



*Holy Stone Enterprise Co., Ltd.*

# CERAMIC CAPACITOR CATALOG

## **HCC Series**

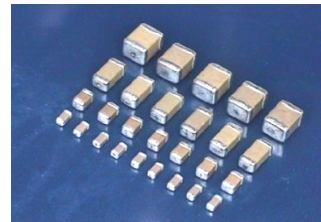
**Commerical grade**

**High Capacitance MLCC**

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# Multilayer Ceramic Chip Capacitors [ High Capacitance MLCC – 1.0uF and above ] HCC Series



### ◆ Features

- Surface mount suitable for wave and reflow soldering
- High reliability
- Small size and high capacitance value
- Excellent high frequency characteristics
- RoHS compliant

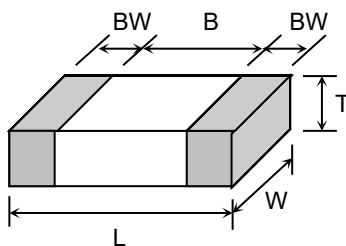
### ◆ Applications

- Ideal for smoothing and decoupling circuits
- Suitable for DC-DC converter, personal computer and peripherals, telecommunication and general electronic equipment

### ◆ Summary of Specifications

Operation Temperature	NP0 & X7R & X7S : -55 °C ~ +125 °C , X6S : -55 °C ~ +105 °C ;
Rated Voltage	4.0Vdc to 50Vdc
Temperature Coefficient	X7R : ≤ ± 15% , -55 °C ~ +125 °C (EIA Class II)
	X7S : ≤ ± 22% , -55 °C ~ +125 °C (EIA Class II)
	X6S : ≤ ± 22% , -55 °C ~ +105 °C (EIA Class II)
	X5R : ≤ ± 15% , -55 °C ~ +85 °C (EIA Class II)
Dissipation Factor	X7R, X5R, X6S, X7S : Max. 0.15
Insulation Resistance	10GΩ or 500/CΩ whichever is smaller (C in Farads)
Aging	X7R/X6S/X5R/X7S : typically 1.0%
Dielectric Strength	250% Rated Voltage

### ◆ Dimensions



TYPE	L	W	T (max)	B (min)	BW (min)
0402	1.00±0.05	0.50±0.05	0.55 [.022]	0.30 [.012]	0.15 [.006]
0603	1.60±0.10	0.80±0.10	0.1 [.039]	0.40 [.016]	0.15 [.006]
0805	2.00±0.20	1.25±0.20	1.45 [.057]	0.70 [.028]	0.20 [.008]
1206	3.20±0.30	1.60±0.20	1.80 [.071]	1.50 [.059]	0.30 [.012]
1210	3.20±0.30 [.126±.012]	2.50±0.20 [.098±.008]	2.70 [.105]	1.60 [.063]	0.30 [.012]
1812	4.60±0.3	3.20±0.3	3.00 [.118]	2.50 [.098]	0.30 [.012]
2220	5.7±0.40	5.00±0.40	3.00 [.118]	3.50 [.137]	0.30 [.012]

### ◆ How To Order



Product Code	Chip Size	Dielectric	Capacitance Unit : pF	Tolerance	Rated Voltage	Packaging
C: MLCC (Multilayer Ceramic Chip of Capacitor)	Ex. 0402 0603 0805 1206 1210 1812 2220	Ex.: X:X7R S:X6S B:X5R R:X7S	Ex.: 105:10×10 <sup>5</sup> 106:10×10 <sup>6</sup> 226:22×10 <sup>6</sup>	Ex.: J : +/- 5% K: +/- 10% M: +/- 20% Z : +80/-20%	Ex.: 004: 4Vdc 007: 6.3Vdc 010: 10Vdc 016: 16Vdc 025: 25Vdc 035: 35Vdc 050: 50Vdc	T: T&R 7" R: T&R 13" B: Bulk

## ◆ Capacitance Range

X7R (X) Series																														
Size	0402				0603				0805					1206					1210					1812		2220				
Code	4V	6.3V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	35V	50V	6.3V	10V	16V	25V	35V	50V	10V	16V	25V	35V	50V	25V	50V	25V	50V		
105	O	O	B	B	B	B	B	D	D	D	D	D	D	D	D	D/E	D/E	D/E	D/E	D	D	D	D	D	E	F	F	F	F	F
155																														
225			B	B				D	D	D	D	D	D												F	F	F	F	F	F
335														E	E	E	E	E	E	F	F	F	F	F	F	F	F	F	F	F
475								D	D	D	D			E	E	E	E	E	E	F	F	F	F	F	F	F	F	F	F	F
106								D	D	D				E	E	E	E	E	E	F	F	F	F	F	F/C	F/C	F/C	G	G	G
226														E	E										G	G	G			
476																									G	G				

X7S (R) Series										
Size	0402		0603			0805		1206	1210	
Code	6.3V	10V	10V	16V	25V	25V	50V	16V	6.3V	6.3V
105		O								
155										
225	O	O		B	B					
335										
475			B	B		D				
106						D				
226								E		
476										
107										G

X6S (S) Series																																		
Size	0201		0402				0603					0805					1206					1210												
Code	4V	6.3V	6.3V	10V	16V	25V	4V	6.3V	10V	16V	25V	50V	4V	6.3V	10V	16V	25V	35V	50V	4V	6.3V	10V	16V	25V	35V	50V	6.3V	10V	16V	25V	35V	50V		
105	S	S	O	O	O	O	B	B	B	B	B	B																						E
225			O	O	O	O	B	B	B	B	B	B																						F
475			O	O	O	O	B	B	B	B	B	B																						F
106			O	O	O	O	B	B	B	B	B	B																						F
226			O	O	O	O	B	B	B	B	B	B																						F
476			O	O	O	O	B	B	B	B	B	B																						F
107																																		F
227																																		F

X5R (B) Series																																		
Size	0201		0402				0603					0805					1206					1210												
Code	4V	6.3V	6.3V	10V	16V	25V	35V	6.3V	10V	16V	25V	35V	50V	4V	6.3V	10V	16V	25V	35V	50V	6.3V	10V	16V	25V	35V	50V	6.3V	10V	16V	25V	35V	50V		
105	S	S	O	O	O	O	O	O	O	O	O	O	O																					F
225	S	S	O	O	O	O	O	O	O	O	O	O	O																					F
335																																		F
475			O	O	O	O																												F
106			O	O	O	O																												F
226																																		F
476																																		F
107																																		F
227																																		F

■ The yellow indication denotes values that are under development. Please contact Holy Stone office for further details

■ Other dimensions, capacitance values and voltages ratings are available on request. Please contact Holy Stone.

## ◆ 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±0.15	1.0+0.1/-0.05	1.25±0.20	1.6±0.2	2.0±0.2	2.4±0.2	2.8±0.2

Cap.	Size	Thickness	Cap. Tol.	Catalog Number		
				Rated Voltage Vdc 6.3V	Rated Voltage Vdc 10V	Rated Voltage Vdc 16V
105 (1uF)	0402	O/0.5+-0.05mm	K	C0402X105K007T		
	0603	B/0.85+-0.15mm	K	C0603X105K007T	C0603X105K010T	C0603X105K016T
	0805	D/1.25±0.2mm	K	C0805X105K007T	C0805X105K010T	C0805X105K016T
	1206	D/1.25±0.2mm	K	C1206X105K007T	C1206X105K010T	C1206X105K016T
		E/1.6±0.2mm	K			C1206X105K016T
1210	D/1.25±0.2mm	K	C1210X105K007T	C1210X105K010T	C1210X105K016T	
225 (2.2uF)	0603	B/0.85+-0.15mm	K	C0603X225K007T	C0603X225K010T	
	0805	D/1.25±0.2mm	K	C0805X225K007T	C0805X225K010T	C0805X225K016T
	1206	E/1.6±0.2mm	K	C1206X225K007T	C1206X225K010T	C1206X225K016T
335 (3.3uF)	1210	F/2.0±0.2mm	K	C1210X225K007T	C1210X225K010T	C1210X225K016T
	0805	D/1.25±0.2mm	K			
475 (4.7uF)	1206	E/1.6±0.2mm	K	C1206X335K007T	C1206X335K010T	C1206X335K016T
	0805	D/1.25±0.2mm	K	C0805X475K007T	C0805X475K010T	C0805X475K016T
	1206	E/1.6±0.2mm	K	C1206X475K007T	C1206X475K010T	C1206X475K016T
1210		F/2.0±0.2mm	K		C1210X475K010T	C1210X475K016T
106 (10uF)	0805	D/1.25±0.2mm	K	C0805X106K007T	C0805X106K010T	C0805X106K016T
	1206	E/1.6±0.2mm	K	C1206X106K007T	C1206X106K010T	C1206X106K016T
		1210	F/2.0±0.2mm	K	C1210X106K007T	C1210X106K010T
226 (22uF)	1206	E/1.6±0.2mm	K	C1206X226K007T	C1206X226K010T	
	1210	G/2.4±0.2mm	K		C1210X226K010T	C1210X226K016T

Cap.	Size	Thickness	Cap. Tol.	Catalog Number		
				Rated Voltage Vdc 25V	Rated Voltage Vdc 35V	Rated Voltage Vdc 50V
105 (1uF)	0603	B/0.85+-0.15mm	K	C0603X105K025T		C0603X105K050T
	0805	D/1.25±0.2mm	K	C0805X105K025T	C0805X105K035T	C0805X105K050T
	1206	D/1.25±0.2mm	K	C1206X105K025T	C1206X105K035T	C1206X105K050T
		E/1.6±0.2mm	K	C1206X105K025T	C1206X105K035T	C1206X105K050T
	1210	D/1.25±0.2mm	K	C1210X105K025T	C1210X105K035T	
		E/1.6±0.2mm	K			C1210X105K050T
	1812	F/2.0±0.2mm	K	C1812X105K025T		C1812X105K050T
2220	F/2.0±0.2mm	K			C2220X105K050T	
155 (1.5uF)	1812	F/2.0±0.2mm	K			C1812X155K050T
225 (2.2uF)	0805	D/1.25±0.2mm	K	C0805X225K025T	C0805X225K035T	C0805X225K050T
	1206	E/1.6±0.2mm	K	C1206X225K025T	C1206X225K035T	C1206X225K050T
	1210	F/2.0±0.2mm	K	C1210X225K025T	C1210X225K035T	C1210X225K050T
	1812	F/2.0±0.2mm	K	C1812X225K025T		C1812X225K050T
	2220	F/2.0±0.2mm	K			C2220X225K050T
335 (3.3uF)	1206	E/1.6±0.2mm	K	C1206X335K025T		
	1812	F/2.0±0.2mm	K			C1812X335K050T
475 (4.7uF)	0805	D/1.25±0.2mm	K	C0805X475K025T		
	1206	E/1.6±0.2mm	K	C1206X475K025T	C1206X475K035T	C1206X475K050T
	1210	F/2.0±0.2mm	K	C1210X475K025T	C1210X475K035T	C1210X475K050T
	1812	F/2.0±0.2mm	K	C1812X475K025T		C1812X475K050T
	2220	F/2.0±0.2mm	K			C2220X475K050T
106 (10uF)	1206	E/1.6±0.2mm	K	C1206X106K025T	C1206X106K035T	
	1210	F/2.0±0.2mm	K	C1210X106K025T	C1210X106K035T	C1210X106K050T
		G/2.4±0.2mm	K			C1210X106K050T
	1812	F/2.0±0.2mm	K	C1812X106K025T		C1812X106K050T
		G/2.4±0.2mm	K	C1812X106K025T		C1812X106K050T
	2220	G/2.4±0.2mm	K			C2220X106K050T

Cap.	Size	Thickness	Cap. Tol.	Catalog Number		
				Rated Voltage Vdc 6.3V	Rated Voltage Vdc 10V	Rated Voltage Vdc 16V
105 (1uF)	0402	O/0.5+-0.05mm	K		C0402R105K010T	
225 (2.2uF)	0402	O/0.5+-0.05mm	K	C0402R225K007T	C0402R225K010T	
	0603	B/0.85+-0.15mm	K			C0603R225K016T
475 (4.7uF)	0603	B/0.85+-0.15mm	K		C0603R475K010T	C0603R475K016T
226 (22uF)	1206	E/1.6±0.2mm	K			C1206R226K016T
107 (100uF)	1210	G/2.4±0.2mm	K	C1210R107K007T		

Cap.	Size	Thickness	Cap. Tol.	Catalog Number	
				Rated Voltage Vdc 25V	Rated Voltage Vdc 50V
225 (2.2uF)	0603	B/0.85+-0.15mm	K	C0603R225K025T	
475 (4.7uF)	0805	D/1.25±0.2mm	K		C0805R475K050T
106 (10uF)	0805	D/1.25±0.2mm	K	C0805R106K025T	

Cap.	Size	Thickness	Cap. Tol.	Catalog Number			
				Rated Voltage Vdc 4V	Rated Voltage Vdc 6.3V	Rated Voltage Vdc 10V	Rated Voltage Vdc 16V
105 (1uF)	0402	O/0.5+-0.05mm	K		C0402S105K007T	C0402S105K010T	C0402S105K016T
	0603	B/0.85+-0.15mm	K		C0603S105K007T	C0603S105K010T	C0603S105K016T
	0805	D/1.25±0.2mm	K				C0805S105K016T
225 (2.2uF)	0402	O/0.5+-0.05mm	K		C0402S225K007T	C0402S225K010T	C0402S225K016T
	0603	B/0.85+-0.15mm	K		C0603S225K007T	C0603S225K010T	C0603S225K016T
	0805	D/1.25±0.2mm	K			C0805S225K010T	C0805S225K016T
	1206	E/1.6±0.2mm	K				C1206S225K016T
475 (4.7uF)	0402	O/0.5+-0.05mm	K		C0402S475K007T		
	0603	B/0.85+-0.15mm	K		C0603S475K007T	C0603S475K010T	C0603S475K016T
	0805	D/1.25±0.2mm	K		C0805S475K007T	C0805S475K010T	C0805S475K016T
	1206	E/1.6±0.2mm	K			C1206S475K010T	C1206S475K016T
	1210	F/2.0±0.2mm	K				C1210S475K016T
106 (10uF)	0603	B/0.80+-0.2mm	K	C0603S106K004T	C0603S106K007T	C0603S106K010T	C0603S106M016T
	0805	D/1.25±0.2mm	K		C0805S106K007T	C0805S106K010T	C0805S106K016T
	1206	E/1.6±0.2mm	K		C1206S106K007T	C1206S106K010T	C1206S106K016T
	1210	F/2.0±0.2mm	K			C1210S106K010T	C1210S106K016T
226 (22uF)	0603	B/0.85+-0.15mm	K	C0603S226K004T	C0603S226K007T		
	0805	D/1.25±0.2mm	K	C0805S226K004T	C0805S226K007T	C0805S226K010T	C0805S226K016T
	1206	E/1.6±0.2mm	K		C1206S226K007T	C1206S226K010T	C1206S226K016T
	1210	G/2.4±0.2mm	K			C1210S226K010T	C1210S226K016T
476 (47uF)	0805	D/1.25±0.2mm	K	C0805S476K004T			
	1206	E/1.6±0.2mm	K	C1206S476K004T	C1206S476K007T		
	1210	G/2.4±0.2mm	K		C1210S476K007T	C1210S476K010T	C1210S476K016T
107 (100uF)	1210	G/2.4±0.2mm	K		C1210S107K007T		

Cap.	Size	Thickness	Cap. Tol.	Catalog Number		
				Rated Voltage Vdc 25V	Rated Voltage Vdc 35V	Rated Voltage Vdc 50V
105 (1uF)	0402	O/0.5+-0.05mm	K	C0402S105K025T		
	0603	B/0.85+-0.15mm	K	C0603S105K025T		C0603S105K050T
	0805	D/1.25±0.2mm	K	C0805S105K025T	C0805S105K035T	C0805S105K050T
	1206	E/1.6±0.2mm	K		C1206S105K035T	C1206S105K050T
	1210	F/2.0±0.2mm	K			C1210S105K050T
225 (2.2uF)	0603	B/0.85+-0.15mm	K	C0603S225K025T		
	0805	D/1.25±0.2mm	K	C0805S225K025T	C0805S225K035T	C0805S225K050T
	1206	E/1.6±0.2mm	K	C1206S225K025T	C1206S225K035T	C1206S225K050T
	1210	F/2.0±0.2mm	K	C1210S225K025T	C1210S225K035T	C1210S225K050T
475 (4.7uF)	0603	B/0.85+-0.15mm	K	C0603S475K025T		
	0805	D/1.25±0.2mm	K	C0805S475K025T	C0805S225K035T	C0805S475K050T
	1206	E/1.6±0.2mm	K	C1206S475K025T	C1206S475K035T	C1206S475K050T
	1210	F/2.0±0.2mm	K	C1210S475K025T	C1210S475K035T	C1210S475K050T
106 (10uF)	0805	D/1.25±0.2mm	K	C0805S105K025T	C0805S106K035T	
	1206	E/1.6±0.2mm	K	C1206S106K025T	C1206S106K035T	
	1210	F/2.0±0.2mm	K	C1210S106K025T	C1210S106K035T	C1210S106K050T
		G/2.4±0.2mm	K			C1210S106K050T
226 (22uF)	1210	G/2.4±0.2mm	K	C1210S226K025T		



Cap.	Size	Thickness	Cap. Tol.	Catalog Number				
				Rated Voltage Vdc 4V	Rated Voltage Vdc 6.3V	Rated Voltage Vdc 10V	Rated Voltage Vdc 16V	
105 (1uF)	0201	S/0.3±0.03mm	M		C0201B105M007T	C0201B105M010T		
	0402	O/0.5+-0.05mm	M		C0402B105M007T	C0402B105M010T	C0402B105M016T	
	0603	B/0.85+-0.15mm	M		C0603B105M007T	C0603B105M010T	C0603B105M016T	
	0805	D/1.25±0.2mm	M				C0805B105M016T	
	1206	E/1.6±0.2mm	M				C1206B105M016T	
	1210	F/2.0±0.2mm	M		C1210B105M007T	C1210B105M010T	C1210B105M016T	
225 (2.2uF)	0201	S/0.3±0.03mm	M		C0201B225M007T	C0201B225M010T		
	0402	O/0.5+-0.05mm	M		C0402B225M007T	C0402B225M010T	C0402B225M016T	
	0603	B/0.85+-0.15mm	M		C0603B225M007T	C0603B225M010T	C0603B225M016T	
	0805	D/1.25±0.2mm	M		C0805B225M007T	C0805B225M010T	C0805B225M016T	
	1206	E/1.6±0.2mm	M			C1206B225M010T	C1206B225M016T	
	1210	F/2.0±0.2mm	M		C1210B225M007T	C1210B225M010T	C1210B225M016T	
335 (3.3uF)	0805	D/1.25±0.2mm	M			C0805B335M010T	C0805B335M016T	
475 (4.7uF)	0402	O/0.5+-0.05mm	M		C0402B475M007T	C0402B475M010T		
	0603	B/0.85+-0.15mm	M		C0603B475M007T	C0603B475M010T	C0603B475M016T	
	0805	D/1.25±0.2mm	M		C0805B475M007T	C0805B475M010T	C0805B475M016T	
	1206	E/1.6±0.2mm	M			C1206B475M010T	C1206B475M016T	
	1210	F/2.0±0.2mm	M		C1210B475M007T	C1210B475M010T	C1210B475M016T	
	106 (10uF)	0402	O/0.5+-0.05mm	M		C0402B106M007T	C0402B106M010T	
0603		B/0.85+-0.15mm	M		C0603B106M007T	C0603B106M010T	C0603B106M016T	
0805		D/1.25±0.2mm	M		C0805B106M007T	C0805B106M010T	C0805B106M016T	
1206		E/1.6±0.2mm	M		C1206B106M007T	C1206B106M010T	C1206B106M016T	
1210		F/2.0±0.2mm	M		C1210B106M007T	C1210B106M010T	C1210B106M016T	
226 (22uF)		0603	B/0.85+-0.15mm	M		C0603B226M007T	C0603B226M010T	
	0805	D/1.25±0.2mm	M		C0805B226M007T	C0805B226M010T	C0805B226M016T	
	1206	E/1.6±0.2mm	M		C1206B226M007T	C1206B226M010T	C1206B226M016T	
	1210	G/2.4±0.2mm	M		C1210B226M007T	C1210B226M010T	C1210B226M016T	
	476 (47uF)	0805	D/1.25±0.2mm	M	C0805B476M004T	C0805B476M007T	C0805B476M010T	
		1206	E/1.6±0.2mm	M		C1206B476M007T	C1206B476M010T	
1210		G/2.4±0.2mm	M		C1210B476M007T	C1210B476M010T	C1210B476M016T	
107 (100uF)	0805	D/1.25±0.2mm	M	C0805B107M004T				
	1206	E/1.6±0.2mm	M		C1206B107M007T			
	1210	G/2.4±0.2mm	M		C1210B107M007T	C1210B107M010T		

Cap.	Size	Thickness	Cap. Tol.	Catalog Number		
				Rated Voltage Vdc 25V	Rated Voltage Vdc 35V	Rated Voltage Vdc 50V
105 (1uF)	0402	O/0.5+-0.05mm	M	C0402B105M025T	C0402B105M035T	
	0603	B/0.85+-0.15mm	M	C0603B105M025T	C0603B105M035T	C0603B105M050T
	0805	D/1.25±0.2mm	M	C0805B105M025T	C0805B105M035T	C0805B105M050T
	1206	E/1.6±0.2mm	M	C1206B105M025T		C1206B105M050T
	1210	F/2.0±0.2mm	M	C1210B105M025T		C1210B105M050T
225 (2.2uF)	0402	O/0.5+-0.05mm	M	C0402B225M025T		
	0603	B/0.85+-0.15mm	M	C0603B225M025T	C0603B225M035T	C0603B225M050T
	0805	D/1.25±0.2mm	M	C0805B225M025T	C0805B225M035T	C0805B225M050T
	1206	E/1.6±0.2mm	M	C1206B225M025T		C1206B225M050T
	1210	F/2.0±0.2mm	M	C1210B225M025T		C1210B225M050T
475 (4.7uF)	0603	B/0.85+-0.15mm	M	C0603B475M025T	C0603B475M035T	
	0805	D/1.25±0.2mm	M	C0805B475M025T	C0805B475M035T	C0805B475M050T
	1206	E/1.6±0.2mm	M	C1206B475M025T		C1206B475M050T
	1210	F/2.0±0.2mm	M	C1210B475M025T		C1210B475M050T
106 (10uF)	0603	B/0.85+-0.15mm	M	C0603B106M025T		
	0805	D/1.25±0.2mm	M	C0805B106M025T	C0805B106M035T	
	1206	E/1.6±0.2mm	M	C1206B106M025T		C1206B106M050T
	1210	F/2.0±0.2mm	M	C1210B106M025T		C1210B106M050T
226 (22uF)		G/2.4±0.2mm	M			C1210B106M050T
	0805	D/1.25±0.2mm	M	C0805B226M025T		
	1206	E/1.6±0.2mm	M	C1206B226M025T		
	1210	G/2.4±0.2mm	M	C1210B226M025T		