAX)	8.0 ± 0.1 (.315 ± .004)