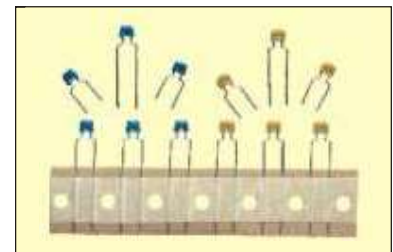
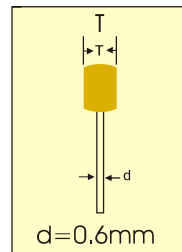
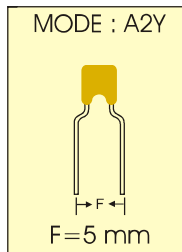
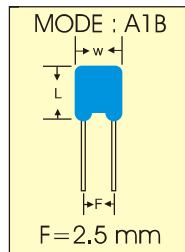




積層陶瓷電容器

MULTILAYER CERAMIC CAPACITORS



SIZE CODE AND DIMENSIONS : Units in Inches (millimeter)

SIZE CODE	L	W	T	LEAD DIAMETER(d)	LEAD LENGTH(L)	LEAD SPACING(F)	LEAD STYLES
R15	.150 (3.81)	.150 (3.81)	.100 (2.54)	0.024 (0.60)	.10(2.50) 1.0)25.0(	.100(2.54)	A1
						.200(5.08)	A2
						.300(7.62)	A2
R20	.200 (5.08)	.200 (5.08)	.125 (3.18)	0.024 (0.60)	.10(2.50) 1.0)25.0(	.100(2.50)	A1
						.200(5.08)	A2
						.250(6.35)	A2
						.300(7.62)	A2
R30	.300 (7.62)	.300 (7.62)	.150 (2.18)	0.024 (0.60)	.10(2.50) 1.0)25.0(	.200(5.08)	A2
						.300(7.62)	A2

ELECTRICAL SPECIFICATIONS

Capacitance Range: 1pF to 10 μ F
Capacitance Tolerance: (Standard)

NPO: F = $\pm 1\%$
G = $\pm 2\%$
C = $\pm 0.25\text{pF}$ 10pF and below(
D = $\pm 0.5\text{pF}$ 10pF and below(
J = $\pm 5\%$ 10pF and above(
K = $\pm 10\%$ 5.6pF and above(
M = $\pm 20\%$ 2.7pF and above(
X7R: K = $\pm 10\%$
M = $\pm 20\%$
Z = + 80-20%

Working Voltage : 25,50,100,200,1k VDC
Temperature Characteristic:
NPO : $0 \pm 30\text{ppm}^\circ\text{C}$, -55°C to $+125^\circ\text{C}$
X7R : $\pm 15\% \Delta^\circ\text{C}$, -55°C to $+125^\circ\text{C}$
Z5U : $+ 22\%$ to $-56\% \Delta^\circ\text{C}$, $+10^\circ\text{C}$ to 85°C
Y5V : $+ 22\%$ to $-82\% \Delta^\circ\text{C}$, -30°C to 85°C

Insulation Resistance: at 25°C
NPO,X7R : 100K Megohms or 1000 Megohms-
Microfarads whichever is less at
rated voltage within 2 minutes of
charging.
Z5U,Y5V : 10K Megohms or 1000 Megohms-
Microfarads whichever is less at
rated voltage within 2 minutes of
charging.

MECHANICAL SPECIFICATIONS

Cast : Conformal coated (epoxy)
Lead Material : Solder coated, copper
Package Method : Bulk, Tape & Ammo pack,
Solder ability : (MIL-STD-202 Method 208)
Leach Resistance : Temp 230°C , 20seconds
immersion in Sn62

*STANDARD TOLERANCE

NPO: J. K.
X7R : K. M.
Z5U,Y5V : M. Z.

Capacitance Test at 25°C or referred to $+25^\circ\text{C}$:
NPO,X7R.
1.0 V RMS ± 0.25 VRMS and 1 KHz;
1 MHz for values below 100pF,
Z5U,Y5V : 0.5 ± 0.1 VRMS maximum and 1KHz.

Dissipation Factor:

N PO : 0.1% maximum at 25°C , 1.0VRMS
 ± 0.25 VRMS and 1 KHz, 1 MHz for
values below 100pF
X7R : 2.5% maximum at 25°C , 1.0VRMS
 ± 0.25 VRMS and 1 KHz.
Z5U,Y5V : 4% maximum at 25°C , 0.5 ± 0.1 VRMS
maximum and 1 KHz.

Dielectric Strength :

NPO, X7R : 250% rated voltage with 50 mA
maximum charging current.
Z5U, Y5V : 200% rated voltage with 50 mA
maximum charging current.

Life Test : (1000 hrs)

NPO, X7R : 200% rated voltage at $+125^\circ\text{C}$
Z5U, Y5V : 150% rated voltage at $+85^\circ\text{C}$

Humidity Resistance:

(MIL-STD-202 Method 106)
NPO,X7R,Z5U:96 hrs 40°C relative
humidity 90-95%

Thermal Shock :

(MIL-STD-202 Method 107, condition A)

積層電容 Taping 尺寸與
陶瓷電容器 (CC)Taping 尺寸相同。



T. C.		NPO						X7R						Z5U,Y5V					
SIZE		R15		R20		R30		R15		R20		R30		R15		R20		R30	
CAP	WVDC	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100
1RF to 100	1R0 to 101	■	■																
120	121	■	■	■	■														
150	151	■	■	■	■														
180	181	■	■	■	■														
220	221	■	■	■	■			■	■	■	■								
270	271	■	■	■	■			■	■	■	■								
330	331	■	■	■	■			■	■	■	■								
390	391	■	■	■	■			■	■	■	■								
470	471	■	■	■	■			■	■	■	■								
560	561	■	■	■	■			■	■	■	■								
680	681	■	■	■	■			■	■	■	■								
820	821	■	■	■	■			■	■	■	■			■	■				
1000	102	■	■	■	■			■	■	■	■			■	■				
1200	122	■	■	■	■			■	■	■	■			■	■				
1500	152	■	■	■	■			■	■	■	■			■	■				
1800	182	■	■	■	■			■	■	■	■			■	■				
2200	222	■	■	■	■			■	■	■	■			■	■				
2700	272	■	■	■	■			■	■	■	■			■	■				
3300	332	■	■	■	■			■	■	■	■			■	■				
3900	392	■	■	■	■			■	■	■	■			■	■				
4700	472	■	■	■	■			■	■	■	■			■	■				
5600	562	■	■	■	■			■	■	■	■			■	■				
6800	682	■	■	■	■			■	■	■	■			■	■				
8200	822	■	■	■	■			■	■	■	■			■	■				
0.01 μF	103	■	■	■	■			■	■	■	■			■	■			■	■
0.012	123	■	■	■	■			■	■	■	■			■	■			■	■
0.015	153	■	■	■	■			■	■	■	■			■	■			■	■
0.018	183	■	■	■	■			■	■	■	■			■	■			■	■
0.22	223	■	■	■	■			■	■	■	■			■	■			■	■
0.027	273	■	■	■	■			■	■	■	■			■	■			■	■
0.033	333	■	■	■	■			■	■	■	■			■	■			■	■
0.039	393	■	■	■	■			■	■	■	■			■	■			■	■
0.047	473	■	■	■	■			■	■	■	■			■	■			■	■

JACKCON MULTILAYER CERAMIC CAPACITOR

DATE: 2022.10.14

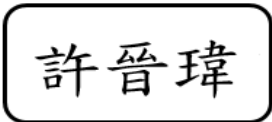
CUSTOMER :JAMECO ELECTRONICS LTD

DESCRIPTION:MULTILAYER CERAMIC CAPACITORS

SPEC.:CM 104K($\pm 10\%$)100V X7R P:5mm

P/N:R20XR104K10H2YS

CUST. P/N: 767834

BUYER'S APPROVAL STAMP	APPROVED BY:	TESTED BY:
		
	2022.10.14	2022.10.14

HONJU TAIWAN CO., LTD

JACKCON CAPACITOR ELECTRONICS CO., LTD.

**SUPPLIER : JACKCON CAPACITOR ELECTRONICS CO., LTD.
5F, NO.88, SHING DE ROAD, SAN CHUNG CITY,
TAIPEI COUNTY, TAIWAN**

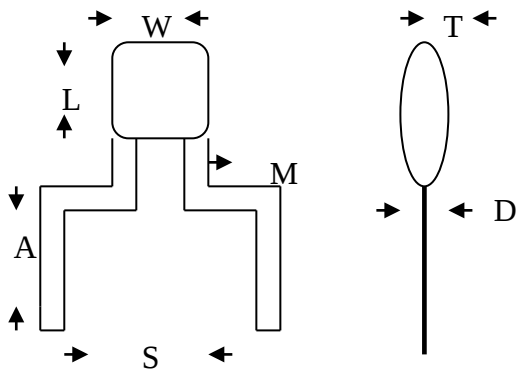
TEL : 886-2-2278-2210 886-2-2278-2212

FAX : 886-2-2278-2656 886-2-2278-2640

www.jackcon.com.tw

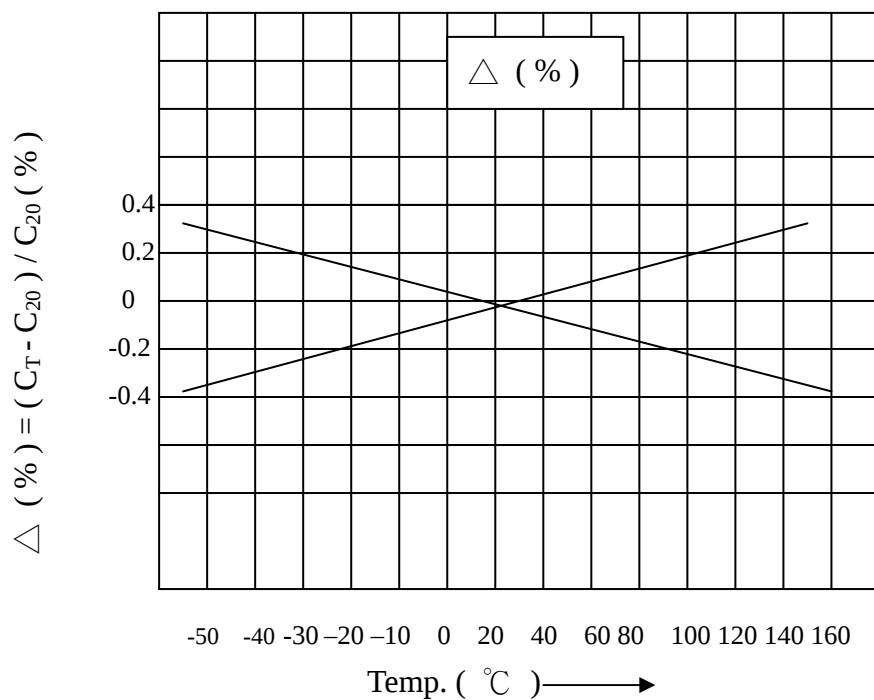
qc@jackcon.com.tw

MONOLITHIC CERAMIC CAPACITOR SPECIFICATICATION

CUSTOMER				CUST. P/N	104K/100V/X7R			
P/N	R20XR104K10H2YS			DWG NO.	PO12			
CAP.	.1UF	TOL%	+/-10%	AT 1 KHZ 1 VRMS				
D.F.(Q)	< 2.5 %							
WVDC	100 VDC							
FLASH	150 VDC							
I R	10GΩ AT 50 VDC							
T.C	X7R							
MARKING 104 OR				DIMENSIONS		D	0.5mm+/-0.05mm	
				W	5.5 mm MAX		S	5.08+/-1mm
				L	5.5mm MAX		A	29+/-2mm
				T	4.5 mm MAX			
NOTES:								

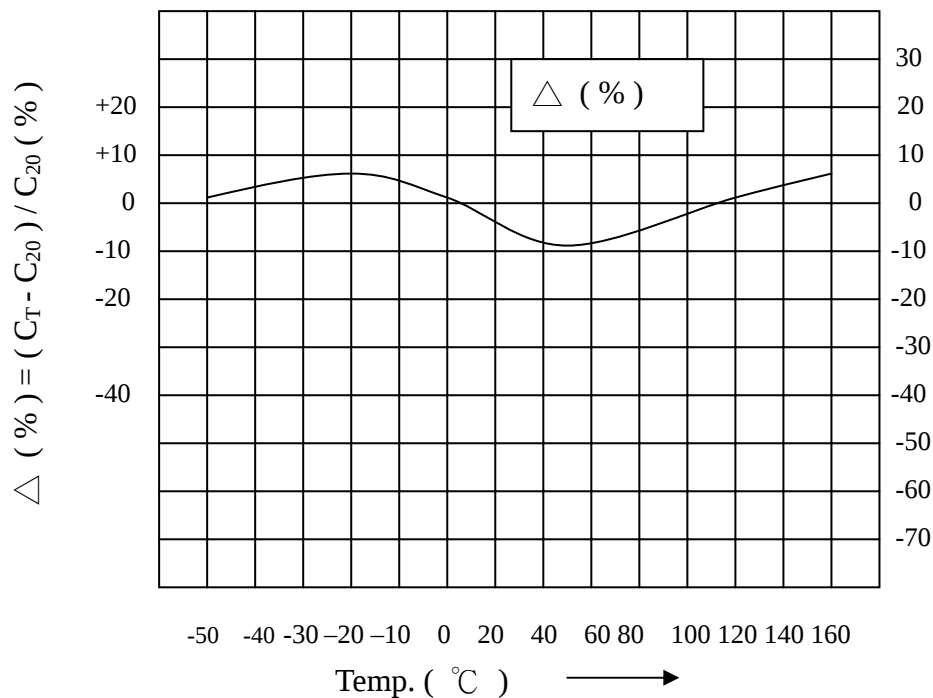
NPO

-30 -20 -10 0 10 20°C 30 40 50 60 70 80 90 100

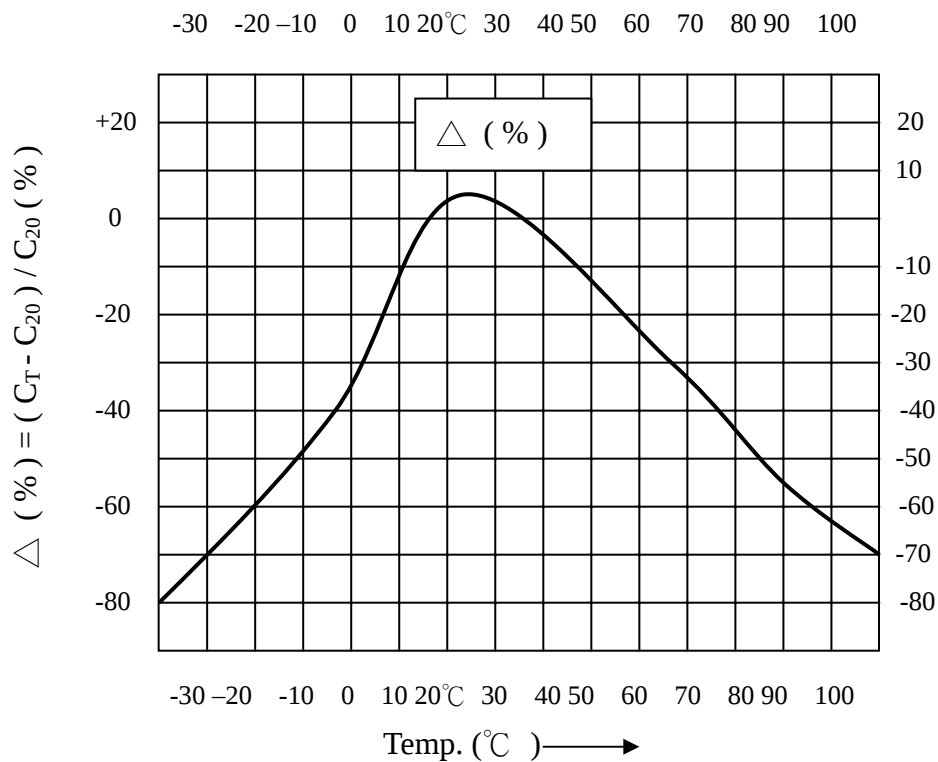


X7R

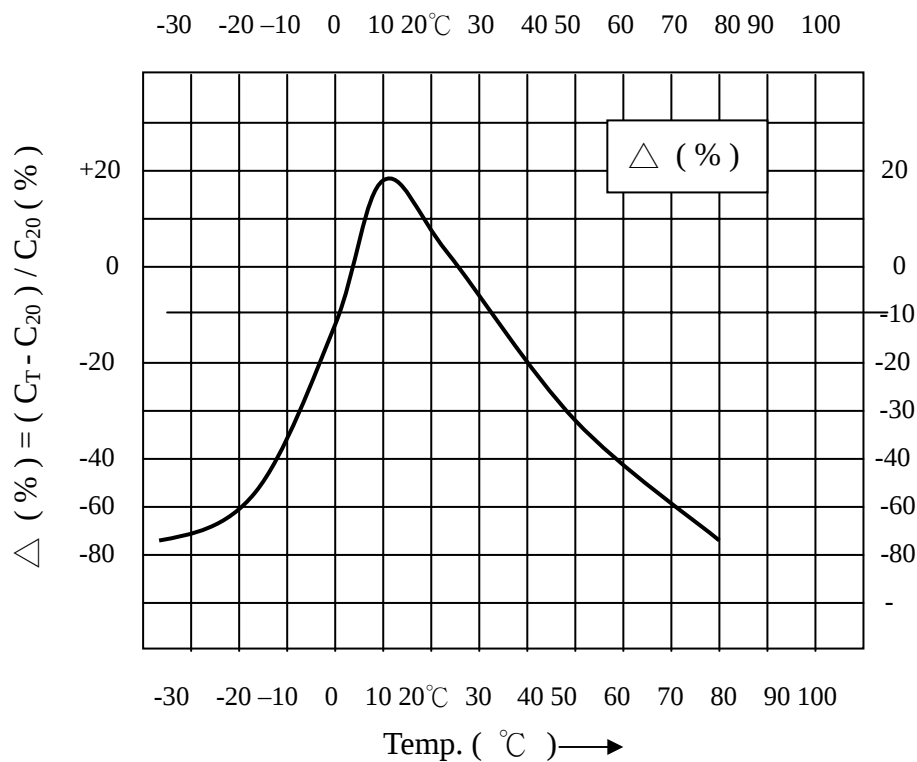
-50 -40 -30 -20 -10 0 20 40 60 80 100 120 140 160



Z5U

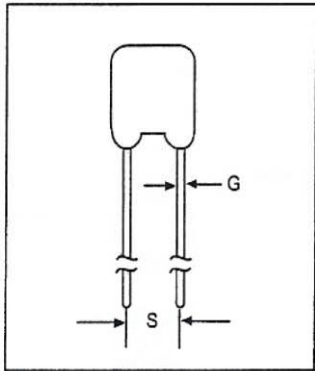


Y5V

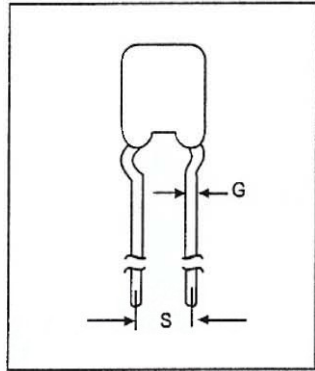


電介質材料 Dielectric Material	NPO COG	X7R	Z5U	Y5V
電介質種類 Dielectric Type	I 類電介質 Stable Class I Dielectric	II 類電介質 Stable Class II Dielectric		
電氣性能 Electrical Properties	電氣性能最穩定,基本上不隨溫度、電壓和時間的改變而改變. With negligible dependence of electrical properties on temperature, voltage, frequency and time.	電氣性能較穩定,在溫度、電壓與時間改變時性能的變化不明顯,由於 X7R 是一種強電介質,因而能造出容量比 NPO 電介質更大的電容器. With predictable change of properties with temperature, voltage, frequency and time, this dielectric is ferroelectric and offers higher capacitance ranges than class I .	具有較高的介電常數,常用於生產比容較大、標稱容量較高的大容量電容器產品,但其容量穩定性能較 X7R 差,容量損耗對溫度、電壓等測試條件敏感. With higher dielectric constant and greater variation of properties with temperature and test conditions, very high capacitance per unit volume and suited for bypass and coupling application as well as filtering, transient suppression blocking, and charge storage application.	
應用 Application	適用於穩定性要求高的高頻電路,如溫度補償電路、震盪電路等. Used in circuit requiring stable performance, such as temperature compensation circuits and oscillator circuits.	適用於隔直、耦合、旁路與對電容穩定性要求不太高的鑒頻電路. Used as blocking, coupling, By-passing and frequency discriminating elements.	適用於要求容量較大的電路,如儲能、記憶電路等. Suited for By-passing and coupling application such as store power and memory circuit.	
使用溫度 Operating Temperature	-55 °C ~ +125 °C	-55 °C ~ +125 °C	+10°C ~ +85°C	-30°C ~ +85 °C
溫度係數 Temperature Coefficient	0 ± 30 ppm/°C	± 15%	+22% ~ -56%	+22% ~ -82%

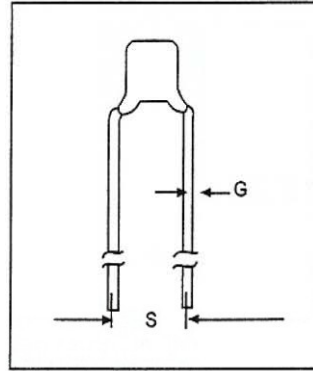
LEAD STYLES:



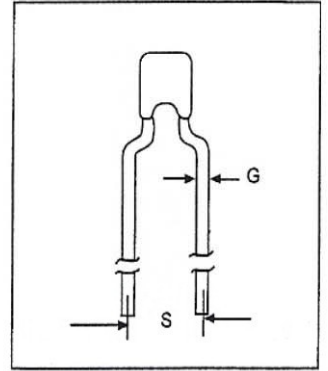
STYLE L
STRAIGHT LEAD



STYLE K
OUTWARD KINK



STYLE A
SLOPE SEATED



STYLE H
HIGH SEATED

HOW TO ORDER

Part Number are designed as :

R **20** **ZU** **104** **Z** **05** **H2** **B** **5**

Product Type :

R : Mono Radial
(Radial Leded

Size Code :

See size chart for
available size by
value and voltage

Temperature Characteristic :

COG = CG

X7R = XR

Z5U = ZU

Y5V = YV

Capacitance (pf) :

The first two digits are
significant of capacitance.
The last digit is multiplier

0 = *1

4 = *10000

1 = *10

5 = *100000

2 = *100

9 = *0.1

3 = *1000

Capacitance Tolerance :

C = 0.25PF

K = 10%

D = 0.5PF

M = 20%

G = 2%

Z = +80% - 20%

J = 5%

Lead Length : Cut lead

3 = 3 mm 7 = 7 mm A = 2.5 mm

4 = 4 mm 8 = 8 mm B = 3.5 mm

5 = 5 mm 9 = 9 mm C = 4.5 mm

6 = 6 mm 0 = 10 mm D = 5.5 mm

S = 25 mm Min. (Long Leaded)

T = Tape & Reel

U = Tape & AMMD Pack

Color :

B = Blue

Y = Yellow

Lead stye + Lead Spacing :

L1 : Straight leads 2.54 mm (0.100") = 1

A2 : slope angle 5.08 mm (0.200") = 2

H2 : High seated & right angle

5.08 mm (0.200") = 2

K1 : Outward Kink 2.54 mm (0.100") = 1

Working Voltage :

02 = 25V

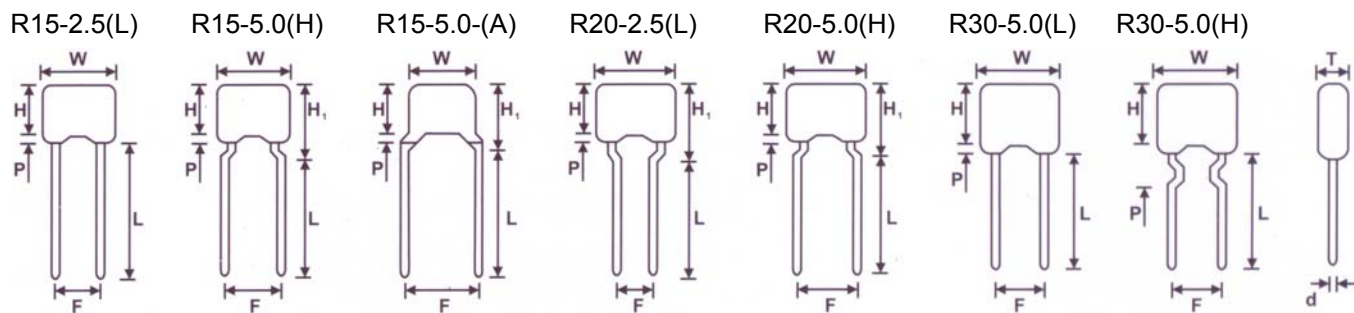
05 = 50V

10 = 100V

20 = 200V

(三) 尺寸大小

Size Code Dimension



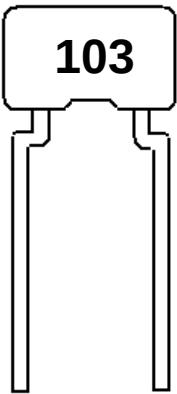
單位(unit) = mm

尺寸大小 Size Code	晶片大小 Chip Size	W .	T	H	H1	F	L	P Max.	d
R15-2.5	0603	3.0-3.8	1.8-2.8	2.6-3.8	--	2.5±0.25	5.0±0.5 6.0±0.5 10.0±0.5 16.0±1.0 30.0±1.0	1.5	0.5 ±0.05
R15-5.0	0603	3.0-3.8	1.8-2.8	2.6-3.8	5.6-7.6	5.0±0.5			
R15-5.0-A (45°角)	0603	3.0-3.8	1.8-2.8	2.6-3.8	5.6-7.6	5.0±0.5			
R15-2.5	0805	3.0-3.8	1.8-2.8	2.6-3.8	--	2.5±0.25			
R15-5.0	0805	3.0-3.8	1.8-2.8	2.6-3.8	5.6-7.6	5.0±0.5			
R15-5.0-A (45°角)	0805	3.0-3.8	1.8-2.8	2.6-3.8	5.6-7.6	5.0±0.5			
R20-2.5	1206/1210	5.0	3.0/3.8	5.0	7.6	2.5±0.25			
R20-5.0	1206/1210	5.0	3.0/3.8	5.0	7.6	5.0±0.5			
R30-5.0	1812	7.6	3.8	7.6	--	5.0±0.5			

(四) 印字

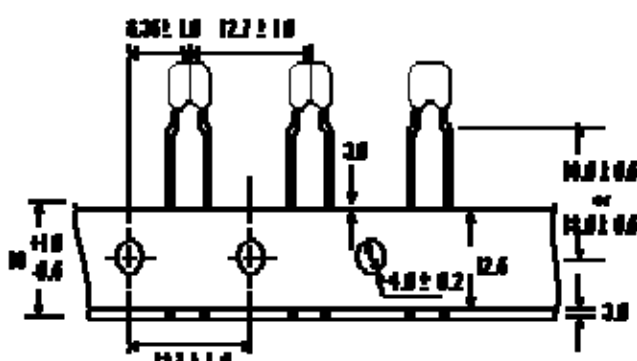
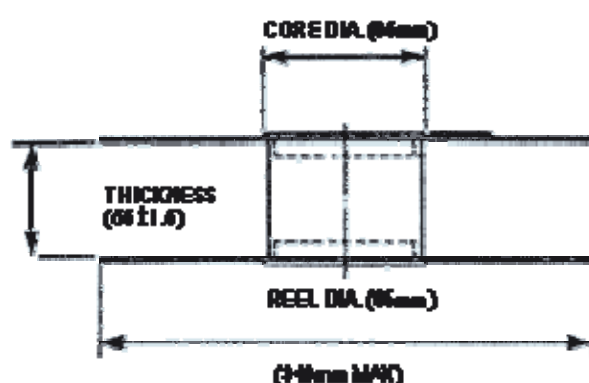
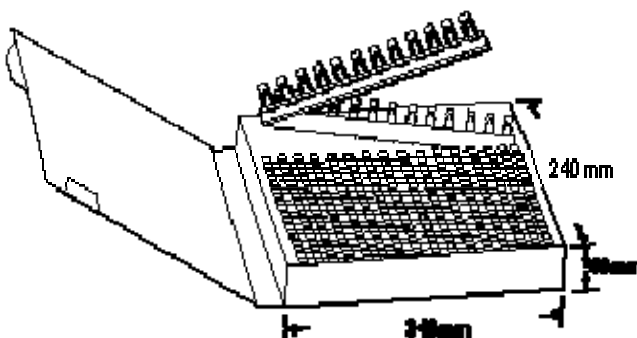
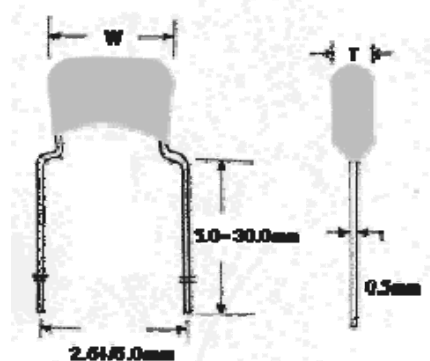
Marking

顏色 Color	黑色 Black	
電容量 Capacitance	允差 Tolerance	印字 Marking
100	J	10
220	J	22
470	J	47
101	J	101
471	J/K	471
102	J/K	102
103	J/K/M	103
104	K/M/Z	104
105	K/M/Z	105



(五) 立式包裝規格

Radial Leaded Type - Packing Specification

編帶： Tape： 	捲軸： Reel： 
盒裝： Box Pack： 	散裝： Bulk： 

(六) 包裝數量

Packing Quantity

項目 Item	立式電容器 Radial Leaded Type	臥式電容器 Axial Leaded Type
編帶/捲裝 Tape & Reel	2500 pcs/捲 2500 pcs/Reel	10k pcs/捲(標準) 10K pcs/Reel(Standard)
編帶/盒裝 Tape & Box	2000 pcs/盒 2000 pcs/Box	5000 pcs/盒 5000 pcs/Reel
散裝 Bulk Pack	1000 pcs/包(標準) 1000 pcs/bag(Standard)	1000 pcs/包 1000 pcs/bag

(七) 檢驗標準**Inspection Norm**

檢驗項目 Item	檢驗標準 Inspection Norm			
	NPO/COG	X7R	Z5U	Y5V
電容量(C) Capacitance	測試頻率： Test Frequency： $\leq 1000\text{PF}=1\text{Mhz}$ $> 1000\text{PF}=1\text{Khz}$	測試頻率： Test Frequency： 1Khz	測試頻率： Test Frequency： 1Khz	測試頻率： Test Frequency： 1Khz
	測試電壓： Test Voltage： $1 \pm 0.2 \text{ Vrms}$	測試電壓： Test Voltage： $1 \pm 0.2 \text{ Vrms}$	測試電壓： Test Voltage： $0.5 \pm 0.1 \text{ Vrms}$	測試電壓： Test Voltage： $1 \pm 0.2 \text{ Vrms}$
	在允差範圍內： In the tolerance： C=±0.25pf D=±0.50pf J=±5%	在允差範圍內： In the tolerance： J=±5%pf K=±10% M=±20%	在允差範圍內： In the tolerance： M=±20% Z=+80%/-20%	在允差範圍內： In the tolerance： M=±20% Z=+80%/-20%
消散係數(DF) Dissipation Factor	測試頻率： Test Frequency： $\leq 1000\text{PF}=1\text{Mhz}$ $> 1000\text{PF}=1\text{Khz}$	測試頻率： Test Frequency： 1Khz	測試頻率： Test Frequency： 1Khz	測試頻率： Test Frequency： 1Khz
	測試電壓： Test Voltage： $1 \pm 0.2 \text{ Vrms}$	測試電壓： Test Voltage： $1 \pm 0.2 \text{ Vrms}$	測試電壓： Test Voltage： $0.5 \pm 0.1 \text{ Vrms}$	測試電壓： Test Voltage： $1 \pm 0.2 \text{ Vrms}$
	<0.1 %	<2.5%-100/50V <3.5%-25/16V	<4.0 %	<5.0%-100/50V <7.0%-25/16V
絕緣組抗(IR) Insulation Resistance $500\Omega=C \cdot R$ $500\Omega/0.47\text{Uf}$ $=1064\text{M}\Omega$	測試電壓： 額定電壓 Test Voltage： Rated Voltage	測試電壓： 額定電壓 Test Voltage： Rated Voltage	測試電壓： 額定電壓 Test Voltage： Rated Voltage	測試電壓： 額定電壓 Test Voltage： Rated Voltage
	兩個中的最小值： Whichever is less $\geq 10 \text{ Gohms}$ or $\geq 1000 \text{ M}\Omega \cdot \mu\text{F}$	兩個中的最小值： Whichever is less $\geq 10 \text{ Gohms}$ or $\geq 1000 \text{ M}\Omega \cdot \mu\text{F}$	兩個中的最小值： Whichever is less $\geq 10 \text{ Gohms}$ or $\geq 100 \text{ M}\Omega \cdot \mu\text{F}$	兩個中的最小值： Whichever is less $\geq 10 \text{ Gohms}$ or $\geq 100 \text{ M}\Omega \cdot \mu\text{F}$
耐電壓 50V(TV) Voltage	2 倍額定電壓 2×rated voltage	2 倍額定電壓 2×rated voltage	2 倍額定電壓 2×rated voltage	2 倍額定電壓 2×rated voltage

(八) 信賴性實驗

Reliability

項目 (Item)	檢驗方法 (Test Methods)	檢驗標準 (Test Specifications)																																													
焊錫性 Solderability	將電容器導線浸入松香溶液後浸入焊錫槽溫度為 260±5℃ 的焊錫中 5 秒,浸入深度距離電容本體 2.5~3mm. The lead wire of a capacitor shall be dipped into a rosin and then into molten solder of 260±5 ℃ for 5 seconds , in both cases the depth of dipping is up to about 2.5 to 3.0 mm from the root of lead wires.	導線表面均勻沾錫,上錫面積不小於總面積的 75%. Lead wire shall be soldered with uniformly coated on the Axial or Radial direction over 75% of the circumferential direction.																																													
耐焊性 Resistance to Soldering heat	焊錫溫度 260±5 ℃,時間 5±0.5 秒, 插入深度距離電容本體 2.5~3mm,試驗後 24±2 小時測量. The lead wire shall be immersed into the melted solder of 260±5 ℃, up to about 2.5 to 3.0 mm from the main body and the specified items shall be measured after leaving for 24±2 hours.	1.外 觀 ：無損傷 Appearance : No marked defect 2.電容值變化(ΔC/C) : Capacitance change : <table><tr><td></td><td>COG</td><td>X7R</td><td>Z5U</td><td>Y5V</td></tr><tr><td>ΔC/C</td><td>≤ ±0.5%, or ±0.5pf</td><td>≤ ±7.5%</td><td>≤ ±20%</td><td>≤ ±20%</td></tr></table>		COG	X7R	Z5U	Y5V	ΔC/C	≤ ±0.5%, or ±0.5pf	≤ ±7.5%	≤ ±20%	≤ ±20%																																			
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引出端強度 Strength of Lead	固定電容器並在兩端導線加力. Fix the body of capacitor, apply a tensile weight gradually to each lead.	拉力：臥式電容器：> 3 kg 立式電容器：> 1 kg Pull ：Axial ：> 3 kg Radial ：> 1 kg																																													