

JACKCON *MULTILAYER CERAMIC CAPACITOR*

DATE: 2022.09.08

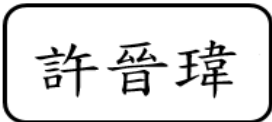
CUSTOMER :JAMECO ELECTRONICS LTD

DESCRIPTION:MULTILAYER CERAMIC CAPACITORS

SPEC.:CM 104K($\pm 10\%$)50V X7R P:5mm

P/N:R20XR104K05H2YS

CUST. P/N: 544921

BUYER'S APPROVAL STAMP	APPROVED BY:	TESTED BY:
		
	2022.09.08	2022.09.08

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**

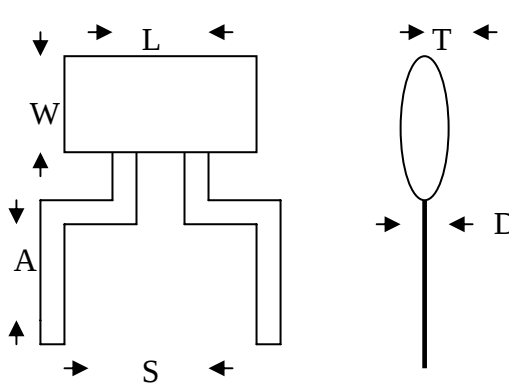
TEL : 886-2-2278-2210 886-2-2278-2212

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

www.jackcon.com.tw

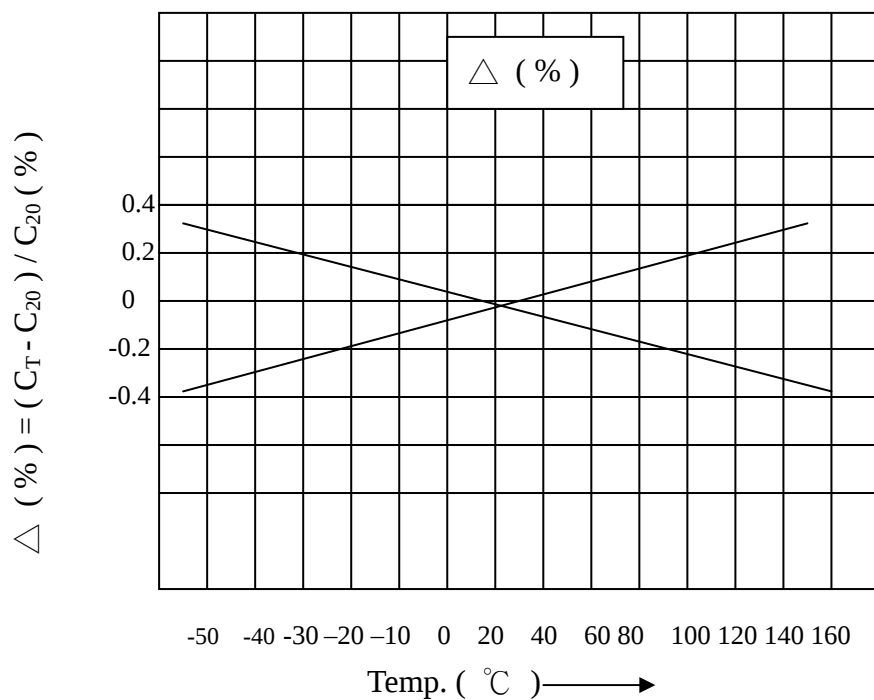
qc@jackcon.com.tw

MONOLITHIC CERAMIC CAPACITOR SPECIFICATICATION

CUSTOMER				CUST. P/N	104K/50V/X7R		
P/N	R20XR104K05H2YS						
CAP.	.1UF	TOL%	+/-10%	AT 1 KHZ 1 VRMS			
D.F.(Q)	<2.5%						
WVDC	50 VDC						
FLASH	100 VDC						
I R	1GΩ AT 50 VDC						
T.C	X7R						
MARKING 104 OR				DIMENSIONS		D	0.55mm+/-0.1mm
				L	5.1mm+/-1mm	S	5.08+/-08mm
				W	4.5mm+/-1.5mm	A	30+/-2mm
				T	2.3mm+/-1.5mm		
NOTES:							

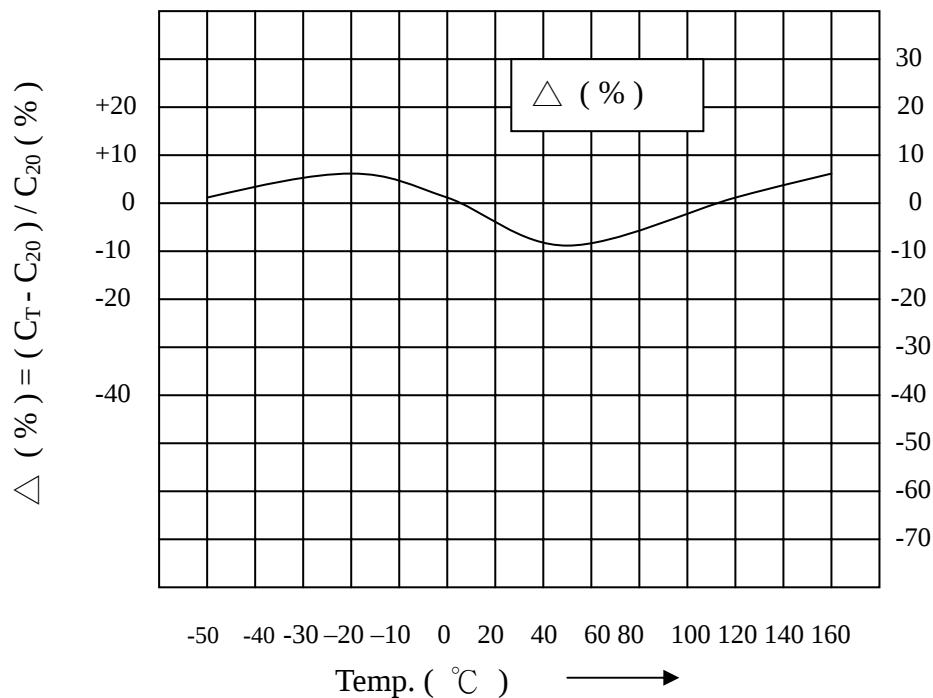
NPO

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

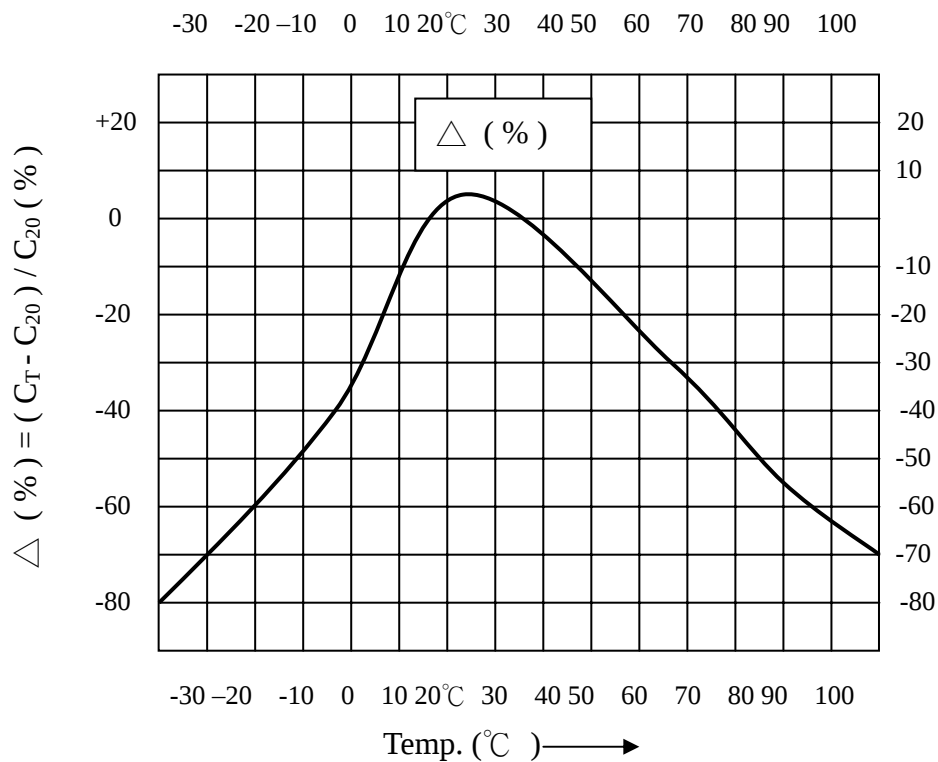


X7R

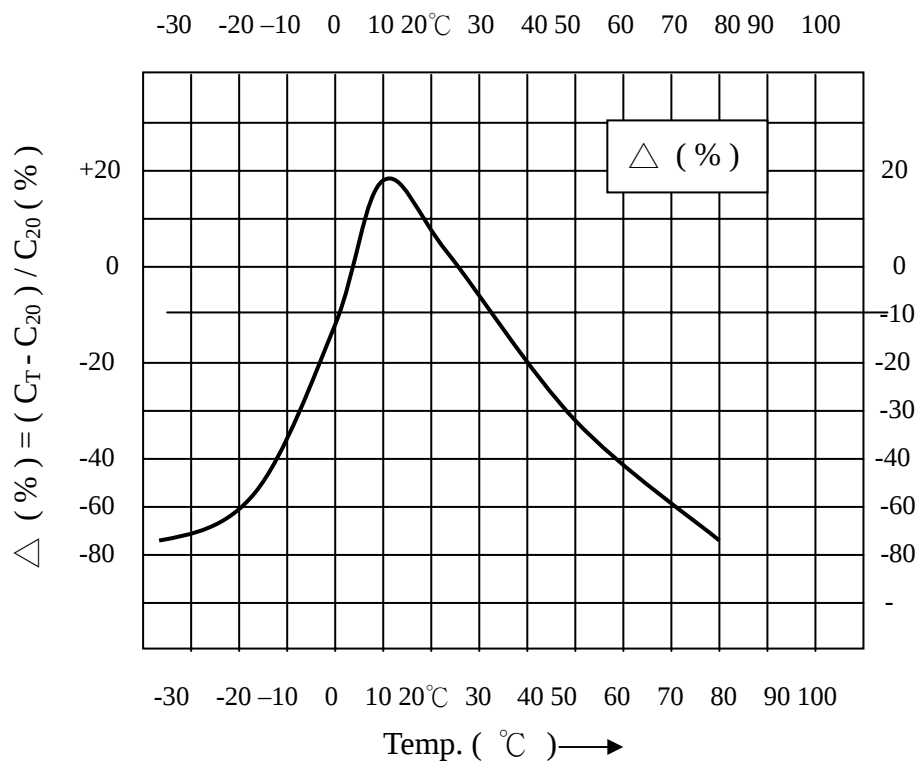
-50 -40 -30 -20 -10 0 20 40 60 80 100 120 140 160



Z5U

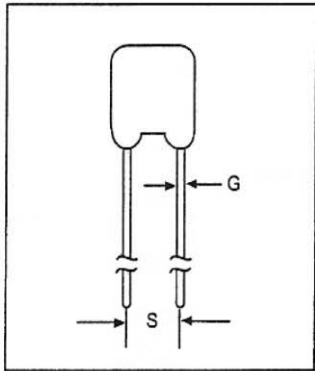


Y5V

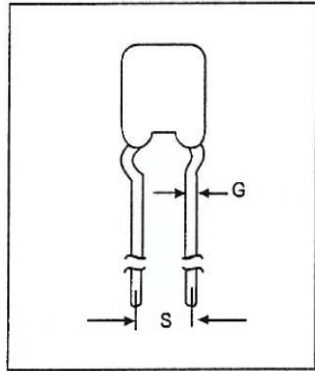


電介質材料 Dielectric Material	NPO COG	X7R	Z5U	Y5V
電介質種類 Dielectric Type	I 類電介質 Stable Class I Dielectric	II 類電介質 Stable Class II Dielectric		
電氣性能 Electrical Properties	電氣性能最穩定,基本上不隨溫度、電壓和時間的改變而改變. With negligible dependence of electrical properties on temperature, voltage, frequency and time.	電氣性能較穩定,在溫度、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%

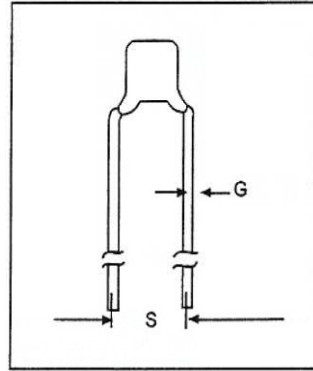
LEAD STYLES:



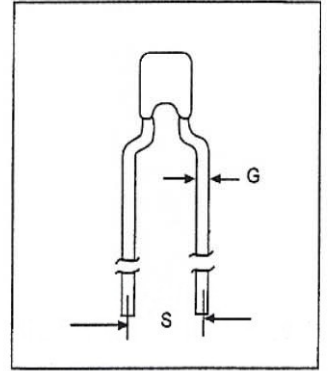
STYLE L
STRAIGHT LEAD



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

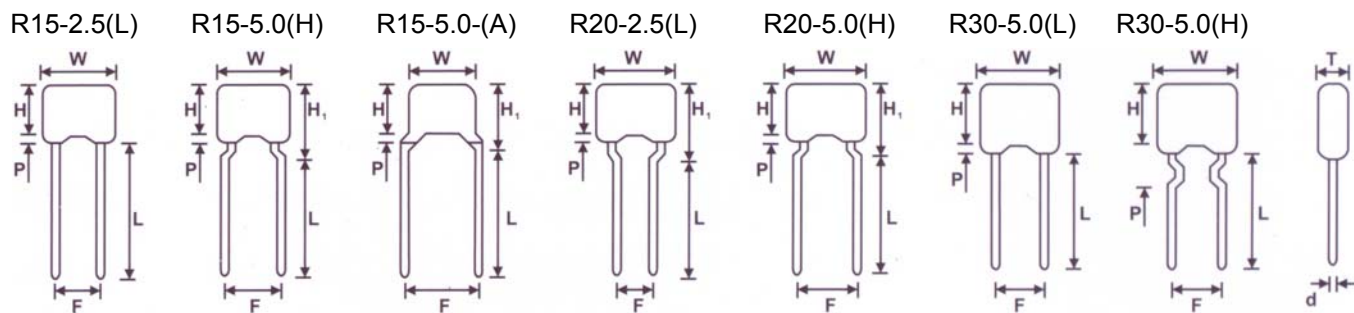
05 = 50V

10 = 100V

20 = 200V

(三) 尺寸大小

Size Code Dimension



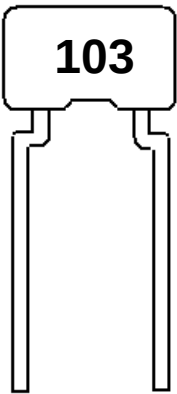
單位(unit) = mm

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



(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%																																			
	COG	X7R	Z5U	Y5V																																											
ΔC/C	≤ ±0.5%, or ±0.5pf	≤ ±7.5%	≤ ±20%	≤ ±20%																																											
壽命實驗 Life Test	<table><tr><td>條件 Condition</td><td>NPO</td><td>X7R</td><td>Z5U</td><td>Y5V</td></tr><tr><td>溫度 Temperature</td><td colspan="2">+125 ℃</td><td colspan="2">+85 ℃</td></tr><tr><td>時間 Time</td><td colspan="4">1000 小時(hours)</td></tr><tr><td>電壓 Voltage</td><td colspan="4">1.5×額定電壓 (rated voltage applied)</td></tr><tr><td>恢復時間 Recovery time</td><td colspan="4">24±2 小時(hours)</td></tr></table>	條件 Condition	NPO	X7R	Z5U	Y5V	溫度 Temperature	+125 ℃		+85 ℃		時間 Time	1000 小時(hours)				電壓 Voltage	1.5×額定電壓 (rated voltage applied)				恢復時間 Recovery time	24±2 小時(hours)				1.外 觀 ：無損傷 Appearance : No marked defect 2.變 化 值 (Change value) : <table><tr><td></td><td>COG</td><td>X7R</td><td>Z5U</td><td>Y5V</td></tr><tr><td>ΔC/C</td><td>≤ ±2%, or ±2pf</td><td>≤ ±10%</td><td>≤ ±20%</td><td>≤ ±30%</td></tr><tr><td>DF</td><td colspan="4">≤ 1.5 × initial requirement</td></tr><tr><td>IR</td><td colspan="4">≥ 0.25 × initial requirement</td></tr></table>		COG	X7R	Z5U	Y5V	ΔC/C	≤ ±2%, or ±2pf	≤ ±10%	≤ ±20%	≤ ±30%	DF	≤ 1.5 × initial requirement				IR	≥ 0.25 × initial requirement			
條件 Condition	NPO	X7R	Z5U	Y5V																																											
溫度 Temperature	+125 ℃		+85 ℃																																												
時間 Time	1000 小時(hours)																																														
電壓 Voltage	1.5×額定電壓 (rated voltage applied)																																														
恢復時間 Recovery time	24±2 小時(hours)																																														
	COG	X7R	Z5U	Y5V																																											
ΔC/C	≤ ±2%, or ±2pf	≤ ±10%	≤ ±20%	≤ ±30%																																											
DF	≤ 1.5 × initial requirement																																														
IR	≥ 0.25 × initial requirement																																														
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																																													