

Multilayer Ceramic Chip Capacitors [Large Size Ceramic Chip Capacitor]

LCC Series – NPO,X7R (50V-8KV)



◆ Features

- Optimized internal designs offer the highest voltage rating (up to 8KVdc)
- Capacitance range from 470 pF to 33 uF & Sizes from 1515 to 7565
- Available with proprietary surface coating for arc prevention
- Available with flexible termination (Superterm) to minimize effects of mechanical stress
- High reliability screening is available
- Pd/Ag, 100% Sn and optional 90/10 Sn/Pb termination
- RoHS compliant

◆ Applications.

- Voltage Multipliers
- Power Supplies
- DC-DC Converters
- Surge protection
- Industrial control circuits
- Isolation
- Ballast
- Snubber
- Custom applications

◆ Summary of Specification

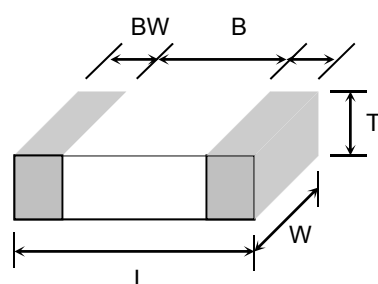
Operation Temperature	-55~+125 °C
Rated Voltage	50Vdc to 8KVdc
Temperature Coefficient	NPO : $\leq \pm 30\text{ppm}/^\circ\text{C}$, -55~+125 °C (EIA Class I)
	X7R : $\leq \pm 15\%$, -55~+125 °C (EIA Class II)
Capacitance Range	NPO :100pF to 820nF ; X7R :1000pF to 33uF
Dissipation Factor :	NPO : $Q \geq 1000$; X7R : D.F. $\leq 2.5\%$
Insulation Resistance	10GΩ or 500/C Ω whichever is smaller(C in Farad)
Aging	NPO:0% ; X7R: 2.5 % per decade of time
Dielectric Strength	$V \leq 500V$: 200% Rated Voltage
	$500V \leq V < 1000V$: 150% Rated Voltage
	$V \geq 1000V$: 120% Rated Voltage

◆ How To Order

C	2520	X	103	K	102	T	N	S	X
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Product Code	Chip Size	Dielectric	Capacitance Unit : pF	Tolerance	Rated Voltage	Packaging	Termination	Testing Requirement	Special Requirement
C: MLCC (Multilayer Ceramic Chip of Capacitor)	EX.: 1515 : 3.80×3.80mm 2520 : 6.35×5.00mm 3530 : 8.90×7.60mm 3640 : 9.20×10.2mm 4540 : 11.5×10.2mm 5550: 14.0×12.7mm 6560 : 16.5×15.3mm 7565: 19.0×16.5mm	Ex.: N: NPO X: X7R	Ex.: 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.: 050:50Vdc 251:250Vdc 631:630Vdc 102:1000Vdc	Ex.: T: Taping &Reel W: Waffle Pack B: Bulk	Ex.: S: Solderable Ag P: Pd/Ag N: 100% Sn Plated W: 90/10 Sn/Pb Plated B: Bulk	Ex.: S: Standard Electrical H: Hi-Reliability	Ex.: Blank: Standard O: Arc Prevention Coating X: Cushion Termination (Super Term)

◆ Dimension



Unit : mm [inches]

TYPE	L	W	T (max)	B (min)	BW (min)
1515	3.80±0.50 [.15±.020]	3.80±0.50 [.15 ±.020]	3.20 [.126]	1.60 [.059]	0.30 [.012]
2520	6.35±0.50 [.25±.020]	5.00±0.50 [.20±.020]	3.20 [.126]	4.00 [.157]	0.30 [.012]
3530	8.90±0.50 [.35±.020]	7.60±0.50 [.30±.020]	5.00 [.200]	5.50 [.217]	0.30 [.012]
3640	9.20±0.50 [.36±.020]	10.2±0.50 [.40±.020]	5.00 [.200]	6.00 [.236]	0.30 [.012]
4540	11.5±0.50 [.45±.020]	10.2±0.50 [.30±.020]	5.00 [.200]	7.50 [.295]	0.30 [.012]
5550	14.0±0.50 [.55±.020]	12.7±0.50 [.50±.020]	5.00 [.200]	9.00 [.354]	0.30 [.012]
6560	16.5±0.50 [.65±.020]	15.3±0.50 [.60±.020]	5.00 [.200]	11.50 [.453]	0.30 [.012]
7565	19.0±0.50 [.750±.020]	16.5±0.50 [.65±.020]	5.00 [.200]	14.00 [.551]	0.30 [.012]

◆ Capacitance Range

Size	Dielectric	Capacitance maximum									
		50V	100V	200V	500V	1KV	2KV	3KV	4KV	5KV	8KV
1515	NPO	473	393	363	103	222	821				
	X7R	225	105	474	124	473	682				
2520	NPO	823	683	563	473	103	392	222	102	471	
	X7R	475	225	474	224	473	153	472	222	102	
3530	NPO	154	134	104	823	253	103	472	332	102	471
	X7R	106	475	225	824	224	473	183	822	472	102
3640	NPO	224	184	124	104	373	153	562	362	122	561
	X7R	126	565	225	105	274	683	273	153	103	182
4540	NPO	284	244	184	154	483	203	962	472	152	621
	X7R	156	685	225	125	394	104	393	223	153	392
5550	NPO	364	304	224	184	683	273	153	562	182	681
	X7R	186	825	275	225	474	124	823	333	223	562
6560	NPO	654	484	404	304	104	423	223	682	332	821
	X7R	226	186	106	335	105	224	104	563	333	103
7565	NPO	844	674	504	474	134	553	283	103	472	102
	X7R	336	226	186	475	125	364	154	823	473	153

■ All value are capacitance EIA codes.

■ Other dimensions, capacitance values and voltages rating are available. Please contact HEC.

*Soldering And Handling Precautions:

Large ceramic capacitors are more prone to thermal and mechanical cracks. To minimize mechanical cracks, capacitors have to be handled carefully in the original waffle pack container, carrier tape or other suitable container. Care must be taken that ceramic chips not to be in contact with each other to cause chip out, cracks or other mechanical damage.

The recommended method for soldering large chips, is reflow soldering. Wave soldering and manual soldering with Iron is not recommended. Ceramic capacitors must be preheated with less than 2°C/sec rate to about 50°C below the reflow temperature. Sudden increase, or decrease in temperature more than the recommended rate, during soldering, may cause internal thermal cracks.

Available Options:

- HEC offers polymer termination (Superterm) for very large chips to minimize mechanical cracks due to board flexing.
- To minimize the potential for surface arcing in higher voltage applications, HEC offers the option of a proprietary surface coating.
- Pure Tin terminated/ROHS compliant products are offered as a standard, however, lead (Pb) content plated termination may be provided if required.
- Pd/Ag termination is also offered as an option for Hybrid circuits and other applications.