

# Carli®

Customer:

久正光电

No: MTFE120607A  
STN002 Edt:E



## Capacitors

# 承认书

(APPROVAL SHEET)

品名: 高温高压小型化金属化聚脂膜电容器  
 (Description) High temperature & High Voltage Mini Size Metallized Polyester Film Capacitor

型式: \_\_\_\_\_  
 (Type) MTF,Safety Type

零件料号: \_\_\_\_\_  
 (Part No.) SERIES

客户料号: \_\_\_\_\_  
 (Customer Part No)

日期: \_\_\_\_\_  
 (Date) 2012.06.07

承认章 (Approved By)



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2012-6-7

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# General Information

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## 0: Product Code System 产品代码系统

**For example:** The part number, comprising 18 digits, is formed as follows.

**举例:** 产品料号由18位数字组成, 如下:

T	F	2	2	4	K	2	Y	1	0	9	L	2	7	0	D	9	R
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

- |                                     |   |
|-------------------------------------|---|
| Digit 1~2: Type Code                | Digit 11~ 17: Type Series Code            |
| 数位1~2: 型号代码                         | 数位11~ 17: 型号系列码                           |
| Digit 3~5: Capacitance Value Code   | Digit 12: Lead Form Code                  |
| 数位 3~5: 容值代码                        | 数位 12: 引线加工型式代码                           |
| Digit 6: Capacitance Tolerance Code | Digit 13~15: Lead Length Code             |
| 数位 6: 容量偏差代码                        | 数位 13~15: 引线长度代码                          |
| Digit 7~8: Rated Voltage Code       | Digit 16: Lead Length Tolerance Code      |
| 数位 7~8: 额定电压代码                      | 数位 16: 引线长误差代码                            |
| Digit 9~10: Case or Pitch Code      | Digit 18: RoHs or HF Compliance Type Code |
| 数位 9~10: 壳体 或 脚距代码                  | 数位 18: RoHs 或 HF 符合性代码                    |

### 0.1 Digit 1 to 2 - 数位1~2: TYPE code. 型号代码

TYPE型号	MPX	MPF	MPH	MPB	MPV	MPC	PPS	PPN	DPS	DPC	DMB
CODE代码	PX	PF	PH	PB	PV	PC	DF	NF	DS	DC	DB

TYPE型号	MEF	MTF	MEH	MEC	MSC	MSF	MTB	MEV
CODE代码	AF	TF	AH	AC	SC	SF	TB	AV

### 0.2 Digit 3 to 5 - 数位3~5: Capacitance Expressed in 3-digit code 3位数字代码表示容值

The first 2 digits indicate significant figures, and the third digit specifies the number of zero to follow.  
前两位表示基数,第三个数字表示其后零的个数

This gives the capacitance in picofarads. 容量值单位为皮法

For examples 举例:

$102 = 10 \times 10^2 \text{ pF} = 1,000 \text{ pF} = 1.0 \text{ nF} = 0.001 \text{ uF}$        $105 = 10 \times 10^5 \text{ pF} = 1,000,000 \text{ pF} = 1000 \text{ nF} = 1 \text{ uF}$

### 0.3 Digit 6 - 数位6: Capacitance tolerance 容量偏差

Tolerance	±1%	±2%	±3%	±5%	±10%	±20%
CODE	F	G	H	J	K	M

### 0.4 Digit 7 to 8 - 数位7~8: Rated Voltage 额定电压:

VR(DC)	50	63	100	160	250	400	450	500	630	800	1000	1250	1600	2000	2500
CODE	1H	1J	2A	2C	2E	2G	2Y	2H	2J	2K	3A	3V	3C	3D	3E

VR(AC)	125	140	150	160	220	250	275	310	350	400	440	450	500	600	630
CODE	2L	4B	2S	2U	2P	2I	3I	2W	2F	2R	4A	2T	2M	2Z	3J

### 0.5 Digit 9 to 10 - 数位9~10: Pitch expressed by Case No or two digits 表示壳体或两个数字的脚距代码

Box type 盒装型

Pitch脚距	7.5	10	12.5	15	20	22.5	27.5	37.5	42.5	55
Case No 壳体代码	B*	C*	G*	D1*	S*	E*	F*	J*	K*	P*



Powder Coating type 粉涂型

Pitch脚距	7.5	10	15	20	22.5	27.5
Code代码	07	10	15	20	22	27



### 0.6 Digit 11 and 17 - 数位11和数位17: series code 系列代码:

### 0.7 Digit 12 - 数位12: Lead Form 引线加工型式代码






Box type 盒装型

Code 代码	L	H
Lead Type 形式		

Axial Type 轴向型

Code 代码	L	L
Lead Type 形式		

Powder Coating type 粉涂型

Code 代码	L	H	K	N	M
Lead Type 形式					

### 0.8 Digit 13 to 15 - 数位13~15: Lead Length (Straight): Expressed in 3-letter code 引线长度以3个数字代码表示

example 举例: code 代码270 = 270/10=27 (mm),

### 0.9 Digit 16 - 数位16: Tolerance of Lead Length (Straight) 引线长度(直型) 偏差: Expressed in 1-letter 1个字母表示

Tolerance	±0.3 mm	±0.5 mm	+0.5/-0mm	±1mm	±2mm	±0.4mm
Code	A	B	C	D	E	F

### 0.10 Digit 18 - 数位18: "H" Halogen-Free compliant, 无卤型 "R" ROHS compliant. ROHS符合型

**Specification for High temperature & High Voltage Mini Size Metallized Polyester Film Capacitor**  
 高温高压小型化金属化聚脂膜电容器规格说明

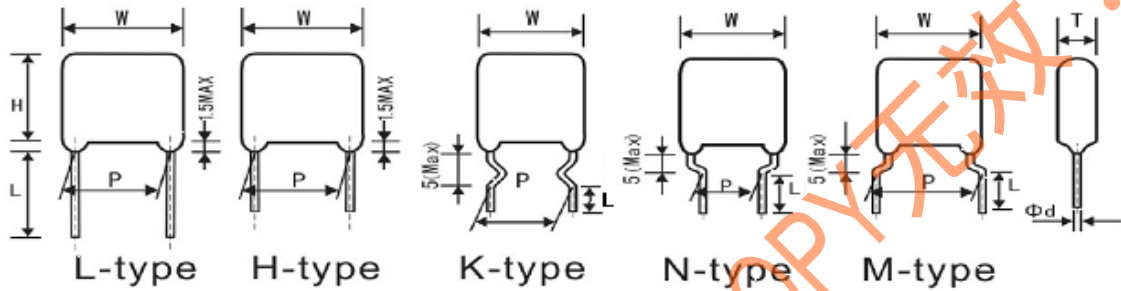
**TYPE MTF**

**1.Scope 范围 .**

This specification applies to metallized Polyester film capacitors ,type name MTF (code TF) ,  
 used in electronic equipments .

本规范适用于应用在电子设备中的金属化聚脂膜电容器, 型号MTF (代码TF) 。

**2. Dimension sheet 规格尺寸**



NO	CARLI P/N	CAP (μF)	TOL ±%	R.V VDC	DF (1KHz) ≤%	DIMENSIONS 尺寸 (mm)						FIG	CUSTOMER P/N (客户料号)
						W (Max)	H (Max)	T (Max)	P±1	L±1	dΦ±0.05		
1	SERIES												
2													
3													
4													
5													
6													
7													
8													
9													
10													

<b>NOTE</b>					
Designed by 制作	邹莉	Checked by 审查		Approved by 核准	

2012-6-7



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MTF type dimension sheet 规格尺寸 : R.V 400VDC(2G)/450VDC(2Y)

PART NO 料号	CAP ( $\mu$ F)	TOLERANCE 偏差	DIMENSIONS尺寸 (mm)					
			W(Max)	H(Max)	T(Max)	P $\pm$ 1	L $\pm$ 1	d $\pm$ 0.05
TF333□2□07	0.033	J=±5%,K=±10%	10.5	8.5	5	7.5	27	0.6
TF473□2□07	0.047	J=±5%,K=±10%	10.5	9.5	6	7.5	27	0.6
TF683□2□07	0.068	J=±5%,K=±10%	10.5	10.5	7	7.5	27	0.6
TF104□2□07	0.1	J=±5%,K=±10%	10.5	12.5	6.5	7.5	27	0.6
TF104□2□10	0.1	J=±5%,K=±10%	12.5	9.5	4.5	10	27	0.6
TF124□2□10	0.12	J=±5%,K=±10%	12.5	9.5	5	10	27	0.6
TF154□2□10	0.15	J=±5%,K=±10%	12.5	9.5	5	10	27	0.6
TF184□2□10	0.18	J=±5%,K=±10%	12.5	10	5.5	10	27	0.6
TF224□2□10	0.22	J=±5%,K=±10%	12.5	11	6	10	27	0.6
TF274□2□10	0.27	J=±5%,K=±10%	12.5	12.5	6.5	10	27	0.6
TF334□2□10	0.33	J=±5%,K=±10%	12.5	13	6.5	10	27	0.6
TF334□2□10B	0.33	J=±5%,K=±10%	12	14	6	10	27	0.6
TF394□2□10	0.39	J=±5%,K=±10%	12.5	14	7	10	27	0.6
TF474□2□10	0.47	J=±5%,K=±10%	12.5	15	7	10	27	0.6
TF474□2□10B	0.47	J=±5%,K=±10%	12.5	14.2	7.5	10	27	0.6
TF474□2□15	0.47	J=±5%,K=±10%	17.5	12.5	5.5	15	27	0.6
TF564□2□15	0.56	J=±5%,K=±10%	17.5	13.5	6	15	27	0.6
TF684□2□10	0.68	J=±5%,K=±10%	12.5	17	8	10	27	0.6
TF684□2□15	0.68	J=±5%,K=±10%	17.5	15	7	15	27	0.8
TF824□2□10	0.82	J=±5%,K=±10%	12.5	18	9	10	27	0.6
TF824□2□15	0.82	J=±5%,K=±10%	17.5	15.5	7	15	27	0.8
TF105□2□10	1.0	J=±5%,K=±10%	12.5	19.5	10	10	27	0.8
TF105□2□15	1.0	J=±5%,K=±10%	17.5	16	7.5	15	27	0.8
TF125□2□15	1.2	J=±5%,K=±10%	17.5	17	8.5	15	27	0.8
TF155□2□15	1.5	J=±5%,K=±10%	17.5	18.5	9.5	15	27	0.8
TF155□2□22	1.5	J=±5%,K=±10%	25.5	16	8	22.5	27	0.8
TF185□2□15	1.8	J=±5%,K=±10%	17.5	20	12	15	27	0.8
TF225□2□15	2.2	J=±5%,K=±10%	17.5	20	12	15	27	0.8
TF225□2□22	2.2	J=±5%,K=±10%	25.5	19.5	9	22.5	27	0.8
TF275□2□22	2.7	J=±5%,K=±10%	25.5	20.5	10	22.5	27	0.8
TF335□2□22	3.3	J=±5%,K=±10%	25.5	21.5	11	22.5	27	0.8

Rated Voltage 额定电压 2G(400V),2Y(450V)

Tolerance 偏差 J(±5%),K(±10%)

2012-6-7



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## MTF type dimension sheet 规格尺寸: R.V 630VDC(2J)

PART NO 料号	CAP容量	TOLERANCE 偏差	DIMENSIONS 成品尺寸(MAXmm)				
	( $\mu$ F)		W	H	T	P $\pm$ 1	d $\phi$ $\pm$ 0.05
TF103*2J10	0.01	J= $\pm$ 5%,K= $\pm$ 10%	12.5	9	6	10	0.6
TF123*2J10	0.012	J= $\pm$ 5%,K= $\pm$ 10%	12.5	9	6	10	0.6
TF153*2J10	0.015	J= $\pm$ 5%,K= $\pm$ 10%	12.5	9	6	10	0.6
TF183*2J10	0.018	J= $\pm$ 5%,K= $\pm$ 10%	12.5	10	6	10	0.6
TF223*2J10	0.022	J= $\pm$ 5%,K= $\pm$ 10%	12.5	11.5	7	10	0.6
TF273*2J10	0.027	J= $\pm$ 5%,K= $\pm$ 10%	12.5	12	7.5	10	0.6
TF333*2J10	0.033	J= $\pm$ 5%,K= $\pm$ 10%	12.5	10	6	10	0.6
TF393*2J10	0.039	J= $\pm$ 5%,K= $\pm$ 10%	12.5	10	6	10	0.6
TF473*2J10	0.047	J= $\pm$ 5%,K= $\pm$ 10%	12.5	10	6	10	0.6
TF563*2J10	0.056	J= $\pm$ 5%,K= $\pm$ 10%	12.5	11	6.5	10	0.6
TF683*2J10	0.068	J= $\pm$ 5%,K= $\pm$ 10%	12.5	12	6.5	10	0.6
TF823*2J10	0.082	J= $\pm$ 5%,K= $\pm$ 10%	12.5	12	7	10	0.6
TF104*2J10	0.1	J= $\pm$ 5%,K= $\pm$ 10%	12.5	14	6.5	10	0.6
TF104*2J15	0.1	J= $\pm$ 5%,K= $\pm$ 10%	17.5	12.5	6.5	15	0.6
TF124*2J10	0.12	J= $\pm$ 5%,K= $\pm$ 10%	12.5	14.5	6.5	10	0.6
TF154*2J10	0.15	J= $\pm$ 5%,K= $\pm$ 10%	12.5	14	8	10	0.6
TF154*2J15	0.15	J= $\pm$ 5%,K= $\pm$ 10%	17.5	12.5	7	15	0.6
TF184*2J10	0.18	J= $\pm$ 5%,K= $\pm$ 10%	12.5	16	8.5	10	0.6
TF224*2J10	0.22	J= $\pm$ 5%,K= $\pm$ 10%	12.5	16.5	9	10	0.6
TF224*2J15	0.22	J= $\pm$ 5%,K= $\pm$ 10%	17.5	13.5	7.5	15	0.8
TF274*2J15	0.27	J= $\pm$ 5%,K= $\pm$ 10%	17.5	15	7.5	15	0.8
TF334*2J15	0.33	J= $\pm$ 5%,K= $\pm$ 10%	17.5	15.5	8	15	0.8
TF394*2J15	0.39	J= $\pm$ 5%,K= $\pm$ 10%	17.5	17.5	8.5	15	0.8
TF474*2J15	0.47	J= $\pm$ 5%,K= $\pm$ 10%	17.5	18	9	15	0.8
TF564*2J15	0.56	J= $\pm$ 5%,K= $\pm$ 10%	17.5	20	9.5	15	0.8
TF684*2J15	0.68	J= $\pm$ 5%,K= $\pm$ 10%	17.5	20.5	10.5	15	0.8
TF824*2J22	0.82	J= $\pm$ 5%,K= $\pm$ 10%	25.5	19.5	9	22.5	0.8
TF105*2J15	1.0	J= $\pm$ 5%,K= $\pm$ 10%	17.5	23.5	13	15	0.8
TF105*2J22	1.0	J= $\pm$ 5%,K= $\pm$ 10%	25.5	20	10	22.5	0.8
TF125*2J22	1.2	J= $\pm$ 5%,K= $\pm$ 10%	25.5	21	11	22.5	0.8
TF155*2J22	1.5	J= $\pm$ 5%,K= $\pm$ 10%	25.5	23	12.5	22.5	0.8
TF185*2J22	1.8	J= $\pm$ 5%,K= $\pm$ 10%	25.5	24	13.5	22.5	0.8
TF225*2J22	2.2	J= $\pm$ 5%,K= $\pm$ 10%	25.5	25	15	22.5	0.8

Rated Voltage 额定电压 2J(630V)

Tolerance 偏差 J( $\pm$ 5%),K( $\pm$ 10%)

2012-6-7

Specification for High temperature & High Voltage Mini Size Metallized Polyester Film Capacitor  
高温高压小型化金属化聚脂膜电容器规格说明

### TYPE MTF

#### 3. Type introduction and application

3.1 MTF are non-inductively wound with metallized polyester film as dielectric and electrode, copper wire lead and flame retardant epoxy resin Powder coating .

MTF 系列电容采用金属化聚脂膜无感结构卷绕, 镀锡铜导线及阻燃性粉体环氧树脂封装构成。

#### 3.2 Type Application .

Multipurpose application in low DC voltage 直流低电压多用途

- blocking ,coupling, decoupling, filtering ,by-pass,timing circuit etc .

隔直、耦合/去耦, 滤波, 旁路, 计时电路等;

- filtering used in PFC circuit of SMPS, Ballaster, Adapter.

开关电源, 镇流器, 电源适配器中的PFC回路滤波用。



#### 4. Features:

- Very small size, cell separate structure safety type . 小型化, 分仓式安全结构.
- High reliability as its excellent self-healing property . 自愈性能好, 稳定性高;
- Good solder - ability. 良好可焊性;
- Flame retardent epoxy powder coating . 阻燃环氧树脂粉末涂装。

#### 5. Electrical specifications 电气特性

Unless otherwise specified, electronic characteristics shall refer to IEC 60384-2 .

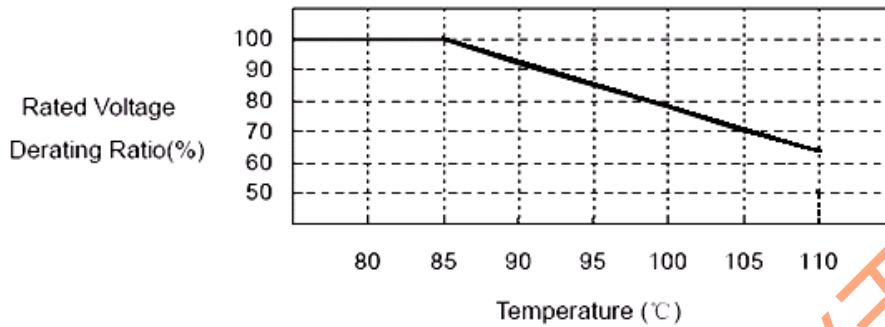
如无其他说明, 电气特性请参考IEC60384-2 .

Item	Specification
Operating Temperature 工作温度	-40℃~+105℃(110℃) (+85℃~+105℃(110℃):derating factor 衰减系数1.5%per℃ for R.V(DC))
Capacitance Range 容量范围	0.01μF~2.2μF
Capacitance Tolerance 容量偏差	±5%(J), ±10%(K)
Rated Voltage 额定电压	400VDC(2G) 450VDC(2Y) 550VDC(2X) 630VDC(2J)
Dissipation Factor 散逸因素	≦ 1.0% (1KHz at 20~25℃)
Insulation Resistance 绝缘电阻	≧ 9000MΩ for C≦0.33μF; ≧ 3000MΩ.μF for C>0.33μF (Measured at 100 ±10VDC/60s/20~25℃)
Withstand Voltage 端子间耐压 between terminals	Add DC test voltage of 175% R.V for 1-5s , no breakdown or flashover (Voltage raising time 5~10sec, cut off current 10mA, ARC=OFF)施加 175% R.Vdc 1~5秒, 无永久性击穿和飞弧为合格(升压时间5~10秒, 漏电流10mA, ARC关闭)。

Note : 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% per °C when capacitors operation temperature is between 85°C to 105°C(110°C).

额定电压定义：在工作温度范围内，电容器连续工作的可承受电压。

但是，工作温度在85°C~110°C之间时，每上升1°C额定电压应下降1.5%。



6. Marking印章说明:

**CARLI MTF**  
**105K 450V**  
**1 D 28 A 05**

Normal type

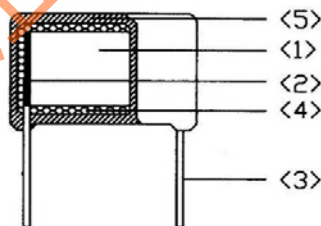
**CARLI MTF**  
**105K450VHF**  
**1 D 28 A 05**

Halogen Free-type

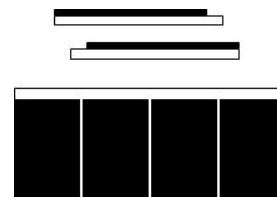
- ❶ CARLI: Manufacture's trademark 制造者商标 CARLI
- ❷ MTF : Product type产品型号 MTF
- ❸ 105K: Capacitance And Tolerance容量与偏差 →  $105=10 \times 10^5 \text{pF}=10 \times 10^2 \text{nF}=1 \mu \text{F}$ ,  $K=\pm 10\%$
- ❹ 450V: Rated voltage额定电压 → 450VDC
- ❺ 1 D 28 A 05: Lot No (D/C), for very small size products, it will be deleted批号, 小尺寸产品不含此项.
- ❻ HF: Halogen Free 无卤

7. Construction and main materials of products产品结构 and 主材

MTF TYPE:



Cell separate structure safety film .



Main Materials

NO.	material name 主要材料	describe 描述	Note备注
1	Metallized polyester film 金属化聚酯膜	MPE (Safety film) MPE (安全膜)	-/-
2	Solder焊料	Sn-based alloy锡基合金	-/-
3	Terminal引线	Copper wire镀锡铜线	-/-
4	inside coating material内涂材料	Epoxy resin环氧树脂	-/-
5	Over coating material外涂材料	Epoxy powder 环氧粉末	Flame retardant type 阻燃型



### 8. Packing 包装说明:

Package bag and Carton 包装袋与纸箱



交货明细表				
规格	型式	包数	数量	

(Normal Product)  
常规品

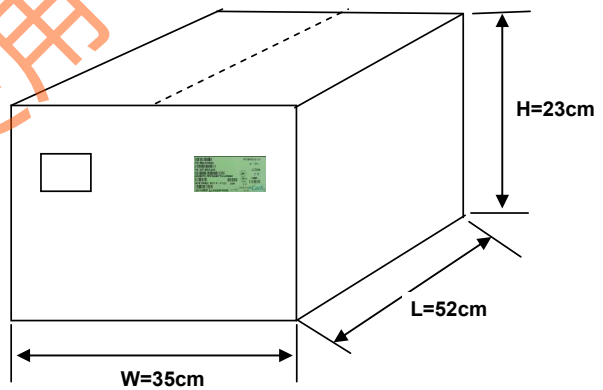


—环保无卤HF— 交货明细表				
规格	型式	包数	数量	

(Halogen Free Product)  
无卤品



Cap	TOLERANCE	W.V
I.	10 ±%	50VDC
P/N	QUANTITY	DATE
TF105K2Y109K210D9R	200 PCS	JUL. 2011



8.1 Carton size 纸箱尺寸: L\*W\*H(长\*宽\*高)=52\*35\*23 cm

8.2 The detail of the carton 纸箱包装说明 :

8.2.1 Packing list card, including 装箱明细, 包括:

Part number of manufacturer, 制造商料号,

Total quantity of bags and unit . 包数及每包数量, Lot No 批号;

8.2.2 Marking or table for RoHS : RoHS 标识 ;

8.2.3 Other marking customer required . 其他客户要求标识。

**9. Storage conditions 存储条件:**

9.1 It should be noted that the solderability of the terminals may be deteriorated when Stored barely in an atmosphere for a long periods .

请注意，长时间暴露在空气中会导致引线焊接性能衰减。

9.2 It shouldn't be located in particularly high temperature and high humidity ,it must Submit to the following conditions( keeping in the original package):

不能放置在高温和高湿环境中,请遵循以下存储条件（原包装下保存）

Temperature温度: 35℃ MAX.

Relative humidity相对湿度: 80% MAX.

9.3 Storage period:( from the manufacturing date marked on the label in package bag)

Loose : 12 months max. 存储时间（包装袋上标注的生产日期为准）最长12个月。

**10. Origin , including 产地:**

10.1 CHINA P.R.C 中国

10.2 TAIWAN R.O.C 中国台湾

**11. The compliance with enviroment requirement 环保要求符合性**

11.1 Compliance with the requirement of RoHS. 符合RoHS要求

11.2 Compliance with the requirement of REACH .符合REACH 要求

11.3 Without Halogen ( as required )符合无卤（如要求）

**12. Characteristics and test conditions 电气特性和测试条件**

Test condition: Unless otherwise specified, the standard range of atmospheric

Conditions for marking measurements and test is as follows Ambient

测试条件:除非另外说明，则在大气标准范围内测试，试验条件如下：

Temperature : 15~35 ℃,环境温度:15~35 ℃

Relative humidity : 25~75%. 相对湿度: 25~75%.

If there may be any doubt on the results, measurements shall be made within the

Following limits.

如对测试结果有任何疑问，则按以下限制测试：

Ambient temperature : 20±2℃ , Relative humidity : 60~70%.

环境温度: 20±2℃ , 相对湿度 : 60~70%.

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## 12.1 Characteristics特性:

NO.	Item 项目	Characteristics 特性	Test method 试验方法
1	Operating Temperature 工作温度	-40°C~105°C(110°C)	Rated voltage shall be derating 1.5% at each 1°C in the range of 85°C~105°C(110°C). 85°C~110°C时, 温度每升高1°C额定电压应降低1.5%。
2	Capacitance Range 容量范围	0.01μF~2.2μF	At 1KHz Test temp测试温度: 20~25°C
3	Capacitance Tolerance 容量偏差	Within specified tolerance 规定偏差范围内 J:±5%; K:±10%	At 1KHz Test temp测试温度: 20~25°C
4	Dissipation Factor 散逸因素	DF ≤ 1.0%	Measure at 1KHz ( 20~25°C)
5	Rated Voltage 额定电压	400VDC/450VDC 550VDC/630VDC	/
6	Withstand Voltage 耐压	Between Terminals 端子间	No abnormality 无异常
			Add DC test voltage of 175% R.V for 1-5s between Terminals (Voltage raising time 5~10sec, cut off current 10mA, ARC=OFF) 端子间施加DC电压175%R.V 1-5s (电压爬升时间: 5~10sec, 阈值电流 10mA, ARC=OFF)
7	Insulation Resistance 绝缘电阻	≥ 9000MΩ for C ≤ 0.33μF ≥ 3000MΩ·μF for C > 0.33μF	Charge time充电时间: 60 ±5sec Charge voltage充电电压: 100VDC Test temp温度: 20~25°C
8	Terminal Strength 端子强度	Pull Strength 拉伸强度	Wire diameter线径:0.6 & 0.8mm Load负重: 10N, time时间:10sec
		Bending Strength 弯曲强度	Wire diameter线径:0.6 & 0.8mm Load力度: 5N, 90° ×4times次
9	Solderability焊接性	At least 95% of the Circumference of the lead wire. Around load surface dipped Into with new solder 引线新锡覆盖面至少95%	Solder temp焊剂温度: 245 ±5°C Immersion time浸入时间: 2.5 ±0.5sec

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NO.	Item 项目		Characteristics 特性	Test method 试验方法
10	Resistance to Soldering heat 耐焊接热	Appearance 外观	No visible damage 无可见损伤	Solder temp 焊锡温度: 260±5°C Immersion time 浸入时间: 10±1sec Then recovery at ordinary Condition 1~2 hours 恢复时间1~2 小时
Withstand Voltage 耐电压		175% R.V for 1~5s No abnormality 无异常		
Capacitance Variation 容量变化		$\Delta C/C \leq \pm 5\%$		
11	Damp heat, Steady state 稳态湿热	Appearance 外观	No visible damage 无可见损伤	Humidity of 90-95% RH 相对湿度90-95% Temp 温度: 40 ± 2°C Duration 持续时间: 500 +24/-0Hrs Then recovery at ordinary condition 1~2 hours 恢复时间1~2 小时
Capacitance Variation 容量变化		$\Delta C/C \leq \pm 10\%$		
Dissipation Factor 散逸因素		$\leq 1.5\%$		
Withstand Voltage 耐压		175% R.V for 1~5s No abnormality 无异常		
Insulation Resistance 绝缘电阻		$\Delta IR/IR \leq 50\%$		
12	High temp Loading test 高温负荷试验	Appearance 外观	No visible damage 无可见受损	DC voltage of 111% of rated Voltage shall be applied to the Capacitor for 1000+48/0 h Through serial resistor of 20 to 1000Ω per 1V at the test Temperature of 85 ± 2°C. (for example, RV450vdc, 500vdc shall be applied.) 施加111%额定直流电压 1000+48/0 h, 连接串联电阻 20到1000 Ω/伏特, 试验温度 85 ± 2°C. (举例, 额定电压450vdc, 则应施加 500vdc) Then recovery at ordinary Condition at least 16 hours 恢复时间至少16 小时
Capacitance Variation 容量变化		$\Delta C/C \leq \pm 10\%$		
Dissipation Factor 散逸因素		$\leq 1.5\%$		
Withstand Voltage 耐压		175% R.V for 1~5s No abnormality 无异常		
Insulation Resistance 绝缘阻抗		$\Delta IR/IR \leq 50\%$		

### 13. Regulation in useage使用规则

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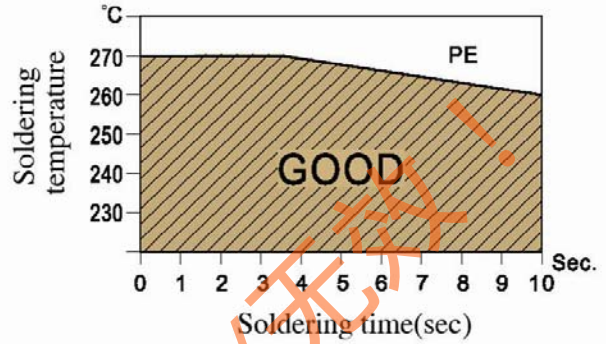
#### 13.1 Soldering

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 characteristic or breakdown of capacitors.

Be sure to solder within the following temperature condition range.

当焊接电容器时，焊锡热会通过引线端子和封装层传递到电容器素子，因此必须注意高温和长时间焊接引起的电容器电特性衰减或损坏。  
请确认焊锡在以下温度范围内。

- (1) Flow soldering-波峰焊
- (2) When using soldering iron
  - Iron tip temperature less than 350°C
  - Soldering time (sec.)within 5 seconds
  - 当使用烙铁焊接时
  - 烙铁尖端温度不超过 350°C
  - 焊接时间不超过5秒



#### 13.2 Arms Vs Frequency- 电流对频率特性

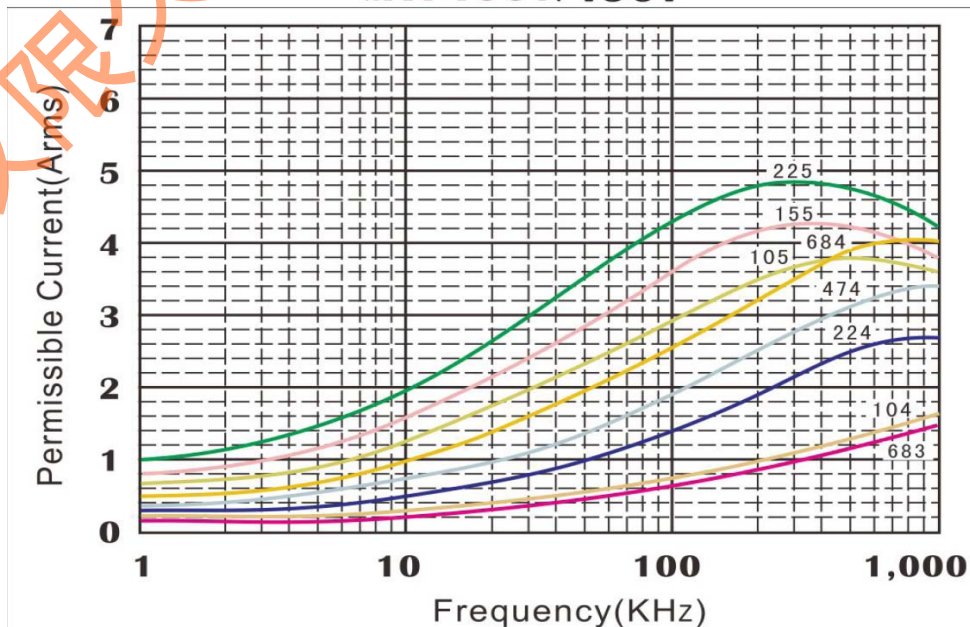
A permissible current is regulated by both a root-mean-square value current and a peak current. A root-mean-square value current is to be a permissible current value to frequency attached. The values of continuous peak current in the allowable peak current shall be those of continuous current, And the values of single peak current shall be those of discontinuous current such as rush current in Switching on or off. The highest number of times of single peak current shall be limited to 10,000times. (In case of exceeding 10,000times,please contact us.)

##### Characteristics of permissible current (Arms)Vs Frequency

允许电流通常由均方根电流和尖峰电流表示。  
均方根电流如下附图所示  
允许尖峰电流中的连续尖峰电流值应为持续电流，  
单个尖峰电流应为不连续电流，如开关动作中的脉冲电流。  
最高次数的单峰电流次数应限制在10000次内(若有超过10000次，请告知我们)。

##### Permissible current VS frequency (Sinusoidal wave $\Delta T \leq 12^\circ\text{C}$ $T_H \leq 40^\circ\text{C}$ )

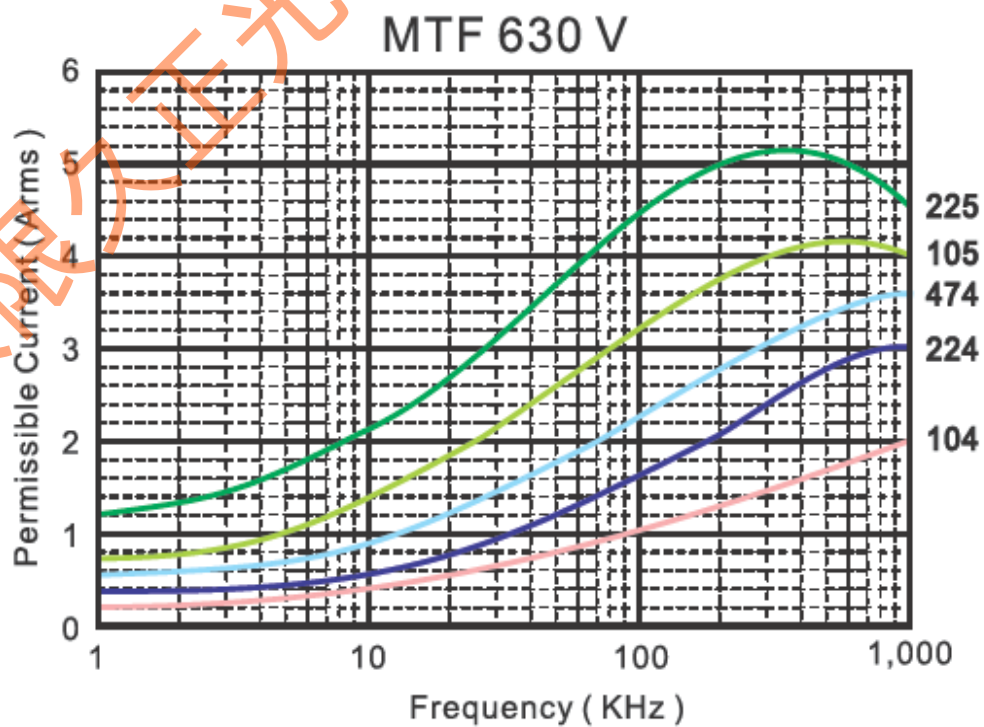
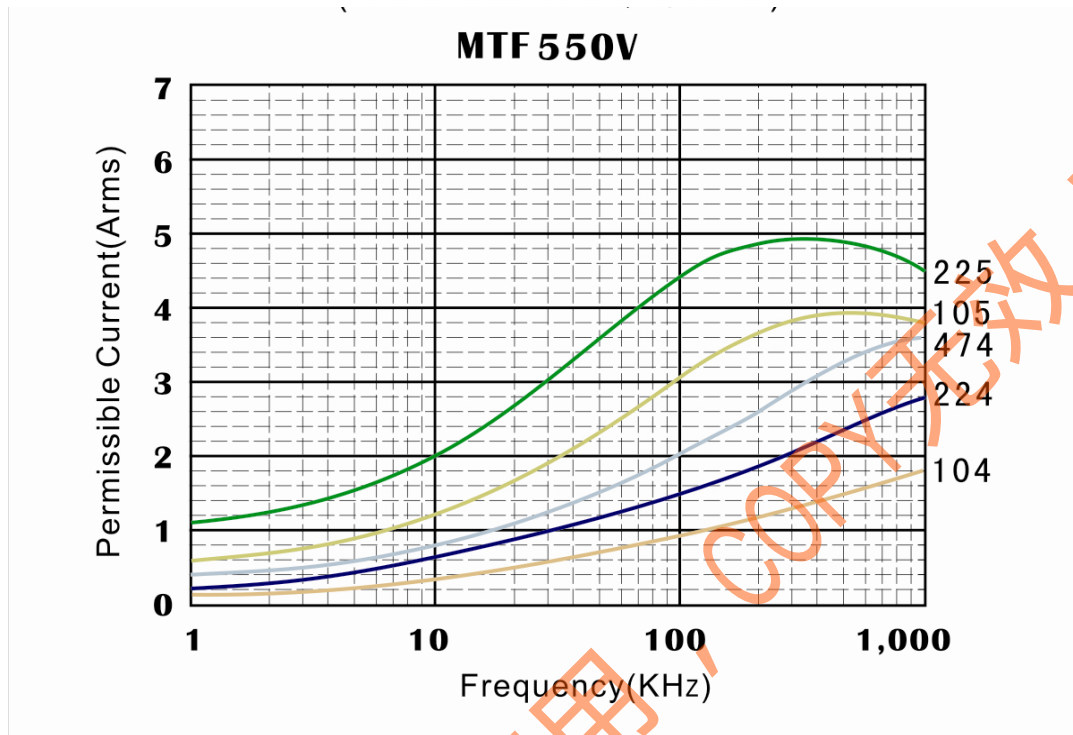
##### MTF400V/450V



# Characteristics of permissible current (Arms) Vs Frequency

## 电流Vs频率特性图

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14. Product electrical characteristic graph 产品电气特性图

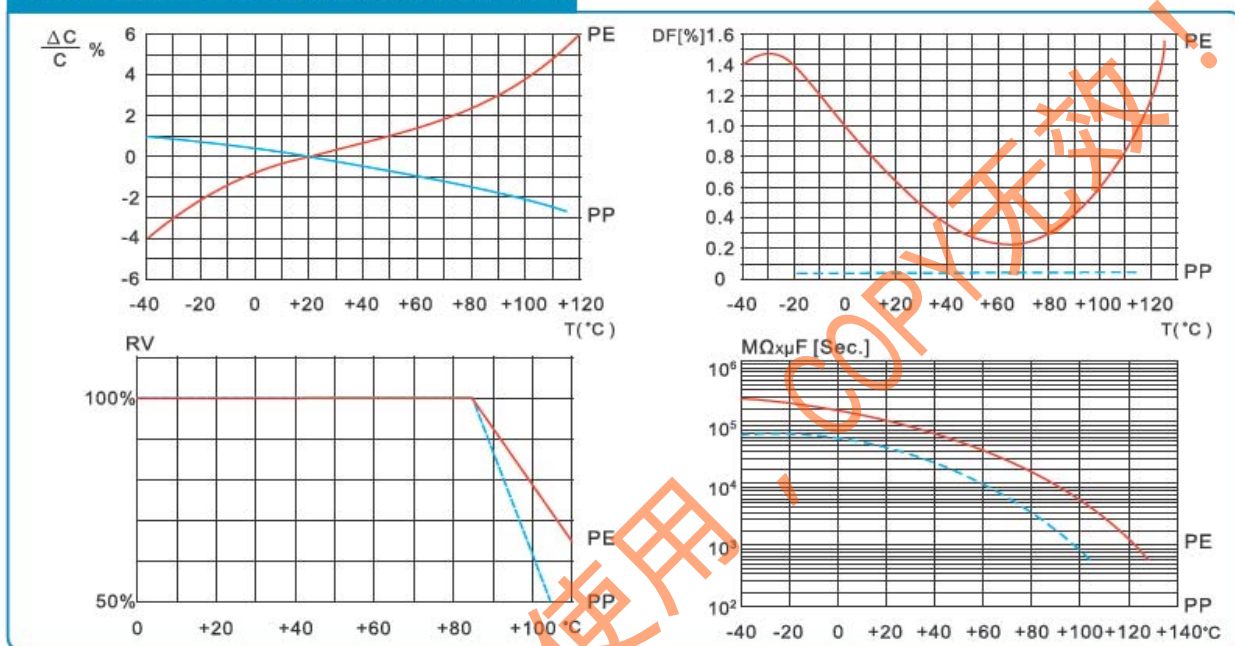
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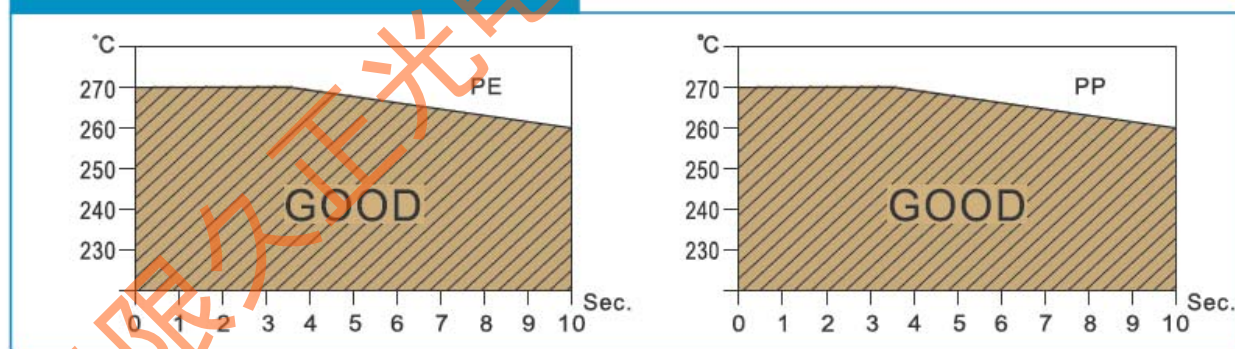
CHARACTERISTICS

TYPICAL GRAPHS

TEMPERATURE CHARACTERISTIC



SOLDERING TEMPERATURE VS. TIME



FREQUENCY CHARACTERISTIC

