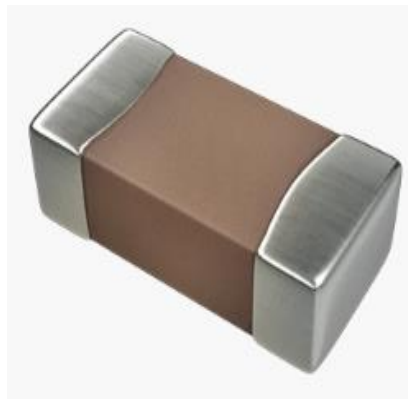


ABCO Multilayer Ceramic Capacitor

CMC1005-00 for Ceramic Capacitor Series



5448-4, Sangdaewon-dong, Jungwon-gu,
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▣ Types of Capacitor and Dielectric Material

1. C0G

The capacitor of this kind dielectric material is considered as Class I capacitor, including general capacitor and high frequency C0G capacitor. The electrical properties of C0G capacitor are the most stable one and have little change with temperature, voltage and time. They are suited for applications where low-losses and high-stability are required, such as filters, oscillators, and timing circuits.

2. X7R、X5R

The capacitor of this kind dielectric material has high dielectric constant. The capacitor made of this kind material is considered as Class II capacitor whose capacitance is higher than that of class I. These capacitors are classified as having a semi-stable temperature characteristic and used over a wide temperature range, such in these kinds of circuits, DC-blocking, decoupling, bypassing, frequency discriminating etc.

3. Y5V

The capacitor made of this kind of material is the highest dielectric constant of all ceramic capacitors. They are used over a moderate temperature range in application where high capacitance is required because of its unstable temperature coefficient, but where moderate losses and capacitance changes can be tolerated. Its capacitance and dissipation factors are sensible to measuring conditions, such as temperature and voltage, etc

CMC Series



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Ordering Code

CMC	1005	A	P	-	100	J	X7R	500	-	00
①	②	③	④		⑤	⑥	⑦	⑧		⑨
① Type				② Dimensions(mm)				③ Thickness(mm)		
CMC				1005 : 1.00(L) × 0.50(W)				A 0.50(T)		

④ Packing	
P	Paper Tape
E	Plastic Tape

⑤ Capacitance	
0R5	0.5pF
1R0	1pF
100	10pF
101	100pF
102	1000pF
103	0.01μF
104	0.1μF
105	1.0μF
106	10μF

⑥ Tolerance	
B	±0.1pF
C	±0.25pF
D	±0.5pF
F	±1%
G	±2%
J	±5%
K	±10%
M	±20%
Z	-20/80%

⑦ Dielectrics		
Material	Temperature Range	Capacitance change
C0G	-55°C~+125°C	0±30ppm/°C
X7R	-55°C~+125°C	±15%
X5R	-55°C~+85°C	±15%
Y5V	-30°C~+85°C	+22/-82%

⑧ Rated voltage	
6R3	6.3V _{DC}
100	10V _{DC}
160	16V _{DC}
250	25V _{DC}
500	50V _{DC}

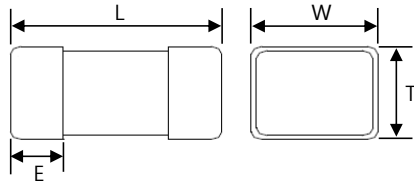
⑨ Internal Code	
00	

CMC1005-00 Series

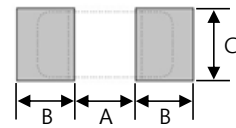


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■ Dimensions



■ Recommended PC Board Pattern



Series	L(mm)	W(mm)	T(mm)	E(mm)
CMC1005-00	1.00±0.10	0.50±0.10	0.50±0.10	0.15~0.3

A(mm)	B(mm)	C(mm)
0.35~0.45	0.40~0.50	0.45~0.55

■ Electrical Characteristics

1) COG type.

Part No.	Capacitance	Thickness (mm)	Tol. ¹⁾	Temperature Range (°C)	Rated Voltage ²⁾ (V _{DC})
CMC1005AP - 0R5B ¹⁾ COG500 ²⁾ - 00	0.5pF	A=0.5±0.10	B=±0.1pF C=±0.25pF	-55°C~+125°C, 0±30ppm/°C	250=25V _{DC} 500=50V _{DC}
CMC1005AP - 1R0B ¹⁾ COG500 ²⁾ - 00	1.0pF				
CMC1005AP - 2R0B ¹⁾ COG500 ²⁾ - 00	2.0pF				
CMC1005AP - 3R0B ¹⁾ COG500 ²⁾ - 00	3.0pF				
CMC1005AP - 4R0B ¹⁾ COG500 ²⁾ - 00	4.0pF				
CMC1005AP - 5R0D ¹⁾ COG500 ²⁾ - 00	5.0pF		D=±0.5pF		
CMC1005AP - 6R0D ¹⁾ COG500 ²⁾ - 00	6.0pF				
CMC1005AP - 7R0D ¹⁾ COG500 ²⁾ - 00	7.0pF				
CMC1005AP - 8R0D ¹⁾ COG500 ²⁾ - 00	8.0pF				
CMC1005AP - 9R0D ¹⁾ COG500 ²⁾ - 00	9.0pF				
CMC1005AP - 100J ¹⁾ COG500 ²⁾ - 00	10pF		F=±1% G=±2% J=±5% K=±10%		
CMC1005AP - 120J ¹⁾ COG500 ²⁾ - 00	12pF				
CMC1005AP - 150J ¹⁾ COG500 ²⁾ - 00	15pF				
CMC1005AP - 180J ¹⁾ COG500 ²⁾ - 00	18pF				
CMC1005AP - 200J ¹⁾ COG500 ²⁾ - 00	20pF				
CMC1005AP - 220J ¹⁾ COG500 ²⁾ - 00	22pF				
CMC1005AP - 270J ¹⁾ COG500 ²⁾ - 00	27pF				
CMC1005AP - 300J ¹⁾ COG500 ²⁾ - 00	30pF				
CMC1005AP - 330J ¹⁾ COG500 ²⁾ - 00	33pF				
CMC1005AP - 390J ¹⁾ COG500 ²⁾ - 00	39pF				
CMC1005AP - 470J ¹⁾ COG500 ²⁾ - 00	47pF				
CMC1005AP - 560J ¹⁾ COG500 ²⁾ - 00	56pF				
CMC1005AP - 680J ¹⁾ COG500 ²⁾ - 00	68pF				
CMC1005AP - 820J ¹⁾ COG500 ²⁾ - 00	82pF				
CMC1005AP - 101J ¹⁾ COG500 ²⁾ - 00	100pF				
CMC1005AP - 121J ¹⁾ COG500 ²⁾ - 00	120pF				
CMC1005AP - 151J ¹⁾ COG500 ²⁾ - 00	150pF				
CMC1005AP - 181J ¹⁾ COG500 ²⁾ - 00	180pF				
CMC1005AP - 201J ¹⁾ COG500 ²⁾ - 00	200pF				

CMC1005-00 Series



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■ Electrical Characteristics

1) C0G type.

Part No.	Capacitance	Thickness (mm)	Tol. ¹⁾	Temperature Range (°C)	Rated Voltage ²⁾ (V _{DC})
CMC1005AP - 221J ¹⁾ C0G500 ²⁾ - 00	220pF	A=0.5±0.10	F=±1% G=±2% J=±5% K=±10%	-55°C~+125°C, 0±30ppm/°C	250=25V _{DC} 500=50V _{DC}
CMC1005AP - 271J ¹⁾ C0G500 ²⁾ - 00	270pF				
CMC1005AP - 331J ¹⁾ C0G500 ²⁾ - 00	330pF				
CMC1005AP - 391J ¹⁾ C0G500 ²⁾ - 00	390pF				
CMC1005AP - 471J ¹⁾ C0G500 ²⁾ - 00	470pF				
CMC1005AP - 561J ¹⁾ C0G500 ²⁾ - 00	560pF				
CMC1005AP - 681J ¹⁾ C0G500 ²⁾ - 00	680pF				
CMC1005AP - 821J ¹⁾ C0G500 ²⁾ - 00	820pF				
CMC1005AP - 102J ¹⁾ C0G500 ²⁾ - 00	1000pF				

2) X7R type.

Part No.	Capacitance	Thickness (mm)	Tol. ¹⁾	Temperature Range (°C)	Rated Voltage ²⁾ (V _{DC})
CMC1005AP - 101J ¹⁾ X7R500 ²⁾ - 00	100pF	A=0.5±0.10	J=±5% K=±10% M=±20%	-55°C~+125°C, ±15%	6R3=6.3V _{DC} 100=10V _{DC} 160=16V _{DC} 250=25V _{DC} 500=50V _{DC}
CMC1005AP - 121J ¹⁾ X7R500 ²⁾ - 00	120pF				
CMC1005AP - 151J ¹⁾ X7R500 ²⁾ - 00	150pF				
CMC1005AP - 181J ¹⁾ X7R500 ²⁾ - 00	180pF				
CMC1005AP - 201J ¹⁾ X7R500 ²⁾ - 00	200pF				
CMC1005AP - 221J ¹⁾ X7R500 ²⁾ - 00	220pF				
CMC1005AP - 271J ¹⁾ X7R500 ²⁾ - 00	270pF				
CMC1005AP - 331J ¹⁾ X7R500 ²⁾ - 00	330pF				
CMC1005AP - 391J ¹⁾ X7R500 ²⁾ - 00	390pF				
CMC1005AP - 471J ¹⁾ X7R500 ²⁾ - 00	470pF				
CMC1005AP - 561J ¹⁾ X7R500 ²⁾ - 00	560pF				
CMC1005AP - 681J ¹⁾ X7R500 ²⁾ - 00	680pF				
CMC1005AP - 821J ¹⁾ X7R500 ²⁾ - 00	820pF				
CMC1005AP - 102J ¹⁾ X7R500 ²⁾ - 00	1000pF				
CMC1005AP - 152J ¹⁾ X7R500 ²⁾ - 00	1500pF				
CMC1005AP - 182J ¹⁾ X7R500 ²⁾ - 00	1800pF				
CMC1005AP - 222J ¹⁾ X7R500 ²⁾ - 00	2200pF				
CMC1005AP - 272J ¹⁾ X7R500 ²⁾ - 00	2700pF				
CMC1005AP - 332J ¹⁾ X7R500 ²⁾ - 00	3300pF				
CMC1005AP - 472J ¹⁾ X7R500 ²⁾ - 00	4700pF				
CMC1005AP - 562J ¹⁾ X7R500 ²⁾ - 00	5600pF				
CMC1005AP - 103J ¹⁾ X7R500 ²⁾ - 00	0.010μF				
CMC1005AP - 153J ¹⁾ X7R500 ²⁾ - 00	0.015μF				

CMC1005-00 Series



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■ Electrical Characteristics

2) X7R type.

Part No.	Capacitance	Thickness (mm)	Tol. ¹⁾	Temperature Range (°C)	Rated Voltage ²⁾ (V _{DC})
CMC1005AP - 183J ¹⁾ X7R250 ²⁾ - 00	0.018μF	A=0.5±0.10	J=±5% K=±10% M=±20%	-55°C~+125°C, ±15%	6R3=6.3V _{DC} 100=10V _{DC} 160=16V _{DC} 250=25V _{DC}
CMC1005AP - 223J ¹⁾ X7R250 ²⁾ - 00	0.022μF				
CMC1005AP - 273J ¹⁾ X7R250 ²⁾ - 00	0.027μF				
CMC1005AP - 333J ¹⁾ X7R250 ²⁾ - 00	0.033μF				
CMC1005AP - 393J ¹⁾ X7R250 ²⁾ - 00	0.039μF				
CMC1005AP - 473J ¹⁾ X7R250 ²⁾ - 00	0.047μF				
CMC1005AP - 563J ¹⁾ X7R250 ²⁾ - 00	0.056μF				6R3=6.3V _{DC} 100=10V _{DC} 160=16V _{DC}
CMC1005AP - 683J ¹⁾ X7R250 ²⁾ - 00	0.068μF				
CMC1005AP - 104J ¹⁾ X7R160 ²⁾ - 00	0.10μF				
CMC1005AP - 154J ¹⁾ X7R160 ²⁾ - 00	0.15μF				6R3=6.3V _{DC} 100=10V _{DC}
CMC1005AP - 184J ¹⁾ X7R100 ²⁾ - 00	0.18μF				
CMC1005AP - 224J ¹⁾ X7R100 ²⁾ - 00	0.22μF				6R3=6.3V _{DC} 100=10V _{DC}
CMC1005AP - 274J ¹⁾ X7R6R3 ²⁾ - 00	0.27μF				
CMC1005AP - 334J ¹⁾ X7R6R3 ²⁾ - 00	0.33μF				
CMC1005AP - 474J ¹⁾ X7R6R3 ²⁾ - 00	0.47μF				
CMC1005AP - 684J ¹⁾ X7R6R3 ²⁾ - 00	0.68μF				
CMC1005AP - 105J ¹⁾ X7R6R3 ²⁾ - 00	1.00μF	6R3=6.3V _{DC}			

3) X5R type.

Part No.	Capacitance	Thickness (mm)	Tol. ¹⁾	Temperature Range (°C)	Rated Voltage ²⁾ (V _{DC})
CMC1005AP - 101J ¹⁾ X5R500 ²⁾ - 00	100pF	A=0.5±0.10	J=±5% K=±10% M=±20%	-55°C~+85°C, ±15%	6R3=6.3V _{DC} 100=10V _{DC} 160=16V _{DC} 250=25V _{DC} 500=50V _{DC}
CMC1005AP - 121J ¹⁾ X5R500 ²⁾ - 00	120pF				
CMC1005AP - 151J ¹⁾ X5R500 ²⁾ - 00	150pF				
CMC1005AP - 181J ¹⁾ X5R500 ²⁾ - 00	180pF				
CMC1005AP - 201J ¹⁾ X5R500 ²⁾ - 00	200pF				
CMC1005AP - 221J ¹⁾ X5R500 ²⁾ - 00	220pF				
CMC1005AP - 271J ¹⁾ X5R500 ²⁾ - 00	270pF				
CMC1005AP - 331J ¹⁾ X5R500 ²⁾ - 00	330pF				
CMC1005AP - 391J ¹⁾ X5R500 ²⁾ - 00	390pF				
CMC1005AP - 471J ¹⁾ X5R500 ²⁾ - 00	470pF				
CMC1005AP - 561J ¹⁾ X5R500 ²⁾ - 00	560pF				
CMC1005AP - 681J ¹⁾ X5R500 ²⁾ - 00	680pF				
CMC1005AP - 821J ¹⁾ X5R500 ²⁾ - 00	820pF				
CMC1005AP - 102J ¹⁾ X5R500 ²⁾ - 00	1000pF				
CMC1005AP - 152J ¹⁾ X5R500 ²⁾ - 00	1500pF				
CMC1005AP - 182J ¹⁾ X5R500 ²⁾ - 00	1800pF				

CMC1005-00 Series



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■ Electrical Characteristics

3) X5R type.

Part No.	Capacitance	Thickness (mm)	Tol. ¹⁾	Temperature Range (°C)	Rated Voltage ²⁾ (V _{DC})
CMC1005AP - 222J ¹⁾ X5R500 ²⁾ - 00	2200pF	A=0.5±0.10	J=±5% K=±10% M=±20%	-55°C~+85°C, ±15%	6R3=6.3V _{DC} 100=10V _{DC} 160=16V _{DC} 250=25V _{DC} 500=50V _{DC}
CMC1005AP - 272J ¹⁾ X5R500 ²⁾ - 00	2700pF				
CMC1005AP - 332J ¹⁾ X5R500 ²⁾ - 00	3300pF				
CMC1005AP - 472J ¹⁾ X5R500 ²⁾ - 00	4700pF				
CMC1005AP - 562J ¹⁾ X5R500 ²⁾ - 00	5600pF				
CMC1005AP - 103J ¹⁾ X5R500 ²⁾ - 00	0.010μF				
CMC1005AP - 153J ¹⁾ X5R500 ²⁾ - 00	0.015μF				
CMC1005AP - 183J ¹⁾ X5R250 ²⁾ - 00	0.018μF				
CMC1005AP - 223J ¹⁾ X5R250 ²⁾ - 00	0.022μF				
CMC1005AP - 273J ¹⁾ X5R250 ²⁾ - 00	0.027μF				
CMC1005AP - 333J ¹⁾ X5R250 ²⁾ - 00	0.033μF				
CMC1005AP - 393J ¹⁾ X5R250 ²⁾ - 00	0.039μF				
CMC1005AP - 473J ¹⁾ X5R250 ²⁾ - 00	0.047μF				
CMC1005AP - 563J ¹⁾ X5R250 ²⁾ - 00	0.056μF				
CMC1005AP - 683J ¹⁾ X5R250 ²⁾ - 00	0.068μF				
CMC1005AP - 104J ¹⁾ X5R160 ²⁾ - 00	0.10μF				
CMC1005AP - 154J ¹⁾ X5R160 ²⁾ - 00	0.15μF				
CMC1005AP - 184J ¹⁾ X5R100 ²⁾ - 00	0.18μF				
CMC1005AP - 224J ¹⁾ X5R100 ²⁾ - 00	0.22μF				
CMC1005AP - 274J ¹⁾ X5R6R3 ²⁾ - 00	0.27μF				6R3=6.3V _{DC}
CMC1005AP - 334J ¹⁾ X5R6R3 ²⁾ - 00	0.33μF				
CMC1005AP - 474J ¹⁾ X5R6R3 ²⁾ - 00	0.47μF				
CMC1005AP - 684J ¹⁾ X5R6R3 ²⁾ - 00	0.68μF				
CMC1005AP - 105J ¹⁾ X5R6R3 ²⁾ - 00	1.00μF				

4) Y5V type.

Part No.	Capacitance	Thickness (mm)	Tol. ¹⁾	Temperature Range (°C)	Rated Voltage ²⁾ (V _{DC})
CMC1005AP - 102M ¹⁾ Y5V500 ²⁾ - 00	1000pF	A=0.5±0.10	M=±20% Z=-20/+80%	-30°C~+85°C, +22/-82%	6R3=6.3V _{DC} 100=10V _{DC} 160=16V _{DC} 250=25V _{DC} 500=50V _{DC}
CMC1005AP - 152M ¹⁾ Y5V500 ²⁾ - 00	1500pF				
CMC1005AP - 182M ¹⁾ Y5V500 ²⁾ - 00	1800pF				
CMC1005AP - 222M ¹⁾ Y5V500 ²⁾ - 00	2200pF				
CMC1005AP - 272M ¹⁾ Y5V500 ²⁾ - 00	2700pF				
CMC1005AP - 332M ¹⁾ Y5V500 ²⁾ - 00	3300pF				
CMC1005AP - 472M ¹⁾ Y5V500 ²⁾ - 00	4700pF				
CMC1005AP - 562M ¹⁾ Y5V500 ²⁾ - 00	5600pF				
CMC1005AP - 103M ¹⁾ Y5V500 ²⁾ - 00	0.010μF				
CMC1005AP - 153M ¹⁾ Y5V500 ²⁾ - 00	0.015μF				

CMC1005-00 Series



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■ Electrical Characteristics

4) Y5V type.

Part No.	Capacitance	Thickness (mm)	Tol. ¹⁾	Temperature Range (°C)	Rated Voltage ²⁾ (V _{DC})
CMC1005AP - 183M ¹⁾ Y5V500 ²⁾ - 00	0.018μF	A=0.5±0.10	M=±20% Z=-20/+80%	-30°C~+85°C, +22/-82%	6R3=6.3V _{DC} 100=10V _{DC} 160=16V _{DC} 250=25V _{DC} 500=50V _{DC}
CMC1005AP - 223M ¹⁾ Y5V500 ²⁾ - 00	0.022μF				
CMC1005AP - 273M ¹⁾ Y5V500 ²⁾ - 00	0.027μF				
CMC1005AP - 333M ¹⁾ Y5V500 ²⁾ - 00	0.033μF				
CMC1005AP - 393M ¹⁾ Y5V500 ²⁾ - 00	0.039μF				
CMC1005AP - 473M ¹⁾ Y5V500 ²⁾ - 00	0.047μF				
CMC1005AP - 563M ¹⁾ Y5V250 ²⁾ - 00	0.056μF				6R3=6.3V _{DC} 100=10V _{DC} 160=16V _{DC} 250=25V _{DC}
CMC1005AP - 683M ¹⁾ Y5V250 ²⁾ - 00	0.068μF				
CMC1005AP - 104M ¹⁾ Y5V250 ²⁾ - 00	0.10μF				6R3=6.3V _{DC} 100=10V _{DC} 160=16V _{DC}
CMC1005AP - 154M ¹⁾ Y5V160 ²⁾ - 00	0.15μF				
CMC1005AP - 184M ¹⁾ Y5V160 ²⁾ - 00	0.18μF				
CMC1005AP - 224M ¹⁾ Y5V160 ²⁾ - 00	0.22μF				6R3=6.3V _{DC} 100=10V _{DC}
CMC1005AP - 274M ¹⁾ Y5V100 ²⁾ - 00	0.27μF				
CMC1005AP - 334M ¹⁾ Y5V100 ²⁾ - 00	0.33μF				6R3=6.3V _{DC} 100=10V _{DC}
CMC1005AP - 474M ¹⁾ Y5V100 ²⁾ - 00	0.47μF				
CMC1005AP - 684M ¹⁾ Y5V6R3 ²⁾ - 00	0.68μF				6R3=6.3V _{DC}
CMC1005AP - 105M ¹⁾ Y5V6R3 ²⁾ - 00	1.00μF				

1. Test Methods

- Capacitance

Dielectrics	Specification	Testing Condition
C0G	Within the specified tolerance A : ±0.05pF, B : ±0.1pF, C : ±0.25pF, D : ±0.5pF, J : ±5%	1.0±0.2Vrms, 1MHz±10% (C > 1000 pF, 1.0±0.2Vrms, 1KHz±10%)
X7R, X5R	Within the specified tolerance J : ±5%, K : ±10%, M : ±20%	1.0±0.2Vrms, 1MHz±10% (Cp > 10uF, 0.5±0.1Vrms, 120±24Hz)
Y5V	Within the specified tolerance M : ±20%, Z : -20%/+80%	1.0±0.2Vrms, 1MHz±10% (Cp > 10uF, 0.5±0.1Vrms, 120±24Hz)

Note : Test temperature 25°C+3°C, Test humidity <70%RH.

ClassII capacitor need de-aging treatment.

(Condition: capacitor in 150°C heat treatment for 1 hour, measure placed after 48h.)