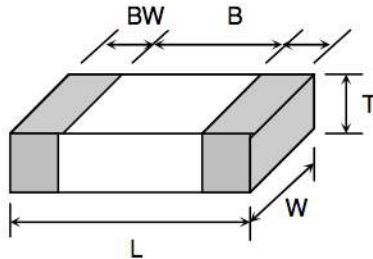


High Voltage Ceramic Chip Capacitor - CHV Series



Construction and Dimensions



Type (mm)	L (mm)	W (mm)	T (max) (mm)	B (min) (mm)	BW (min) (mm)
0603	1.60±0.10	0.80±0.10	0.95	0.4	0.15
0805	2.00±0.20	1.25±0.20	1.45	0.7	0.20
1206	3.20±0.30	1.60±0.20	1.80	1.5	0.30
1210	3.20±0.30	2.50±0.20	2.60	1.6	0.30
1808	4.60±0.30	2.00±0.20	2.20	2.5	0.30
1812	4.60±0.30	3.20±0.30	3.00	2.5	0.30
1825	4.60±0.30	6.35±0.40	3.00	2.5	0.30
2220	5.70±0.40	5.00±0.40	3.00	3.5	0.30
2225	5.70±0.40	6.35±0.40	3.00	3.5	0.30

Scope

- Cal-Chip's unique construction process ensures excellent volumetric efficiency and stability of capacitance with temperature.
- Our high voltage capacitors have extended values to those previously offered.

Features

- Special internal electrode design offers the highest voltage rating.
- Surface mount suitable for wave and reflow soldering
- High reliability
- RoHS compliant

Applications

- Suitable for LAN/WLAN interface
- Back-lighting inverter, DC-DC converters,
- Ballast, Modems and Power Supplies

Electrical Specifications

Operation Temperature	-55°C ~ +125°C
Rating Voltage	100Vdc to 5000Vdc
Temperature Coefficient	NPO : $\pm 30\text{ppm}/^\circ\text{C}$, -55°C ~ +125°C (EIA Class I)
	X7R : $\pm 15\text{ppm}/^\circ\text{C}$, -55°C ~ +125°C (EIA Class II)
Dissipation Factor	NPO : $Q \leq 1000$, X7R : D.F. $\leq 2.5\%$
Insulation Resistance	10GΩ or 500/Ω whichever is smaller
Aging	NPO : 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

CHV	0805	N	250	103	K	X	T	D
Product Type	Size	Termination Options	Rated Voltage	Capacitance	Tolerance	Dielectric	Packaging	Packaging
	0603: 0603 0805: 0805 1206: 1206 1210: 1210 1808: 1808 1812: 1812 1825: 1825 2220: 2220 2225: 2225	N: Nickel Barrier X: Flex Termination / Nickel Barrier	250: 250 VDC 500: 500 630: 630 1K0: 1KV 1K5: 1.5KV 2K0: 2KV 2K5: 2.5KV 3K0: 3KV 4K0: 4KV 5K0: 5KV	Two significant digits followed by no. of zeros. And R in place of decimal point.	B: $\pm 1\text{pF}$ C: $\pm 0.25\text{pF}$ D: $\pm 0.50\text{pF}$ F: $\pm 1\%$ G: $\pm 2\%$ J: $\pm 5\%$ K: $\pm 10\%$ M: $\pm 20\%$	C: COG X: X7R	T: 7" Reel	D: Optional 10K reel (from 0603 - 1210 size)

■ Capacitance Range

DIMENSION (MM)		CHV0603		CHV0805				
L(L1)		1.6±0.1		2.00 ± 0.2				
W		0.8±0.1		1.25 ± 0.2				
BW(L2/L3)		0.40 ± 0.05		0.7 ± 0.2				
Dielectric		COG	X7R	COG		X7R		
H (max)		0.95	0.95	1.45	1.1	1.1	1.1	1.1
Rated Voltage		250	250	250	500	250	500	1KV
Cap. Range								
1.0pF	1R0							
1.3	1R3							
1.5	1R5							
1.8	1R8							
2.0	2R0							
2.2	2R2							
2.4	2R4							
2.5	2R5							
2.7	2R7							
3.0	3R0							
3.3	3R3							
3.6	3R6							
3.9	3R9							
4.0	4R0							
4.3	4R3							
4.7	4R7							
5.0	5R0							
5.1	5R1							
5.6	5R6							
6.0	6R0							
6.8	6R8							
7.0	7R0							
7.5	7R5							
8.0	8R0							
8.2	8R2							
9	9R0							
9.1	9R1							
10	100							
11	110							
12	120							
13	130							
15	150							
16	160							
18	180							
20	200							
22	220							
24	240							
27	270							
30	300							
33	330							
36	360							
39	390							
43	430							

DIMENSION (MM)		CHV0603		CHV0805			
L(L1)		1.6±0.1		2.00 ± 0.2			
W		0.8±0.1		1.25 ± 0.2			
BW(L2/L3)		0.40 ± 0.05		0.7 ± 0.2			
Dielectric		COG	X7R	COG	X7R		
H (max)		0.95	0.95	1.45	1.1	1.1	1.1
Rated Voltage		250	250	250	500	250	500 1KV
Cap. Range							
47	470						
51	510						
56	560						
62	620						
68	680						
75	750						
82	820						
91	910						
100	101						
120	121						
130	131						
150	151						
160	161						
180	181						
200	201						
220	221						
240	241						
270	271						
300	301						
330	331						
360	361						
390	391						
430	431						
470	471						
510	511						
560	561						
620	621						
680	681						
750	751						
820	821						
910	911						
1.0nF	102						
1.2	122						
1.3	132						
1.5	152						
1.6	162						
1.8	182						
2.0	202						
2.2	222						
2.7	272						
3.3	332						
3.9	392						
4.7	472						
5.6	562						
6.8	682						
8.2	822						
10	103						
12	123						
15	153						
18	183						
22	223						
27	273						
33	333						
39	393						
47	473						
56	563						
68	683						
82	823						
100	104						

DIMENSION (MM)		CHV1206													
L(L1)		3.2±0.30													
W		1.6±0.2													
BW(L2/L3)		1.50±0.3													
Dielectric		COG						X7R							
H (max)		1.8						1.8							
Rated Voltage		250	500	630	1KV	2KV	3KV	250	500	630	1KV	1.5KV	2KV	2.5KV	3KV
Cap. Range															
1.0pF	1R0														
2.0	2R0														
3.3	3R3														
3.9	3R9														
5.0	5R0														
8.2	8R2														
10	100														
12	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														
1.0nF	102														
1.2	122														
1.5	152														
1.8	182														
2.2	222														
2.7	272														
3.3	332														
3.9	392														
4.7	472														
5.6	562														
6.8	682														
8.2	822														
10	103														
12	123														
15	153														
18	183														
22	223														
27	273														
33	333														
39	393														
47	473														
56	563														
68	683														
82	823														
100	104														
124	124														
154	154														
184	184														
224	224														
274	274														
334	334														
393	394														
564	564														
684	684														
824	824														
1.0uF	105														
2.2	225														

DIMENSION (MM)		CHV1210							
L(L1)		3.20±0.30							
W		2.50±0.20							
BW(L2/L3)		1.60±0.30							
Dielectric		COG				X7R			
H (max)		2.2				2.6	2.2	2.6	
Rated Voltage		250	500	630	1KV	250	500	1KV	2KV
Cap. Range									
2.0pF	2R0								
3.3	3R3								
3.9	3R9								
5.0	5R0								
8.2	8R2								
10	100								
12	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								
1.0nF	102								
1.2	122								
1.5	152								
1.8	182								
2.2	222								
2.7	272								
3.3	332								
3.9	392								
4.7	472								
5.6	562								
6.8	682								
8.2	822								
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22	223								
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33	333								
39	393								
47	473								
56	563								
68	683								
82	823								
100	104								
124	124								
154	154								
184	184								
224	224								
274	274								
334	334								
393	394								
474	474								
564	564								
684	684								
824	824								
1.0uF	105								
2.2	225								
3.3	335								
6.8	685								

DIMENSION (MM)		CHV1808													
L(L1)		4.60±0.30													
W		2.00±0.20													
BW(L2/L3)		2.50±0.30													
Dielectric		COG								X7R					
H (max)		1.8			2.2					2.2			2.2	2.2	2.2
Rated Voltage		250	500	630	1KV	2KV	3KV	4KV	5KV	250	500	1KV	2KV	3KV	4KV
Cap. Range															
2.0pF	2R0														
3.3	3R3														
3.9	3R9														
5.0	5R0														
8.2	8R2														
10	100														
12	120														
15	150														
18	180														
22	220														
27	270														
33	330														
39	390														
47	470														
56	560														
68	680														
82	820														
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180	181														
220	221														
270	271														
330	331														
390	391														
470	471														
560	561														
680	681														
820	821														
1.0nF	102														
1.2	122														
1.5	152														
1.8	182														
2.2	222														
2.7	272														
3.3	332														
3.9	392														
4.7	472														
5.6	562														
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15	153														
18	183														
22	223														
27	273														
33	333														
39	393														
47	473														
56	563														
68	683														
82	823														
100nF	104														

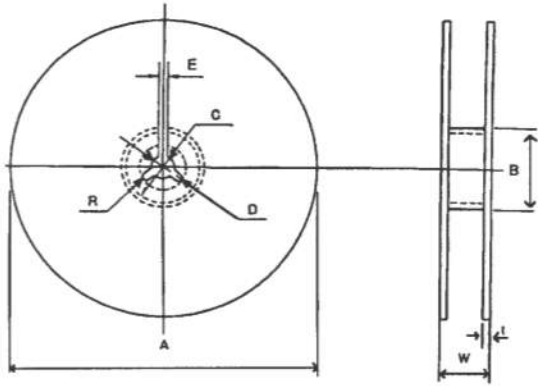
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DIMENSION (MM)		CHV2225												
L(L1)		5.70±0.40												
W		6.35±0.40												
BW(L2/L3)		3.50±0.30												
Dielectric		COG							X7R					
H (max)		3.0							3.0	2.2		2.6	1.8	2.2
Rated Voltage		250	500	630	1KV	2KV	3KV	4KV	250	500	1KV	2KV	3KV	4KV
Cap. Range														
2.0pF	2R0													
3.3	3R3													
3.9	3R9													
5.0	5R0													
8.2	8R2													
10	100													
12	120													
15	150													
18	180													
22	220													
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47	473													
56	563													
68	683													
82	823													
100	104													
124	124													
154	154													
184	184													
224	224													
274	274													
334	334													
393	394													
474	474													
564	564													
684	684													
824	824													
1.0uF	105													
2.2	225													
3.3	335													
4.7	475													
6.8	685													
8.2	825													
100	106													

Packaging (Taping)

(Reel Type-Size)



Standard Reel

Unit:mm

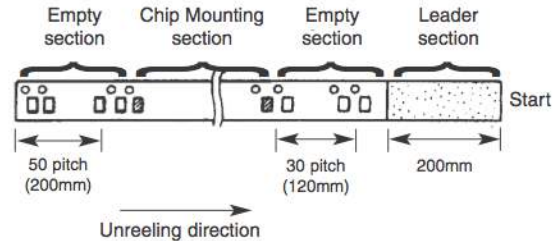
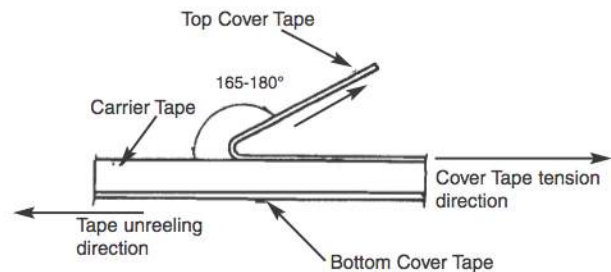
A	B	C	D	E	W	t	R
ø178 ±2.0	ø50 min.	ø13.0 ±0.5	ø21.0 ±0.8	2.0 ±0.5	10.2 - 8mm 14.0 - 12mm +1.5	0.8 ±0.2	1.0

"TD" designator for optional 10/13 inch reels

Unit:mm

A	B	C	D	E	W	t	R
ø330 +2.0	ø50 min.	ø13.0 ±0.5	ø21.0 ±0.8	2.0 ±0.5	10.0 ±1.5	0.8 ±0.2	1.0

Carrier Tape (Standard)



- To peel off the cover tape by the method shown in the right figure apply a peel-off force of 20 gf - 60 gf (card board); 10 gf - 75 gf (plastic tape).
- The cover tape should not touch the top or bottom of the chip.
- If the cover tape has been peeled off it may be difficult to remove the chip due to punch-hole clearance, dirt, and debris. Make sure therefore that no paper waste will adhere to and block the absorption nozzle.
- If the cover tape has been peeled off from the top, stick it back on with a suitable adhesive.
- Follow the illustration for the start and end of the winding operation.

- Cardboard carrier tape for 0402,0603 type and 0805/1206 type

Unit: mm

Type	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	t ₁	t ₂	Mounting Hole	Std Reel Qty. 7in (10/13in)*
0402	0.7±0.2	1.3±0.2	8.0±0.3	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	ø1.5±0.1	1.1 max	1.4 max	Angular Punch Hole	10,000 (20,000)
0603	1.1±0.2	1.9±0.2											4,000 (10,000)
0805	1.65±0.2	2.4±0.2											4,000 (10,000)
1206	2.0±0.2	3.6±0.2											4,000 (10,000)

*quantities listed are considered as "standard" and subject to change

- Embossed plastic carrier tape for 0805/1206 type and 1210 type

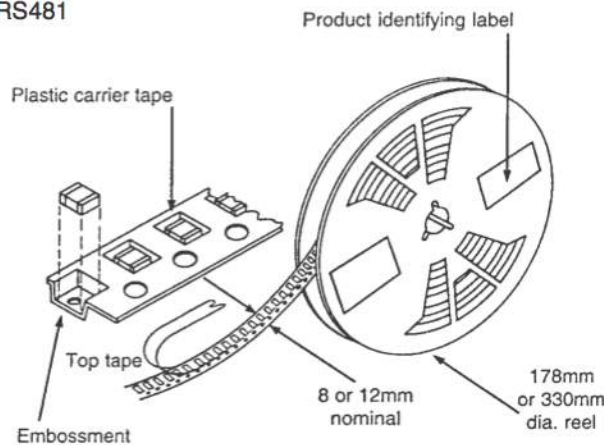
Unit:mm

Type	A	B	W	F	E	P ₁	P ₂	P ₀	D ₀	t ₁	t ₂	Mounting Hole	Std Reel Qty	Optional Reel Qty (10/13")
0805	1.45±0.2	2.3±0.2	8.0±0.3	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	ø1.5±1/-0	0.6 max	2.5 max	Angular Embossed Hole	2,000	3,000
1206	2.0±0.2	3.6±0.2											2,000	3,000
1210	2.9±0.2	3.6±0.2											1,000	2,000
1812	3.6±0.2	4.9±0.2	12.0±0.3	5.5±0.05	1.75±0.1	8.0±0.1	2.0±0.05	4.0±0.1	ø1.5±0.1	0.6 max	6.5 max	Angular Embossed Hole	500	1,000
1825	6.8±0.3	4.9±0.2											500	1,000
2220	5.5±0.3	6.2±0.3											500	1,000
2225	6.8±0.3	6.2±0.3											500	700

*quantities listed are considered as "standard" and subject to change

Packaging

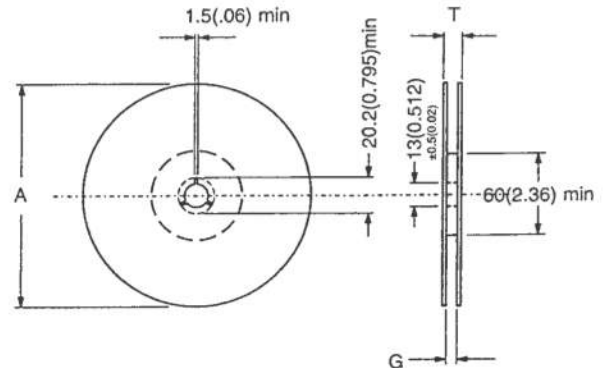
Tape and reel packing of surface mounting chip capacitors for automatic placement are in accordance with IEC286 part 3 and RS481



Peel force

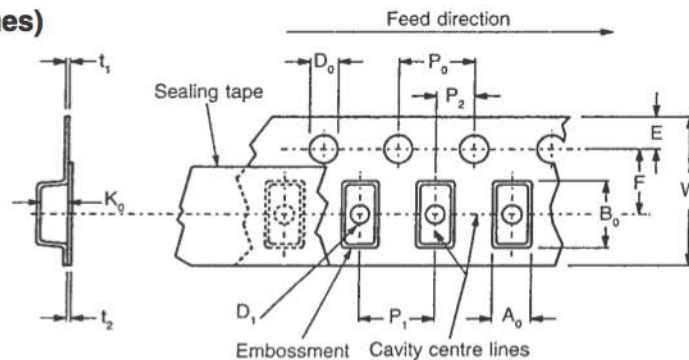
The peel force of the top sealing tape is between 0.2 and 1.0 Newton at 1800. The breaking force of the carrier and sealing tape in the direction of unreeling is greater than 10 Newtons.

Reel dimensions mm (inches)



Symbol	Description	178mm reel	330mm reel
A	Reel diameter	178(7) ±2(0.079)	330(13) max
G	Reel inside with	8.4(0.33) ±1.5(0.059)-0	12.4(0.49) ±1.5(0.059)-0
T	Reel outside with	14.4(0.56) max	18.4(0.72) max

Tape dimensions mm (inches)



Symbol	Description	8mm tape	12mm tape
A ₀ B ₀ K ₀	Width of cavity Length of cavity Depth of cavity	Dependent on chip size to minimize rotation	
W	Width of tape	8(0.315) ±0.2(0.008)	12(0.472) ±0.2(0.008)
F	Distance between drive hole centres and cavity centres	3.5(0.138) ±0.05(0.002)	5.5(0.213) ±0.05(0.002)
E	Distance between drive hole centres and tape edge	1.75(0.069) ±0.1(0.004)	
P ₁	Distance between cavity centres	4(0.156) ±0.1(0.004)	8(0.315) ±0.1(0.004)
P ₂	Axial distance between drive hole centres and cavity centres	2(0.079) ±0.05(0.002)	
P ₀	Axial distance between drive hole centres	4(0.156) ±0.1(0.004)	
D ₀	Drive hole diameter	1.5(0.059) +0.1(0.004)-0	
D ₁	Diameter of cavity piercing	1(0.039) +0.1(0.004)-0	1.5(0.059) +0.1(0.004)-0
t ₁	Embossed tape thickness	0.3(0.012) ±0.1(0.004)	0.4(0.016) ±0.1(0.004)
t ₂	Top tape thickness	0.1(0.004) max	