



# 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

客 戶 名 稱 :

( Customer )

項 目 :

( Item )

**KHS系列**

客 戶 料 號 :

( Customer Part No )

久 亦 料 號 :

( Joey Parts No )

送 樣 日 期 :

( Date )

**22.06.29**

備 注 :

( Remark )

CUSTOMER APPROVAL 廠商認可

請確認後簽回，若不簽回，視同默認。

PLEASE SIGNATURE AFTER CHECKING , NO SIGNATURE IS EQUAL PRETERMIT.

承認章 ( Approved By )

廣東省東莞市企石鎮舊圍村東湖路1號2號樓201室

Room 201, Building 2, No. 1, Donghu Road, Jiuwei Village, Qishi Town, Dongguan, Guangdong

TEL : 0769 - 83729966 FAX : 0769 - 83729969



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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 : KHS 系 列  
( Item )  
客 戶 料 號 :  
( Customer Part No )  
久 亦 料 號 :  
( Joey Parts No )  
送 樣 日 期 :  
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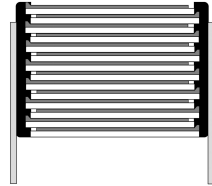
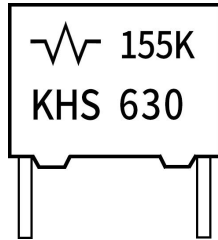









小型化金屬化聚丙烯膜電容器 (安全膜盒裝型 - 高溫125°C)

Mini-size metallized polypropylene film capacitor ( Safety film dipped-box , high temperature )



-  金屬化聚丙烯膜 / Metallized polypropylene film
-  金屬噴塗層 / Metal spray layer
-  引腳 / Connecting wire

**特點：**

- # 金屬化聚丙烯膜
- # 小型化，良好的自愈性
- # 阻燃環氧樹脂和殼體封裝 (UL94/V- 0)
- # 內部溫升低，耐高溫(125°C)

**Features :**

- # Metallized polypropylene film
- # Mini- size , excellent self- healing
- # Flame retardant epoxy and box coating ( UL94/V- 0)
- # Low loss at high frequency,high temperature rage (125°C)

**主要用途：**

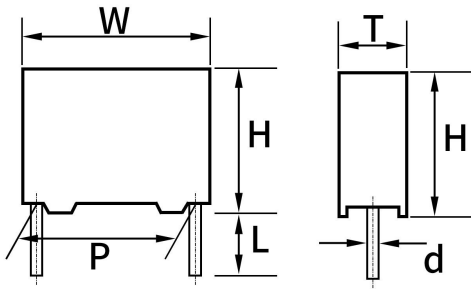
- # 用於開關電源，電子鎮流器和變頻器等中間電路直流濾波 (如:DC-Link, PFC等)

**Typical Application :**

- # As intermediate circuit capacitor for SMPS , Electronic Ballast inverter ( i.e. DC-link , DC filt and P.F.C )

**技術要求 Specifications**

引用標準 / Reference Standard	GB/T 10190 ( IEC 60384-16 )					
額定溫度 / Rated Temperature	105°C					
工作溫度範圍 Operating Temperature Range	- 40°C ~ +125°C ( + 85°C ~+125°C : decreasing factor 1.25% per °C for UR)					
額定電壓 / Rated Voltage	( 400 / 450 / 500 / 550 / 630 ) VDC					
容量範圍 / Capacitance Range	0.01uF ~ 2.2uF					
電容量偏差 / Capacitance Tolerance	±5% (J) , ±10% (K)					
耐電壓 / Voltage proof	1.6U <sub>R</sub> ( 2S )					
損耗角正切 / Dissipation Factor	≤ 0.1% (1KHz , 20°C)					
絕緣阻抗 Insulation Resistance	30 000MΩ for C ≤ 0.33uF 10 000MΩ for C ≥ 0.33uF (20°C , 100V , 1min)					
最大脈衝爬升速率 Maximum Pulse Rise Time (dV / dt) : 若實際工作電壓U比額定電壓U <sub>R</sub> 低，電容器可工作在更高的dV / dt場合。這樣dV / dt允許值應為右表值U <sub>R</sub> /U。 If the working voltage (U) is lower than the rated voltage ( U <sub>R</sub> ), the capacitor can be worked at a higher dV / dt . In thiscase , the maximum allowed dV / dt is obtain by multiplyingthe right value with U <sub>R</sub> /U.	U <sub>R</sub> (V)	dv/dt (V/us)				
		P=7.5	P=10	P=15	P=22.5	
		400/450	320	300	200	100
		500/550	380	350	220	150
	630	420	400	300	180	



- (1) 可依照客戶需求設計,產品詳細型號及尺寸可聯系業務部門或技術部門
- (2) 引腳腳型可進行加工編帶,切腳和彎切

外型尺寸 Dimensions (mm)

CAP	CAP (uF)	400Vdc / 450Vdc				
		W ±0.5	H ±0.5	T ±0.5	P	d
104	0.1	13	11	5	10	0.6
154	0.15	13	12	6	10	0.6
224	0.22	13	11	5	10	0.6
334	0.33	13	12	6	10	0.6
474	0.47	13	13	7	10	0.6
334	0.33	18	13.5	6	15	0.8
474	0.47	18	11	5.5	15	0.8
684	0.68	18	13.5	6	15	0.8
824	0.82	18	13.5	7.5	15	0.8
105	1.0	18	14.5	8.4	15	0.8
155	1.5	17	16.5	9.5	15	0.8
225	2.2	18	19.2	11.2	15	0.8
155	1.5	26.5	17	10	22.5	0.8
225	2.2	26	20	11	22.5	0.8

CAP	CAP (uF)	500Vdc / 550Vdc				
		W ±0.5	H ±0.5	T ±0.5	P	d
104	0.1	12	11	5	10	0.6
154	0.15	13	12	6	10	0.6
224	0.22	13	13	7	10	0.6
334	0.33	13	16	8	10	0.6
224	0.22	17	11	5.5	15	0.8
334	0.33	18	13.5	6	15	0.8
474	0.47	17	13.5	7.5	15	0.8
684	0.68	17	16.5	9.5	15	0.8
824	0.82	18	18	10	15	0.8
105	1.0	18	19.2	11.2	15	0.8
824	0.82	26.5	16.5	7	22.5	0.8
105	1.0	25	17.5	8	22.5	0.8
155	1.5	25	19	10	22.5	0.8
225	2.2	26.5	23	13	22.5	0.8

CAP	CAP (uF)	630Vdc				
		W ±0.5	H ±0.5	T ±0.5	P	d
104	0.1	13	12	6	10	0.6
154	0.15	13	13	7	10	0.6
224	0.22	13	16	8	10	0.6
334	0.33	12.5	16.5	10	10	0.6
224	0.22	18	12	6	15	0.8
334	0.33	18	14.5	8.5	15	0.8
474	0.47	18	16	10	15	0.8
684	0.68	18	18	10	15	0.8
824	0.82	26.5	19	10	22.5	0.8
105	1.0	26.5	19	10	22.5	0.8
155	1.5	26.5	23	13	22.5	0.8

一 . Scope: this specification applied to capacitor for type "KHS"  
(Metallized polypropylene film capacitor)

二 . Applications

PFC(Power Factor Correction)

三 . Climatic

\*Max. Operating temperatur: 125°C

\*Climatic category ( IEC 60068-1) : 55/110/56

四 . Features

\*Very compact design

\*Very small dimensions

\*Very high ripple and peak current

\*High voltage capability

\*Excellent self-healing property

五 . Working voltage: KHS ( 450 ~ 630 VDC )

六 . Capcitanse range: ( 0.01uF ~ 2.2uF )

七 . Capcitanse tolerance:  $\pm 5\%$ (J),  $\pm 10\%$ (K)

八 . Constructions & Show

\*Constructions

A: Elenent ( Metallized polypropylene film )

B: Metals

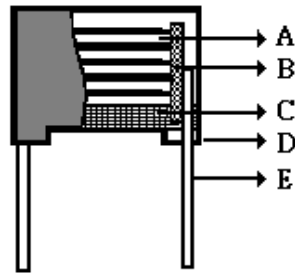
C: Epoxy resing

D: Plastic Case

E: Wire

\*Shows:

Capacitor's shows, it's shown. Attached drawing



九 . Marking:

Capacitor is marking on body for following items

**W 105 K**

**KHS 450**

A : Capacitance tolerance

B : Capacitance

C : Manufacture's name and trade mark

(we use " W " as our registered trand mark)

D : Work voltage

E : Type name

十 . Standard testing condition:

Capacitors may be measured at temperature  $20 \pm 5^\circ\text{C}$

And humidity :  $65 \pm 5\% \text{RH}$

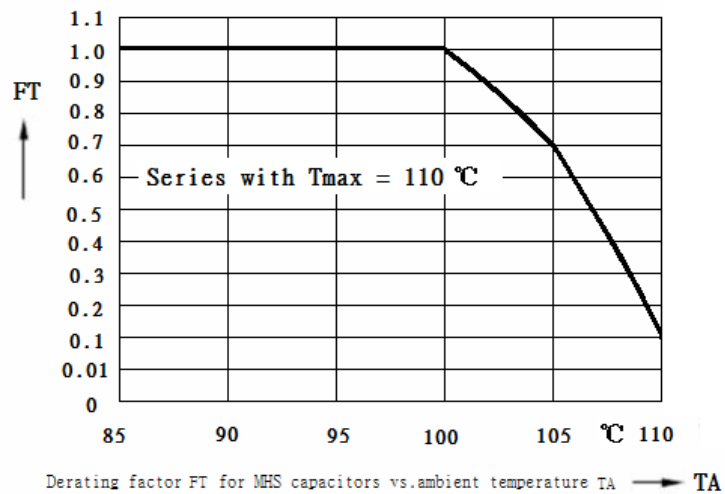
十一. Technical data		
Rated temperature $T_R$	+ 85°C	
Operating temperature range	Max. operating temperature $T_{op, max}$	+125°C
	Upper category temperature $T_{max}$	+110°C
	Lower category temperature $T_{op min}$	-55°C
	Rated temperature $T_R$	+85°C
Dissipation factor $\tan \delta$ ( in $10^{-3}$ ) at 20°C ( upper limit values )	at 1kHz	1.0
	at 10kHz	2.5
	at 100kHz	25.0
Insulation resistance $R$ at 20°C, rel. humidity (minimum as-delivered values )	30 G $\Omega$ ( $C_R \leq 0.33\mu F$ )	
	10000 s ( $CR < 0.33\mu F$ )	
DC test voltage	1.4 * $V_R$ , 2S	
Category voltage $V_C$ ( continuous operation $V_{DC}$ at $f \leq 1$ kHz)	Top ( °C )	DC voltage derating
	Top $\leq 85$ 85 < Top $\leq 110$	$V_C = V_R$ $V_C = V_R * (165 - Top) / 80$
Operating voltage $V_{op}$ for short operating periods $V_{DC}$ at $f \leq 1$ kHz)	Top ( °C )	DC voltage ( max. hours )
	Top $\leq 100$ 100 < Top $\leq 12$	$V_{OP} = 1.1 * V_C$ (1000 h) $V_{OP} = 1.0 * V_C$ (1000 h)
Damp heat test Limit values after damp Heat test	56 days / 40°C / 93% relative humidity	
	Capacitance change $ \Delta C/C $	$\leq 5\%$
	Dissipation factor change $\Delta \tan \delta$	$\leq 5.0 * 10^{-3}$ (at 1kHz )
	Insulation resistance $R_{ins}$	$\geq 50\%$ initial limit value
Reliability		
Failure rate $\lambda$	1 fit ( $\leq 1.0 * 10^{-9}/h$ ) at 0.5* $V_R$ , 40°C	
Service life $t_{SL}$	200 000 h at 0.5* $V_R$ , 85°C	
	For conversion to other operating conditions and temperatures , refer to chapter "Quality , 2Reliability".	
Failure criteria	Short circuit or open circuit	
Total failure	Capacitance change $ \Delta C/C $	> 10%
Failure due to variatio: of parameters	Dissipation factor $\tan \delta$	< 4 . Upper limit values
	Insulation resistance $R_{ins}$	150 M $\Omega$ ( $C_R \leq 0.33\mu F$ )
	Or time constant $\tau$	50 s ( $CR \geq 0.33\mu F$ )



十三. Important note :

The operating temperature , which is the sum of ambient temperatures and self-heating , shall not exceed the upper category temperature ( 110°C ). To assure this , a derating in the Irms shall be applied as follows :

$I_{rms} (T_A > 100^\circ\text{C}) = I_{rms} (T_A < 100^\circ\text{C}) * FT$  , with FT defined as below :



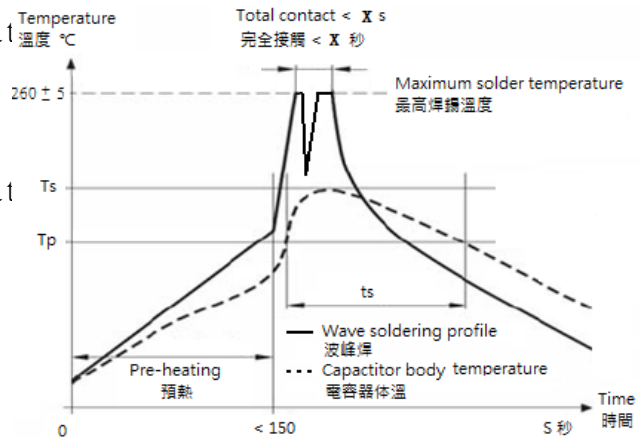
十四. Soldering suggestions - 焊接建議

When soldering a capacitor, heat in soldering is conducted to the element of the capacitor enclosure, and hence it should be noted that soldering under high temperature and a deterioration of breakdown of capacitors. Characteristic or Be sure to solder within the 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 descriptive  
電容器本體溫度應該符合以下描述：

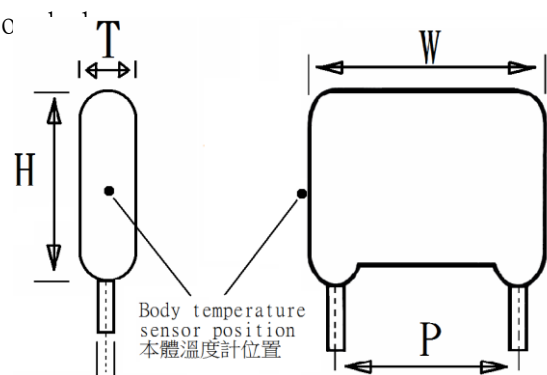
PP 聚丙烯電容器

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

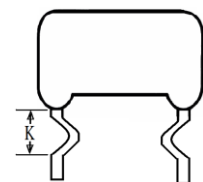
During soldering:  $T_s \leq 120^\circ\text{C}$  ,  $t_s \leq 45\text{ s}$

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 $\geq 6$	10 s	
$6\text{mm} > T$ 產品厚度 $\geq 5\text{mm}$ 且 $K \geq 3.5\text{mm}$	10 s	
$6\text{mm} > T$ 產品厚度 $\geq 5$		5 s
$5\text{mm} > T$ 產品厚度 $\geq 4.5\text{mm}$ 且 $K \geq 3.5\text{mm}$		5 s



# When SMD components are used together with leaded ones, the film capacitors should not undergo 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。

# Leaded film capacitors are not suitable for reflow soldering. 引腳式薄膜電容器不適合回流焊。

# In order to ensure proper conditions for manual or selective soldering, the body temperature of capacitor ( $T_s$ ) 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 ( $T_s$ ) 的本體溫度必須是  $\leq 120^\circ\text{C}$

# One recommended condition for manual soldering is that the tip of the soldering iron 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。

## 十五. TESTING EQUIPMENT 檢測設備:

## (一) CAPACITANCE AND 容量和損耗角 (CAP&amp; 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 &amp; WITHOUT HALOGEN

RoHS和無鹵產品

1. SHIMADZU EDX-LE

## 十六. 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

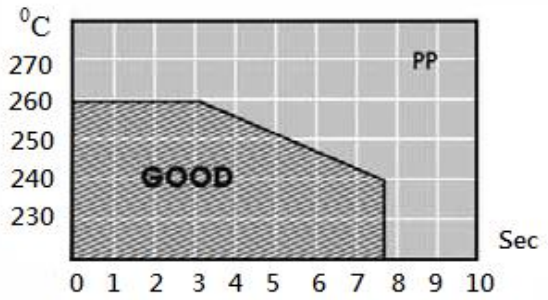
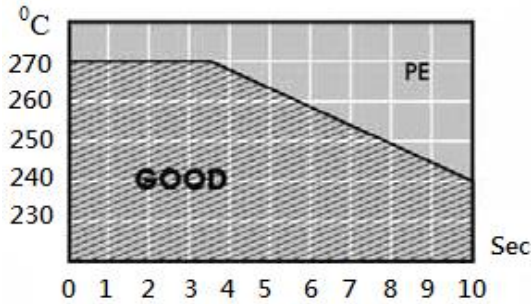
## (四) ELECTRICAL CHARACTERISTICS AQL: 0.065 (INCLUDE CAP,DF,TV,IR)

電器特性不良低於 0.065 (包括 CAP,DF,TV,IR)

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

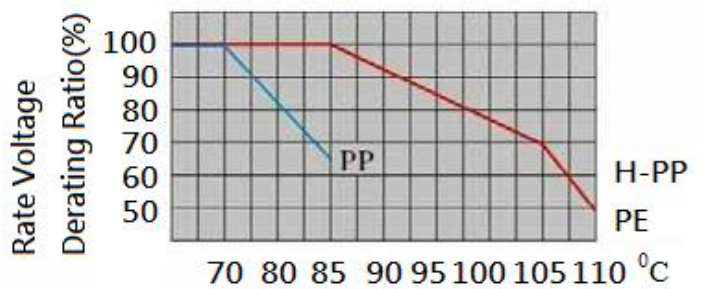
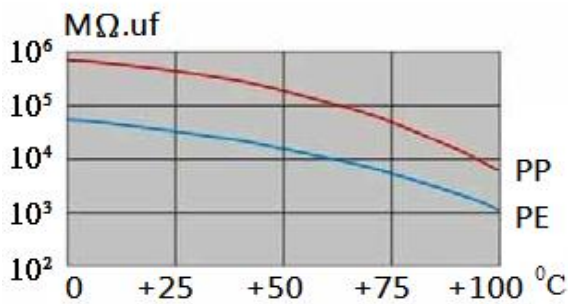
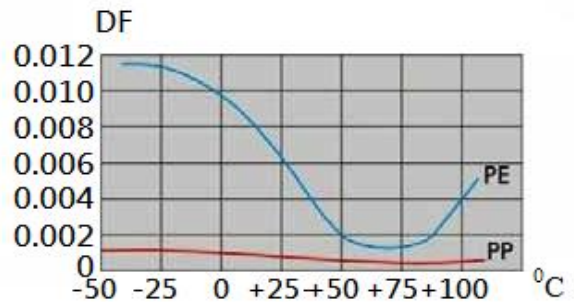
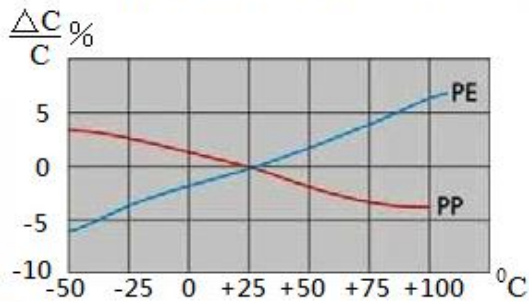
焊接溫度與時間對比

Soldering Temperature VS Time



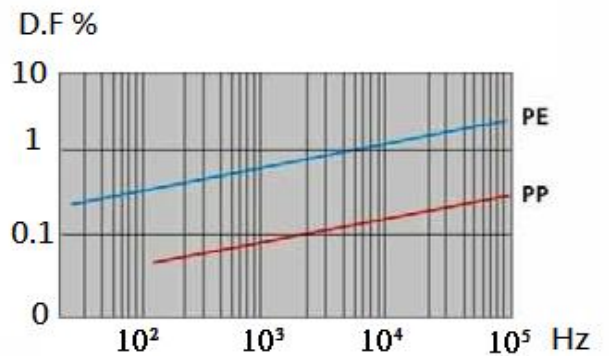
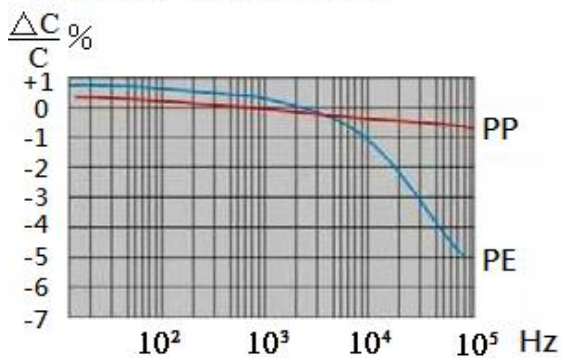
溫度性能

Temperature Characteristics



頻率性能

Frequency Characteristics



十八. 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

十九. The compliance with environment requirement 環保要求符合性

19.1 Compliance with the requirement of RoHS. 符合RoHS要求。

19.2 Compliance with the requirement of REACH. 符合REACH要求。

19.3 Without Halogen ( as required ) 符合無鹵 ( 如要求 )。

二十. Storage conditions 存儲條件:

20.1 It should be noted that the solderability of the terminals may be deteriorated when stored hardly 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。

20.2 It shouldn't be located in particularly high temperature and high 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, 請遵循以下存儲條件 ( 原包裝下保存 )

Temperature 溫度: 35°C MAX.

Relative humidity 相對濕度: 80% MAX.

20.3 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。

二一. 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

Relative 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% .