■ 概述

● 电容器及介质种类

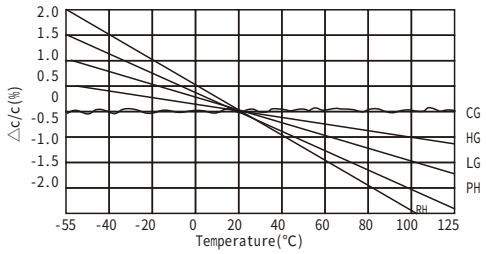
＊ 高频类：此类介质材料的电容器为Ⅰ类电容器，包括通用型高频 COG 电容器和温度补偿型高频 HG、LG、PH、RH、SH、TH、UJ、SL电容器。其中COG电容器电性能最稳定，几乎不随温度、电压和时间的变化而变化。适用于低损耗，稳定性要求高的高频电路，如滤波器，振动器和计时电路中。

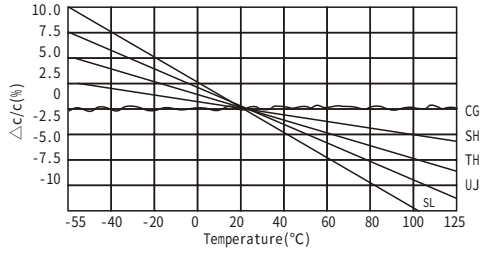
● TYPES OF DIELECTRIC MATERIAL AND CAPACITOR

＊ HIGH FREQUENCY TYPE: The capacitor of this kind dielectric material is considered as Class Ⅰ capacitor, including high frequency COG capacitor and temperature compensating capacitor such as HG, LG, PH, RH, SH, TH, UJ, SL. The electrical properties of COG 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.

高频电容温度系数

Temperature Coefficient VS Capacitance Change



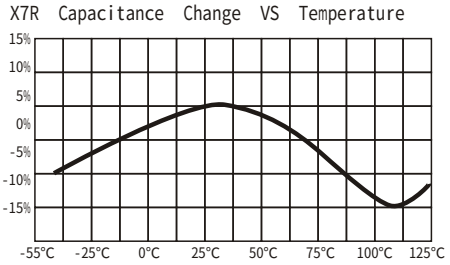


＊ X7R：此类介质材料的电容器为Ⅱ类电容器，具有较高的介电常数，容量比Ⅰ类电容器高，具有较稳定的温度特性，适用于容量范围广，稳定性要求不高的电路中，如隔直、耦合、旁路、鉴频等电路中。

＊ X7R: X7R material is a kind of material which 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-satble temperature characteristic and used over a wide temperature range, such in these kinds of circuits,DC-blocking,decoupling,bypassing, frequency discriminating etc.

X7R温度特性

X7R Capacitance Change VS Temperature

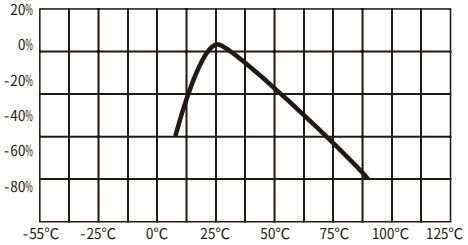


＊ Z5U：此类介质的电容器为Ⅱ类电容器，其温度特性介于X7R和Y5V之间，容量稳定性较差，对温度、电压等条件较敏感，适用于要求大容量，使用温度范围接近于室温的旁路，耦合等，低直流偏压的电路中。

＊ Z5U: The capacitor made of this kind of material is considered as Class Ⅱ capacitor, whose temperature characteristic is between that of X7R and Y5V. The capacitance of this kind of capacitor is unstable and sensible to temperature and voltage. Ideally suited for bypassing and decoupling application circuits operating with low DC bias in the environment approaches to room temperature.

Z5U温度特性

Z5U Capacitance Change VS Temperature

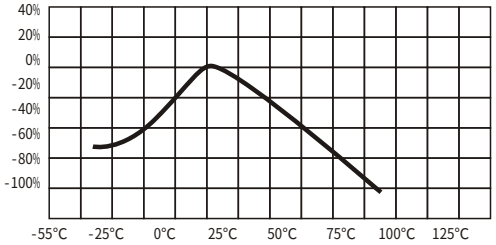


＊ Y5V：此类介质的电容器为Ⅱ类电容器，是所有电容器中介电常数最大的电容器，但其容量稳定性较差，对温度、电压等条件较敏感，适用于要求大容量，温度变化不大的电路中。

＊ Y5V: The capacitors 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.

Y5V温度特性

Y5V Capacitance Change VS Temperature



- 容量和容量偏差：

不同的电路需要不同的容量和容量偏差。因此，客户可根据自己的需要进行选择。

- 电压：

电压的选择可根据客户自身要求而定。

- 外电极(端头电极)

提供两种端头电极的电容器。 一种是直接可焊端头，有纯银端头和纯铜端头两种不同材料端头。另一种是三层电镀端头，三层指银层(或铜层)，镍层和锡层。客户可根据自己的焊接方式选择合适的端头类别。

- 包装：

包装形式主要有散包装和编带包装，其中散包装有盒装散包装和袋装散包装，编带包装有纸带编带包装和胶带编带包装。

- 非标项目：

可根据客户的特殊要求对电容器产品进行客户附加的特殊性能指标项目的测试。

- CAPACITANCE AND CAPACITANCE TOLERANCE

Different circuit needs different capacitance and capacitance tolerance. So the selection of capacitance is depended on the need of customers.

- VOLTAGE

The selection of voltage is depended on the customer's requirements.

- OUTER ELECTRODE(TERMINATIONS)

We can provide two kinds of terminations. One is solderable Termination,including silver solderable termination and copper solderable termination. The other is Nickel Barrier Termination, Silver (Copper) layer, Nickel layer and Tin layer. What kind of termination to be chosen is depended on the soldering method.

- PACKAGE

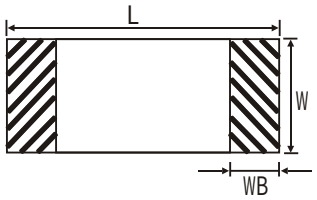
There are two types of package. One is bulk package, including bulk case and bulk bag. The other is taping package, including paper tape and embossed tape.

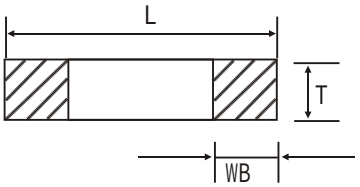
- NONSTANDARD ITEMS

For nonstandard items,we can test the extra items according to customers' special requirements.

■ MLCC的结构及其尺寸 STRUCTURE AND DIMENSIONS OF MLCC

- 尺寸 DIMENSIONS

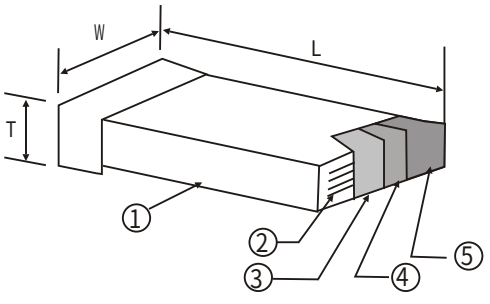




型号 Type		尺寸 Dimensions (mm)			
英制表示 British expression	公制表示 Metric expression	L	W	T	WB
0402	1005	1.00±0.05	0.50±0.05	0.50±0.05	0.25±0.10
0603	1608	1.60±0.10	0.80±0.10	0.80±0.1	0.30±0.10
0805	2012	2.00±0.20	1.25±0.20	0.70±0.20 1.00±0.20 1.25±0.20	0.50±0.20
1206	3216	3.20±0.30	1.60±0.2	0.70±0.20 1.00±0.20 1.25±0.20	0.50±0.25
1210	3225	3.20±0.30	2.50±0.30	1.25±0.30 1.50±0.30	0.75±0.25
1808	4520	4.50±0.40	2.00±0.20	≤2.00	0.75±0.25
1812	4532	4.50±0.40	3.20±0.30	≤2.50	0.75±0.20
2225	5763	5.70±0.50	6.30±0.50	≤2.50	1.00±0.25
3035	7690	7.60±0.50	9.00±0.50	≤3.00	1.00±0.25

备注：可根据客户的特殊要求设计符合客户需求的产品。
Note: We can design according to customer special requirements.

- 结构 STRUCTURE



序号 NO	名称 Name
①	陶瓷介质 Ceramic dielectric
②	内电极 Inner electrode
③	外电极 Outer electrode
④	镍层 Nickel Layer
⑤	锡层 Tin Layer

• 订货方式 HOW TO ORDER

0805	CG	102	J	500	N	T
①	②	③	④	⑤	⑥	⑦

说明（NOTES）：

①尺寸 DIMENSIONS

单位unit：inch/mm

尺寸规格 Size Code	0402	0603	0805	1206	1210	1808	1812	2225	3035
长×宽 (L×W)inch	0.04×0.02	0.06×0.03	0.08×0.05	0.12×0.06	0.12×0.10	0.18×0.08	0.18×0.12	0.22×0.25	0.30×0.35
长×宽 (L×W)mm	1.00×0.50	1.60×0.80	2.00×1.25	3.20×1.60	3.20×2.50	4.50×2.00	4.50×3.20	5.70×6.30	7.60×9.00

②介质种类DIELECTRIC STYLE

介质种类代号 (Dielectric Code)	CG	HG	LG	PH	RH	SH	TH	UJ	SL	B	E	F
介质材料 (Dielectric)	COG	HG	LG	PH	RH	SH	TH	UJ	SL	X7R	Z5U	Y5V

③标称容量NOMINAL CAPACITANCE

单位unit：PF

表示方式 (Express Method)	实际值 (Actual Value)	
0R5	0.5	注：头两位数字为有效数字，第三位数字为0的个数；R为小数点。 Note: the first two digits are significant;third digit denotes number of zeros; R=decimal point.
1R0	1.0	
102	10×10^{2}	
224	22×10^{4}	
…	…	

④容量误差CAPACITANCE TOLERANCE

代码 (Code)	B	C	D	F	G	J	K	M	S	Z
误差 (Tolerance)	±0.10pF	±0.25pF	±0.5pF	±1.0%	±2.0%	±5.0%	±10%	±20%	+50% -20%	+80% -20%

备注：B、C、D级误差相对容量≤10pF而选订。
Note: These capacitance tolerance B, C, D are just applicable the capacitance that equals to or less than 10pF.

⑤额定电压RATED VOLTAGE

单位unit：V

表示方式 (Express Method)	实际值 (Actual Value)	
6R3	6.3	注：头两位数字为有效数字，第三位数字为0的个数；R为小数点。 Note: the first two digits are significant;third digit denotes number of zeros; R=decimal point.
500	50×10^{0}	
201	20×10^{1}	
102	10×10^{2}	
…	…	

⑥端头材料TERMINAL MATERIAL STYLES

端头类别(Termination Styles)	端头类别(Termination Material)	表示方式 (Express Method)
纯银端头(Silver Solderable Termination)	银 (Silver)	S
纯铜端头(Copper Solderable Termination)	铜 (Copper)	C
三层电镀端头(Nickel Barrier Termination)	银/铜层 (Silver/Copper Layer) 镍层 (Nickel Layer) 锡层 (Tin Layer)	N

⑦包装方式PACKAGE STYLES

无标记 (NO Marks)	T	B
塑料袋散包装 (Bulk Bag)	编带包装 (Taping Package)	塑料盒散包装 (Bulk Case)

• 温度系数/特性 TEMPERATURE COEFFICIENT/CHARACTERISTICS

介质种类 Dielectric	标称温度系数 Temperature Coefficient	温度点(包括上下温限) Temperature Point
COG	0±30 ppm/℃	+20℃→-55℃→+20℃→+125℃
HG	-33±30 ppm/℃	+20℃→-55℃→+20℃→+85℃
LG	-75±30 ppm/℃	+20℃→-55℃→+20℃→+85℃
PH	-150±60 ppm/℃	+20℃→-55℃→+20℃→+85℃
RH	-220±60 ppm/℃	+20℃→-55℃→+20℃→+85℃
SH	-330±60 ppm/℃	+20℃→-55℃→+20℃→+85℃
TH	-470±60 ppm/℃	+20℃→-55℃→+20℃→+85℃
UJ	-750±120 ppm/℃	+20℃→-55℃→+20℃→+85℃
SL	-1000～+140 ppm/℃	+20℃→-55℃→+20℃→+85℃
X7R	±15%	+20℃→-55℃→+20℃→+125℃
Z5U	-56%～+20%	+20℃→+10℃→+20℃→+85℃
Y5V	-80%～+30%	+20℃→-25℃→+20℃→+85℃

备注：Ⅰ类电容器标称温度系数和允许偏差是采用温度在20℃和85℃之间的电容量变化来确定的。
Note：Nominal temperature coefficient and allowed tolerance of class Ⅰ are decided by the changing of the capacitance between 20℃ and 85℃.