



久亦電子有限公司

JOEY ELECTRONICS CO., LTD.

塑膠薄膜電容器規格承認書

SPECIFICATION OF PLASTIC FILM CAPACITOR FOR APPROVAL

立创商城

客 戶 名 稱 : 深 圳 市 立 创 电 子 商 务 有 限 公 司
(Customer)
項 目 名 稱 : MPS 系 列
(Item)
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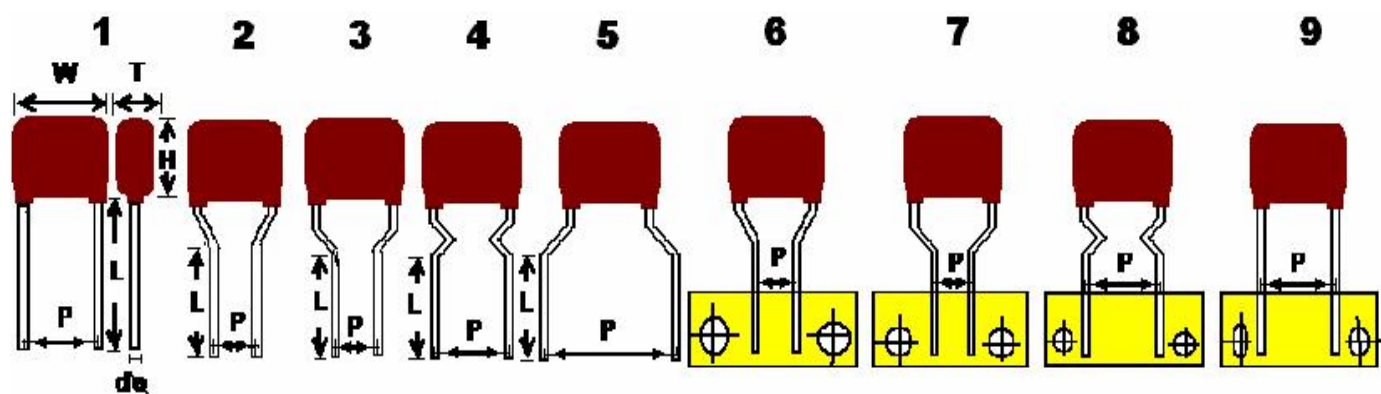
承認章 (Approved By)

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Unit : mm

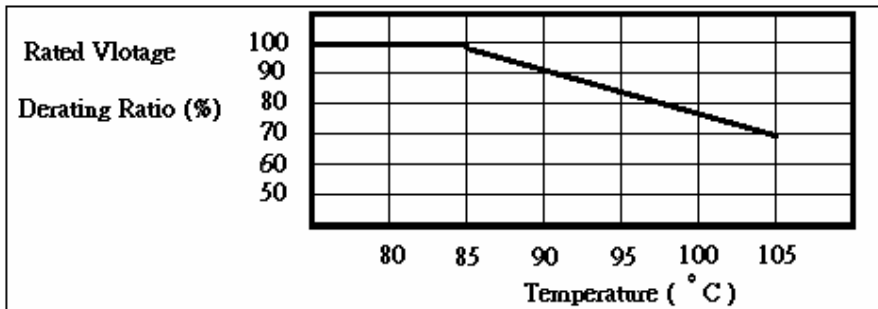
立創編號	久亦料號	規格	W	H	T	d0	P	FIG	備注
			max	max	max	±0.05		1	
C4355395	MPS104K2L4AA420MA1	MPS104K450V	12.5	9	5.5	0.6	10	1	10AA10
C4355396	MPS104K2L3AA320MA1	MPS104K450V	10.5	9	5	0.6	7.5	1	7.5AA7.5
C4355506	MPS104K2L4AT4000A1	MPS104K450V	12.5	7.5	4.5	0.6	10	9	10AT10
C4355397	MPS104K2H4AA420MA1	MPS104K500V	13	8	5	0.6	10	1	10AA10
C4355507	MPS104K2H4KA420MA1	MPS104K500V	13	8	5	0.6	10	4	10KA10
C4355508	MPS105K2L6KS6030A1	MPS105K450V	17.5	17.5	8.5	0.6	15	1	15KS15
C4355509	MPS105K2L6AS6035A1	MPS105K450V	17.5	11.5	8	0.6	15	1	15AS15
C4355399	MPS154K2H4AA420MA1	MPS154K500V	13	10	6	0.6	10	1	10AA10
C4355400	MPS155K2L6AA620MA1	MPS155K450V	17.5	19.5	11	0.6	15	1	15AA15
C4355510	MPS155K2L6AS6035A1	MPS155K450V	17.5	12.5	9.5	0.8	15	1	15AS15
C4355401	MPS184K2L4AA420MA1	MPS184K450V	12	11	7	0.6	10	1	10AA10
C4355402	MPS223J2K6AA620MA1	MPS223J800V	17.5	13	7	0.6	15	1	15AA15
C4355511	MPS224J2L4KS4035A1	MPS224J450V	13	11	6	0.6	10	4	10KS10
C4355403	MPS224K2G6AA620MA1	MPS224K400V	12.5	11.5	7.5	0.6	10	1	10AA10
C4355404	MPS224K2L4AA420MA1	MPS224K450V	12.5	12	7	0.6	10	1	10AA10
C4355405	MPS224K2L6AA620MA1	MPS224K450V	17	10.5	5	0.6	15	1	15AA15
C4355406	MPS224K2L3AA320MA1	MPS224K450V	10.5	9.2	6	0.6	7.5	1	7.5AA7.5
C4355512	MPS224K2L4AT4000A1	MPS224K450V	12.5	12	7	0.6	10	9	10AT10
C4355407	MPS224K2H4AA420MA1	MPS224K500V	13	11.5	7	0.6	10	1	10AA10
C4355513	MPS225K2L6AS6035A1	MPS225K450V	17.5	16	11.5	0.8	15	9	15AS15
C4355514	MPS225K2L6AS6045A1	MPS225K450V	17.5	16	11.5	0.8	15	4	15AS15
C4355515	MPS225K2L6AS6040A1	MPS225K450V	17.5	16	11.5	0.8	15	1	15AS15
C4355516	MPS225K2L6KS6035A1	MPS225K450V	17.5	16	11.5	0.8	15	4	15KS15
C4355517	MPS304J2L4KS4035A1	MPS304J450V	12.5	13	7	0.6	10	4	10KS10
C4355408	MPS334K2L4AA420MA1	MPS334K450V	12.5	9	6	0.6	10	1	10AA10

一. SCOPE: THIS SPECIFICATION APPLIED TO CAPACITOR FOR TYPE "MPS"
(METALLIZED POLYPROPYLENE FILM CAPACITOR)

二. OPERATING TEMPERATURE: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$ ($+105^{\circ}\text{C}$)

(Derating ratio of rated voltage to $+85^{\circ}\text{C} \sim +105^{\circ}\text{C}$: 1.5% per $^{\circ}\text{C}$ for Rated Voltage)

Rated Voltage: Rated voltage is defined the voltage which shall be capable of applying to capacitors continuously in the operating temperature range. However, rated voltage shall be derated 1.5% at each 1°C in the range of $+85^{\circ}\text{C} \sim +105^{\circ}\text{C}$ as shown in the Fig. below.



三. WORKING VOLTAGE: MPS (400~630VDC)

四. CAPACITANCE RANGE : MPS (0.001 μF ~2.2 μF).

五. CAPACITANCE TOLERANCE : $\pm 1\%$ (F), $\pm 2\%$ (G), $\pm 3\%$ (H), $\pm 5\%$ (J), $\pm 10\%$ (K), $\pm 20\%$ (M).

六. CONSTRUCTIONS & SHOW

(一) CONSTRUCTIONS.

A : ELEMENT (METALLIZED POLYPROPYLENE FILM.)

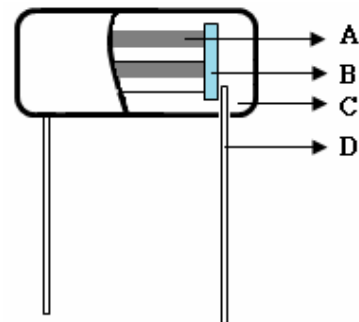
B : METALS(SN.ZN.SB.CU).

C : EPOXY RESIN & WAX

D : WIRE .

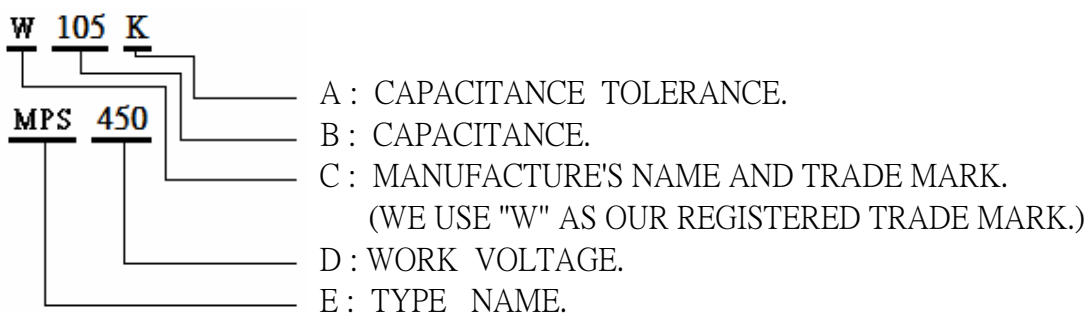
(二) SHOWS:

CAPACITOR'S SHOWS, IT'S SHOWN. ATTACHED DRAWING.



七. MARKING:

CAPACITOR IS MARKING ON BODY FOR FOLLOWING ITEMS.



八. STANDARD TESTING CONDITION:

CAPACITORS MAY BE MEASURED AT TEMPERATURE $20 \pm 5^{\circ}\text{C}$
AND HUMIDITY: $65 \pm 5\% \text{RH}$

九. CHARACTERISTICS

NO.	TEST ITEMS		CHARACTERISTICS	TEST METHOD
(一)	TESTING VOLTAGE (TV)	BETWEEN TERMINALS	NO BREAKDOWN OR FLASHOVER	150% RATED VOLTAGE FOR 2 SEC NOT EXCEED 15 mA FOR CHANGE 150% WORKING VOLTAGE FOR 60 SEC
		BETWEEN & ENCLOSURE TERMINALS	NO BREAKDOWN OR FLASHOVER	
(二)	INSULATION RESISTANCE (IR)	BETWEEN TERMINALS	$C \leq 0.33\mu F \geq 30\ 000M\Omega$ or more	CHARGING TIME : 60 ± 5 SEC CHARGING VOLTAGE : 100VDC
		BETWEEN & ENCLOSURE TERMINALS	$1.0\mu F \geq C > 0.33\mu F > 10\ 000M\Omega$ or more $C > 1.0\mu F > 5\ 000M\Omega$ or more	
(三)	CAPACITANCE		PLEASE CONSULT PAGE THREE	FREQUENCY AT 1KHZ TEST VOLTAGE 1 V AT $20 \pm 5^\circ C$
(四)	DISSIPATION FACTOR (DF)		0.1%(MAX) AT 1KHZ	TEST VOLTAGE 1V AT $20 \pm 5^\circ C$
(五)	LOAD STRENGTH	PULL TEST	ELECTRICAL AND MECHANICAL CHARACTERISTICS NO CHANGE.	WIRE 0.5mm LOAD 0.5KG 10SEC WIRE 0.6mm LOAD 0.5KG 10SEC WIRE 0.8mm LOAD 0.5KG 10SEC WIRE 1.0mm LOAD 1.0KG 20SEC ACC.TO IEC 68-2-21, TEST UA.
		BENDING TEST	ELECTRICAL AND MECHANICAL CHARACTERISTICS NO CHANGE.	WIRE 0.5mm LOAD 5N : $4 \times 90^\circ$ WIRE 0.6&0.8mm LOAD 5N : $4 \times 90^\circ$ WIRE 1.0mm LOAD 5N : $4 \times 90^\circ$ ACC.TO IEC 68-2-21, TEST UB
(六)	VIBRATION		ELECTRICAL AND MECHANICAL CHARACTERISTICS NO CHANGE.	FREQUENCY RANGE 10-55-10HZ 2HRS FOR DIRECTION * 3 DIRECTIONS ACC.TO IEC 68-2-6, TEST FC&FD B4
(七)	SOLDERABILITY		AFTER THE IMMERSION COVER SOLDER OF 95% AROUND LEAD SURFACE DIPPING POINT.	SOLDERABILITY TEMP. FOR $245 \pm 5^\circ C$ TIME FOR 2 ± 0.5 SEC ACC. TO IEC68-2-20, TEST TA METHOD
(八)	RESISTANCE TO SOLDERING HEAT	CHANGE IN CAPACITANCE	CHANGE IN (max) $< \pm 3\%$	SOLDER TEMP. AT $260 \pm 5^\circ C$ DIPPING TIME FOR 5 ± 1 SEC HAND SOLDER TEMP. AT $350 \pm 10^\circ C$ TIME . AT 3 ± 1 SEC
		TANGENT OF THE LOSS ANGLE	0.1%(MAX) AT 1KHZ	
		DIELECTRIC STRENGTH	110% WORKING VOLTAGE	
		INSULATION RESISTANCE	$C \leq 0.33\mu F > 30G\Omega$ $1.0\mu f \geq C > 0.33\mu F > 10\ G\Omega$ $C > 1.0\mu f > 5G\Omega$	
		APPEARANCE	NO VISIBLE	

九. CHARACTERISTICS			
NO.	TEST ITEMS	CHARACTERISTICS	TEST METHOD
(九)	LOW TEMPERATURE TEST	CHANGE IN CAPACITANCE	CHANGE IN (max) $< \pm 3\%$
		TANGENT OF THE LOSS ANGLE	0.1%(MAX) AT 1KHZ
		DIELECTRIC STRENGTH	110% WORKING VOLTAGE
		INSULATION RESISTANCE	$C \leq 0.33\mu F > 30G\Omega$ $1.0\mu f \geq C > 0.33\mu F > 10 G\Omega$ $C > 1.0\mu f > 5G\Omega$
		APPEARANCE	NO VISIBLE
(十)	HIGH TEMPERATURE TEST	CHANGE IN CAPACITANCE	CHANGE IN (max) $< \pm 5\%$
		TANGENT OF THE LOSS ANGLE	0.1%(MAX) AT 1KHZ
		DIELECTRIC STRENGTH	110% WORKING VOLTAGE
		INSULATION RESISTANCE	$C \leq 0.33\mu F > 30G\Omega$ $1.0\mu f \geq C > 0.33\mu F > 10 G\Omega$ $C > 1.0\mu f > 5G\Omega$
		APPEARANCE	NO VISIBLE
(十一)	TEMPERATURE CYCLE	CHANGE IN CAPACITANCE	CHANGE IN (max) $< \pm 10\%$
		TANGENT OF THE LOSS ANGLE	0.1%(MAX) AT 1KHZ
		DIELECTRIC STRENGTH	110% WORKING VOLTAGE
		INSULATION RESISTANCE	$C \leq 0.33\mu F > 30G\Omega$ $1.0\mu f \geq C > 0.33\mu F > 10 G\Omega$ $C > 1.0\mu f > 5G\Omega$
		APPEARANCE	NO VISIBLE
(十二)	HUMIDITY RESISTANCE LOADING TEST	CHANGE IN CAPACITANCE	CHANGE IN (max) $< \pm 10\%$
		TANGENT OF THE LOSS ANGLE	0.1%(MAX) AT 1KHZ
		DIELECTRIC STRENGTH	110% WORKING VOLTAGE
		INSULATION RESISTANCE	$\Delta IR / IR \leq 50\%$
		APPEARANCE	NO VISIBLE
(十三)	HIGH TEMPERATURE LOADING	CHANGE IN CAPACITANCE	CHANGE IN (max) $< \pm 3\%$
		TANGENT OF THE LOSS ANGLE	0.1%(MAX) AT 1KHZ
		DIELECTRIC STRENGTH	110% WORKING VOLTAGE
		INSULATION RESISTANCE	$C \leq 0.33\mu F > 30G\Omega$ $1.0\mu f \geq C > 0.33\mu F > 10 G\Omega$ $C > 1.0\mu f > 5G\Omega$
		APPEARANCE	NO VISIBLE

ACC.TO IEC 68-2-1,TEST. Bb
MEASURING CONDITION
TEMP : $-40^{\circ}C \pm 2^{\circ}C$
DURATION : 2 + 1/ - 0 HOURS
THEN RECOVERY AT ORDINARY
CONDITION 1~2 HORUS

ACC.TO IEC 68-2-2,TEST. Bb
MEASURING CONDITION
TEMP : $85^{\circ}C \pm 2^{\circ}C$
DURATION : 2 + 1/ - 0 HOURS
THEN RECOVERY AT ORDINARY
CONDITION 16 \pm 1 HORUS

ACC TO IEC 68-2-14 METHOD
TESTCYCLES

NO	TEMP	TIME
1	$+20^{\circ}C \pm 2^{\circ}C$	30m
2	$-40^{\circ}C \pm 2^{\circ}C$	30m
3	$+20^{\circ}C \pm 2^{\circ}C$	30m
4	$+85^{\circ}C \pm 2^{\circ}C$	30m
5	$+20^{\circ}C \pm 2^{\circ}C$	30m

THEN RECOVERY AT ORDINARY
CONDITION 2 HORUS

ACC TO IEC 68-2-14 METHOD
HUMIDITY OF 90~95% RH
TEMP : $40 \pm 2^{\circ}C$
APPLIED VOLTAGE : R.V
DURATION : 500 + 24/ - 0 HOURS
THEN RECOVERY AT ORDINARY
CONDITION 16 HORUS

VOLTAGE OF 110% OF RATED
VOLTAGE 50 TO 60Hz SHALL BE
APPLIED TO THE CAPACITOR FOR
1000 + 48/0 H THROUGH SERIAL
RESISTOR OF 20 TO 1000 Ω PER 1V
AT THE TEST TEMPERATURE OF
 $85 \pm 2^{\circ}C$
THEN RECOVERY AT ORDINARY
CONDITION 16 HORUS

十. TESTING EQUIPMENT 檢測設備:

(一) CAPACITANCE AND 容量和損耗角 (CAP& DF) :

1. UAD TECH 1689 LCR METER.
2. TAI WAN ZENTECH 1062 LCR METER.
3. TAI WAN ZENTECH 1063 LCR METER.
4. TAI WAN ZENTECH 1075 LCR METER.

(二) INSULATION RESISTANCE 絕緣阻抗 (IR) :

1. DAN BRIDGE 602 METER
2. ZENTECH 705 IR METER.

(三) DIELECTRIC STRENGTH 耐電壓 (TV) :

1. ZENTECH 902
2. TAI WAN EXTECH 7450

(四) AUTO SORTING MACHINES 自動分選機(選別機)

1. TAI WAN URANUS SORTING AUTOMATIC
2. TAI WAN WELL DELL SORTING AUTOMATIC

(五) CHARACTERISTICS OF PERMISSIBLE CURRENT TO FREQUENCY

許容電流與頻率特性

1. CHROMA PROGRAMMABLE HF AC TESTER MODEL 11805
可程式高頻交流測試器11805
2. CHROMA DIGIT MULTIMETER 12061
六位半數位多功能電表
3. CHROMD CAPACITOR LEAKAGE CURRENT / IR METER MODEL11200
電容漏電流/絕緣電阻表11200

(六) RoHS & WITHOUT HALOGEN

RoHS和無鹵產品

1. SHIMADZU EDX-LE

十一. ACCEPTABLE QUALITY LEVEL 允收標準 (AQL):

AQL IS ACCORDING TO MIL-STD-105E-II, BY LOT GOING INSPECTION.

允收標準(AQL)是根據MIL-STD-105E-II抽樣方試檢驗

(一) APPEARANCE AQL : 1.0 AC

外觀不良低於1.0為允收

(二) DIMENSIONS AQL: 1.0 AC

尺寸不良低於1.0為允收

(三) MECHANICAL CHARACTERISTICS AQL: 1.0 AC

機械特性不良低於1.0為允收

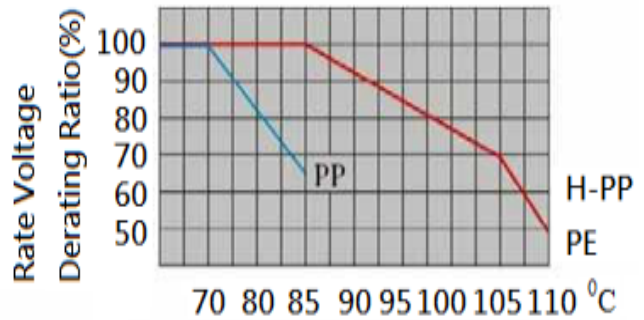
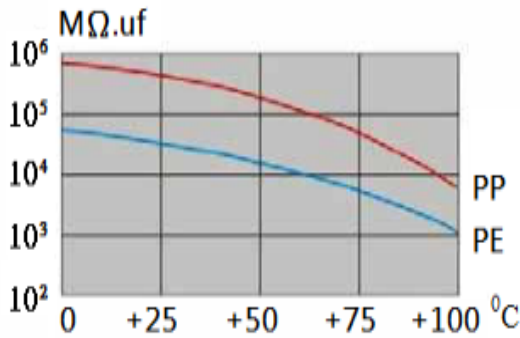
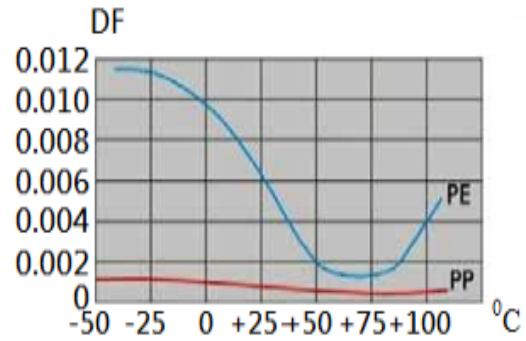
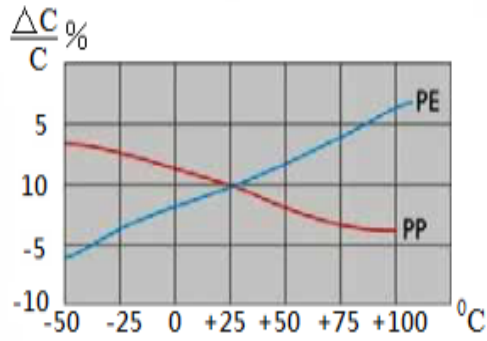
(四) ELECTRICAL CHARACTERISTICS AQL: 0.065 (INCLUDE CAP,DF,TV,IR)

電器特性不良低於 0.065 (包括 CAP,DF,TV,IR)

十二. Product electrical characteristic graph 產品電氣特性圖

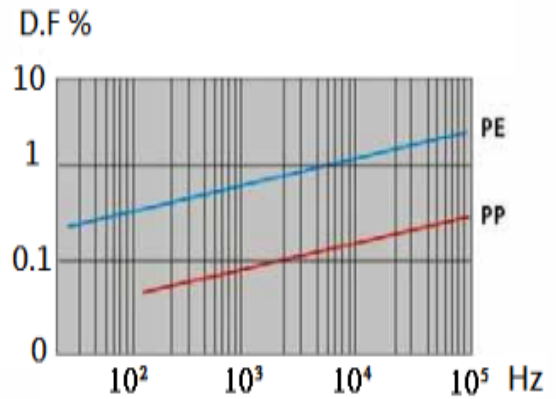
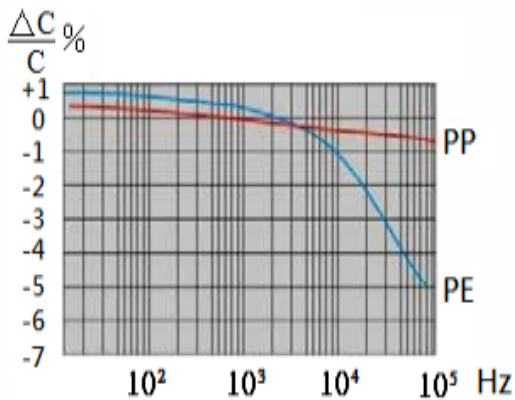
溫度性能

Temperature Characteristics



頻率性能

Frequency Characteristics



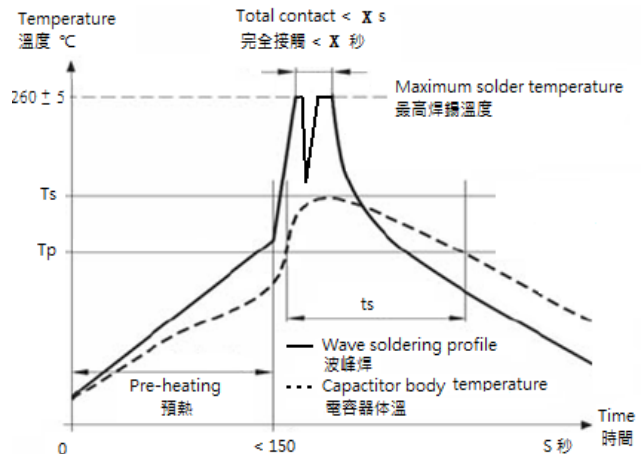
十三. Soldering suggestions - 焊接建議

When soldering a capacitor, heat in soldering is conducted to the element of the capacitor from wire lead and an enclosure, and hence it should be noted that soldering under high temperature and a long period may cause deterioration of breakdown of capacitors. Characteristic or Be sure to solder within the following temperature condition range.

當焊接電容時，焊錫熱會通過引線端子高溫和封裝層傳遞到電容素子，因此必須注意高溫和長時間焊接引起的電容器特性衰減或損壞，請確認焊錫在以下溫度範圍內。

Ts : Capacitor body maximum temperature at wave soldering
電容器本體最高波峰焊溫度

Tp : Capacitor body maximum temperature at pre-heating
電容器本體最高預熱溫度



Body temperature should follow the description below :
電容器本體溫度應該符合以下描述：

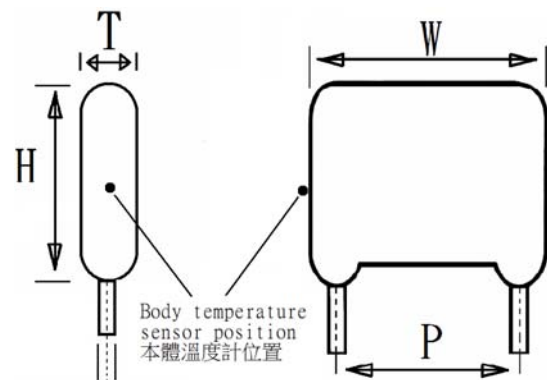
PP 聚丙烯電容器

Duing pre-heating : $T_p \leq 115^\circ\text{C}$

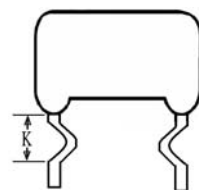
Duing soldering : $T_s \leq 120^\circ\text{C}$, $t_s \leq 45\text{ s}$

預熱期間溫度 : $T_p \leq 115^\circ\text{C}$

焊接期間溫度 : $T_s \leq 120^\circ\text{C}$, $t_s \leq 45\text{ 秒}$



	X s	X s
T 產品厚度 $\geq 6\text{mm}$	10 s	
$6\text{mm} > T$ 產品厚度 $\geq 5\text{mm}$ 且 K 3.5mm	10 s	
$6\text{mm} > T$ 產品厚度 $\geq 5\text{mm}$		5 s
$5\text{mm} > T$ 產品厚度 $\geq 4.5\text{mm}$ 且 K 3.5mm		5 s
OPP P < 7.5mm 或 T 產品厚度 < 4.5 mm	3 s	



十四. When SMD components are used together with leaded ones, the film capacitors should not pass into the SMD adhesive curing. The leaded components should be assembled after the SMD curing step.

當SMD元件與引腳式元件一起使用時，薄膜電容器不應進入SMD粘合劑固化爐。引腳式部件應在SMD固化步驟之後組裝。

十五. Leaded film capacitors are not suitable for reflow soldering.

引腳式薄膜電容器不適合回流焊。

十六. In order to ensure proper conditions for manual or selective soldering, the body temperature of the capacitor (Ts) must be $\leq 120^\circ\text{C}$

為了確保手動或選擇性焊接的適當條件，電容器 (Ts) 的本體溫度必須是 $\leq 120^\circ\text{C}$

十七. One recommended condition for manual soldering is that the tip of the soldering iron should be $< 360^\circ\text{C}$ and the soldering contact time should be no longer than 3 seconds.

手工焊接的一個推薦條件是烙鐵的頂端應該是 $< 360^\circ\text{C}$ ，焊接接觸時間不應超過3秒。

十九. PERMISSIBLE PEAK CURRENT (PULSE CURRENT)

允許峰值電流值 (脈沖電流)

Current flowing through a capacitor shall be within the following permissible peak value. A root-mean-square of the current shall be also within the permissible current value relative to frequency shown by type .

經流電容器的峰值電流必須嚴格限制在下表給出允許峰值以內，其電流的有效值也不能超過各型號電容器分別給出的與頻率有關的允許電流值(有效值)。

*The value of a single peak current is one obtained by assuming an inrush current and so on at turn-on and turn-off, and the number of times is limited to 10,000 times.

*從充放電試驗得到的單個脈沖峰值電流值可應用于開關合時產生的單個(離散)脈沖，最高可承受10,000次。

*The value of a continuous peak current is one obtained by assuming repetitive wave forms. Pay attention of a capacitor caused by a current.

*連續的峰值電流值應用于重復的或頻繁出現的脈沖情形。請注意電容器因電流發生自熱的現象。

*If the value of a current exceeds the following one or a single peak current occurs 10,000 times or more, contact us.

*如果電流值超出下表給出的值或脈沖數超過10,000個，請與我們聯系。

CAP	(uf)	450V		CAP	(uf)	450V	
		Single單發 (Ao-p)	Continualc連續 (Ao-p)			Single單發 (Ao-p)	Continualc連續 (Ao-p)
102	0.0010	0.15	0.06	334	0.33	35.64	4.73
103	0.010	1.50	0.32	394	0.39	42.12	5.59
223	0.022	3.30	0.70	474	0.47	50.76	6.74
473	0.047	7.05	1.10	564	0.56	34.44	4.54
104	0.1	15.00	1.41	684	0.68	41.82	5.51
124	0.12	12.96	1.72	824	0.82	50.43	6.64
154	0.15	16.20	2.15	105	1.0	61.50	8.10
184	0.18	19.44	2.58	125	1.2	73.80	9.72
224	0.22	23.76	3.15	155	1.5	55.50	7.56
274	0.27	29.16	3.87	225	2.2	81.40	11.08

*The value of a permissible current is calculated from the value of $I(Ao-p)=C(uf)*dv/dt(v/us)$

*允許峰值電流值是根據公式 $I(Ao-p)=C(uf)*dv/dt(v/us)$ 計算出來的，詳細的資料請參照各個型號的規格欄。

二十. Manufacturers製造商：JOEY ELECTRONICS CO,LTD. 久亦電子有限公司。
Origin , including 產地：CHINA P .R .C 中國

二一. The compliance with enviroment requirement 環保要求符合性

- 21.1 Compliance with the requirement of RoHS.符合RoHS要求。
- 21.2 Compliance with the requirement of REACH.符合REACH要求。
- 21.3 Without Halogen (as required) 符合無鹵 (如要求)。

二二. Storage conditions 存儲條件：

- 22.1 It should be noted that the solderability of the terminals may be deteriorated when Stored bardly in an atmosphere for a long periods.
請注意，長時間暴露在空氣中會導致引線焊接性能衰減。
- 22.2 It shouldn't be located in particularly high temperature and hign humidity , it must Submit to the following conditions (keeping in the original package) :
不能放置在高溫和高濕環境中，請遵循以下存諸條件 (原包裝下保存)
Temperature 溫度：35°C MAX.
Relative humidity 相對濕度：80% MAX.
- 22.3 Storage period : (from the manufacturing date marked on the label in package bag)
Loose : 12months MAX.
存儲時間：(包裝袋上標注的生產日期為準) 最長12個月。

二三. Characteristics and test conditions 電氣特性和測試條件：

Test condition : Unless otherwise specified , the standard range of atmospheric Conditions for marking measurements and test is as follows Ambient
Temperature 環境溫度：15~35°C
Relaive humidity 相對濕度：25~75%
If there may be any doubt on the results , measurements shall be made within the Following limits.
如對測試結果有任何疑問，則按以下限制測試：
Ambient temperature 環境溫度：20 ~ 25 °C
Relative humidity 環境濕度：60 ~ 70% .

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