

Carli®

Customer: 立创

No: MPCF190121A

STN019, Edt F



Capacitors



承认书

(APPROVAL SHEET)

品名: 小型化金属化聚丙烯膜电容器 (盒装式)
(Description) Mini-size Metallized Polypropylene Film Capacitor (BOX TYPE)

型式: _____
(Type) MPC (Code 代号 PC)

零件料号: _____
(Part No.) PC334J2YD29H200D9R

客户料号: _____
(Customer Part No.) _____

日期: _____
(Date) 2019.01.21

承认章 (Approved By)



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承认书修订履历表
UPDATE HISTORY

客户 (Customer)	立 创		承认书编号 (SPEC NO)	MPCF190121A
NO	Date	Edition	Histroy	
1	2019.01.21	A	新制订承认书编号: MPCF190121A	
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2019-1-21

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General Information

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位数组成, 如下:

P	C	3	3	4	J	2	Y	D	2	9	H	2	0	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 and 17:	Type Series Code
数位1~2:	型号代码	数位11和17:	型号系列码
Digit 3~5:	Capacitance Value Code	Digit 12:	Lead Form Code
数位 3~5:	容量代码	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, 第三个数位表示其后零的个数

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

For examples 举例:

$$102 = 10 \times 10^2 \text{ pF} = 1,000 \text{ pF} = 1.0 \text{ nF} = 0.001 \mu\text{F}$$

$$105 = 10 \times 10^5 \text{ pF} = 1,000,000 \text{ pF} = 1000 \text{ nF} = 1 \mu\text{F}$$

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 表示壳体或两个数位的脚距代码

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*	D*	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个数位代码表示

example 举例: code 代码200 = 200/10=20 (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

2019-1-21

Specification for metallized polypropylene film capacitor

金属化膜电容器说明

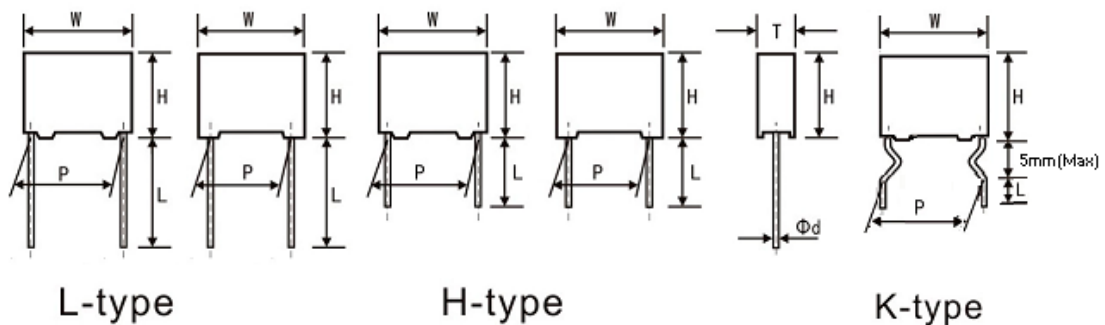
TYPE MPC

1.Scope 范围 .

This specification applies to metallized polypropylene film capacitors ,
type name MPC (code PC) ,used in electronic equipments .

此规范应用于电子设备中的金属化聚丙烯膜电容器,型号MPC(代码PC) .

2. Dimension sheet 规格尺寸



NO	CARLI P/N	CAP (μ F)	TOL \pm %	R.V VDC	DF (1KHz) \leq %	DIMENSIONS 尺寸 (mm)						FIG	CUSTOMER 客户 P/N 料号
						W (\pm 0.5)	H (\pm 0.5)	T (\pm 0.5)	P \pm 1	L \pm 1	ϕ d \pm 0.05		
1	PC334J2YD29H200D9R	.33	5	450	0.1	18	12	6	15	20	0.8	H	
2													
3													
4													
5													
6													
7													
8													
9													
10													

NOTE

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刘金香

Checked by
审查

谭娟

Approved by
核准

林乔伟

2019-1-21

Specification for metallized polypropylene film capacitor ,MPC type

金属化聚丙烯膜电容器规格 ,MPC

3. Type introduction and application 型号介绍及用途:

3.1 MPC are wined with metallized polypropylene film dielectric ,non-inductive construction , Cp or Cu lead wire and encapsulated in plastic case with flame retardant epoxy resin sealed.

3.2 Type Application:

blocking ,coupling, filtering etc
It is popular for filtering used in PFC circuit circuit of SMPS, Ballaster,Adapter.

MPC 电容是由金属化聚丙烯膜无感结构卷绕而成,

采用镀锡铜包钢线或镀锡铜线,塑胶壳体以及阻燃环氧树脂封装而成.

用途: 隔直流、耦合、滤波等,尤其适用于电源供应器、镇流器、适配器的PFC回路滤波用.

4. Features -特点:

- Small size Metallized Polypropylene non-inductive structure 小型化MPP无感结构;
- High reliability due to self-healing effect. 自愈性好,寿命长;
- Low loss at high frequency 高频损耗小;
- Exellent active and passive flame resistant 优良阻燃性能;

5. Electrical specifications- 电气特性

Unless otherwise specified, electric characteristics shall refer to IEC 60384-16.

如无其他说明,气特性请参考IEC60384-16.

Item	Specification
Operating Temperature 工作温度	Max. operating temperature:105°C
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/ 450VDC,500VDC/550VDC,630VDC
Dissipation Factor 散逸因素	≦0.1% (1KHz at 25±5°C)
Insulation Resistance 绝缘电阻	≧30000MΩ for C≦0.33μF ≧10000MΩ·μF for C>0.33μF (Measured at 100 ±10VDC/60s/25±5°C)
Withstand Voltage between terminals 端子间耐压	Add DC test voltage of 140% R.V for 1-5s , no breakdown or flashover (Voltage raising time 5~10sec,cut off current 10mA, ARC=OFF)施加测试电压140% R.V for 1-5s , 无击穿或电弧(电压上升时间 5~10sec,漏电流10mA, ARC=OFF)

备注

Operating temperature range	Max. operating temperature $T_{OP,max}$	+105 °C
	Upper category temperature T_{max}	+105 °C
	Lower category temperature T_{min}	-40 °C
	Rated temperature T_R	+85 °C
Category voltage V_C (continuous operation with V_{DC} at $f \leq 1kHz$)	$T_{op}(^{\circ}C)$	DC voltage derating
	$T_{op} \leq 85$ $85 < T_{op} \leq 105$	$V_C = V_R$ $V_C = V_R \times (165 - T_{op}) / 80$
Operating voltage for short operating periods (V_{DC} at $f \leq 1kHz$)	$T_{op}(^{\circ}C)$	DC voltage(max.hours)
	$T_{op} \leq 85$ $85 < T_{op} \leq 105$	$V_{op} = 1.25 \times V_C (1000h)$ $V_{op} = 1.0 \times V_C (1000h)$

6. Marking:

CARLI MPC
334J 450V

Normal type
(常规型)

CARLI MPC
334J 450VHF

Halogen Free-type
(无卤型)

CARLI: Manufacture's trademark code 制造商标 CARLI

MPC: Product type 产品型号 MPC

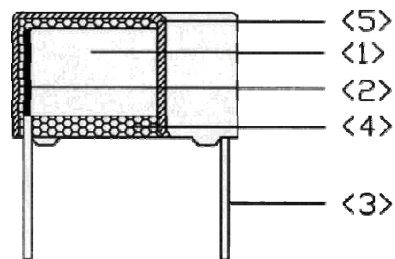
334J: Capacitance and tolerance 容值与偏差 $334 = 33 \times 10^4 pF = 33 \times 10 nF = 0.33 \mu F$, $J = \pm 5\%$

450V: Rated voltage 额定电压 450VDC(2Y)

HF: Halogen Free 无卤

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

MPC TYPE:



Main Materials

NO.	Main Materials 主要材料	Specification	Note
1	Metallized Polypropylene Film 金属化聚丙烯膜	MPP	-/-
2	Solder 焊料	Sn-based alloy 锡基合金	-/-
3	Terminal 引线	Cp or Cu lead wire Cp或Cu导线	-/-
4	Sealed Material 封装材料	Epoxy resin 环氧树脂	UL94-V0
5	Plastic Case 塑胶壳体	PBT	UL94-V0

2019-1-21

8. Packing 包装说明:

Package bag and Carton 包装袋与纸箱



CARLI 交货明细表				
规格	型式	包数	数量	

(Normal Product)
常规品

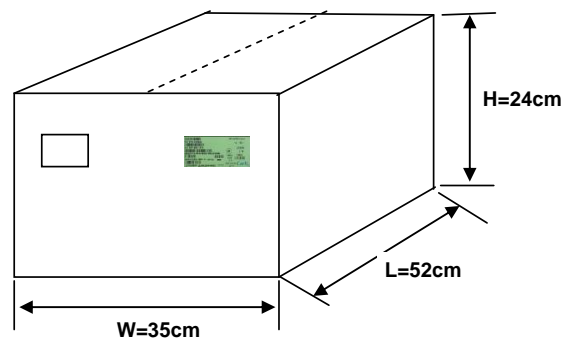


— 环保无卤HF — CARLI 交货明细表				
规格	型式	包数	数量	

(Halogen Free Product)
无卤品



CARLI 凯励电子股份有限公司 CARLI ELECTRONICS CO.,LTD		
ORDER NO.		
Cap	TOLERANCE	W.V
	± %	
P/N	QUANTITY	DATE
	PCS	



8.1 Carton size 纸箱尺寸: L*W*H(长*宽*高)=52*35*24 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°C MAX.

Relative humidity 相对湿度: 85% MAX.

9.3 Storage period: Loose :12 months max.

存储时间: 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 environment 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,条件如下:

Temperature 环境温度: 15~35 °C,

Relative humidity 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 环境温度: 20±2°C , Relative humidity 相对湿度: 60~70%.

2019-1-21

12.1 Characteristics:

NO.	Item 项目	Characteristics 特性	Test method 试验方法
1	Capacitance Range 容量范围	0.01 μ F~2.2 μ F	At 1KHz Test Temp: 25 \pm 5 $^{\circ}$ C
2	Capacitance Tolerance 容量偏差	Within specified tolerance 规定范围内偏差 J: \pm 5%; K: \pm 10%	At 1KHz Test Temp: 25 \pm 5 $^{\circ}$ C
3	Dissipation Factor 散逸因素	\leq 0.1%	Measure at 1KHz (25 \pm 5 $^{\circ}$ C)
4	Rated Voltage 额定电压	400VDC/ 450VDC 500VDC/550VDC,630VDC	//
5	Withstand Voltage 耐电压	Between Terminals 端子间	No abnormality无异常 Add DC test voltage of 140% R.V at 1-5s between Terminals (Voltage raising time 5~10sec ,cut off current 10mA,ARC=OFF) 端子间施加DC电压140%R.V 1-5s (电压爬升时间: 5~10sec, 漏电流10mA, ARC=OFF)
6	Insulation Resistance 绝缘电阻	\geq 30000M Ω for C \leq 0.33 μ F \geq 10000M Ω · μ F for C>0.33 μ F	Charge time 充电时间: 60 \pm 5sec Charge voltage充电电压: 100VDC Test temp 温度: 25 \pm 5 $^{\circ}$ C
7	Terminal Strength 端子强度	Pull Strength 拉伸强度	Wire diameter线径:0.6 & 0.8mm Load 荷重: 10N, time时间:10sec
		Bending Strength 弯曲强度	Wire diameter 线径:0.6 & 0.8mm Load 荷重: 5N, 90 $^{\circ}$ \times 4times次
8	Solderability 焊锡附着性	At least 95% of the Circumference of the lead wire. Around load surface dipped Into with new solder 焊锡覆盖面积必须达浸沾表面积95%以上	Solder temp 焊锡温度: 245 \pm 5 $^{\circ}$ C Immersion time 浸入时间: 2.5 \pm 0.5sec

2019-1-21

12.1 Characteristics:

NO.	Item 项目	Characteristics 特性	Test method 试验方法	
9	Appearance 外观	No visible damage 无可见损伤	Solder temp 焊锡温度:260±5℃ Immersion time 浸入时间:10±1sec Then recovery at ordinary Condition 1~ 2 hours 恢复时间1~ 2 小时	
	Resistance to Soldering heat 焊接耐热性	Withstand Voltage 耐电压		140% R.V for 1~5s No abnormality 施加140%R.V,1~5秒,无损伤
	Capacitance Variation 容量变化	$\Delta C/C \leq \pm 5\%$		
10	Appearance 外观	No visible damage 无可见损伤	Humidity 相对湿度:90-95% Temp 温度:40±2℃ 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	$\Delta C/C \leq \pm 5\%$		
	Dissipation Factor 散逸因素	$\leq 0.2\% \quad 1\text{KHz}$		
	Withstand Voltage 耐电压	140% R.V for 1~5s No abnormality 施加140%R.V,1~5秒,无损伤		
	Insulation Resistance 绝缘电阻	$\Delta IR/IR \leq 50\%$		
11	Appearance 外观	No visible damage	DC voltage of 125% 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. 施加125%额定直流电压 1000+48/0 h, 连接串联电阻 20到1000Ω/伏特, 试验温度85 ± 2°C. 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	$\leq 0.2\% \quad 1\text{KHz}$		
	Withstand Voltage 耐电压	140% R.V for 1~5s No abnormality 施加140%R.V,1~5秒,无损伤		
	Insulation Resistance 绝缘阻抗	$\Delta IR/IR \leq 50\%$		
High temp Loading test 高温负荷试验				

13. Regulation in useage - 使用规则

2019-1-21

13.1 Soldering suggestions - 焊接的建议

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.

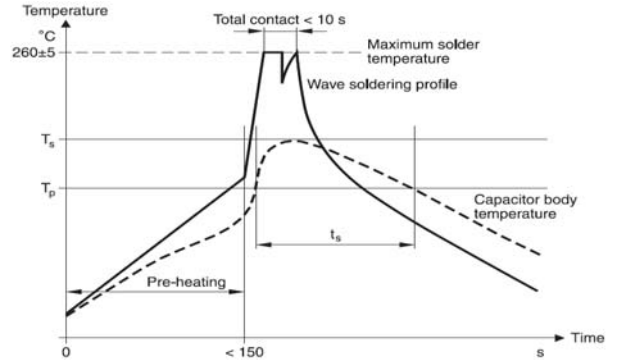
当焊接电容器时,焊锡热会通过引线端子高温和封装层传递到电容器素子,因此必须注意高温和长时间焊接引起的电容器特性衰减或损坏,请确认焊锡在以下温度范围内。

T_s : Capacitor body maximum temperature at wave soldering

电容器本体最高波峰焊温度

T_p : Capacitor body maximum temperature at pre-heating

电容器本体最高预热温度



Body temperature should follow the description below:

电容器本体温度应该符合以下描述

MPP电容器

During pre-heating: $T_p \leq 110^\circ\text{C}$

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

加热温度: $T_p \leq 110^\circ\text{C}$

焊接温度: $T_s \leq 120^\circ\text{C}$, $t_s \leq 45\text{s}$

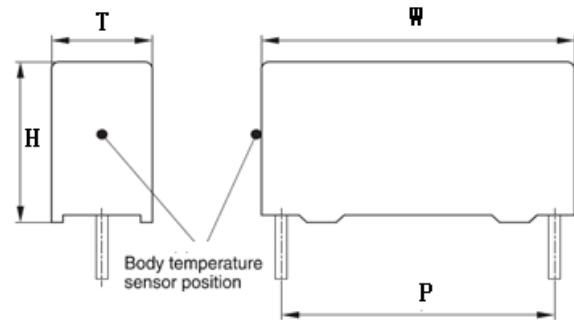
MPE电容器

During pre-heating: $T_p \leq 125^\circ\text{C}$

During soldering: $T_s \leq 160^\circ\text{C}$, $t_s \leq 45\text{s}$

加热温度: $T_p \leq 125^\circ\text{C}$

焊接温度: $T_s \leq 160^\circ\text{C}$, $t_s \leq 45\text{s}$



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

当SMD元件与引脚式元件一起使用时,薄膜电容器不应进入SMD粘合剂固化炉。引脚式部件应在SMD固化步骤之后组装。

■ Leaded film capacitors are not suitable for reflow soldering.

引脚式薄膜电容器不适合回流焊

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

为了确保手动或选择性焊接的适当条件,电容器(T_s)的本体温度必须是 $\leq 120^\circ\text{C}$ 。

■ 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.

手工焊接的一个推荐条件是烙铁的顶端应该是 $< 360^\circ\text{C}$, 焊接接触时间不应超过3秒。

■ For uncoated MPE capacitors with lead spacings $\leq 10\text{mm}$ the following measures are recommended:

未涂覆的MPE电容器引线间隔为 ≤ 10 毫米, 建议采取以下措施

1. pre-heating to not more than 110°C in the preheater phase 预热阶段预热温度不超过 110°C

2. rapid cooling after soldering 焊后快速冷却



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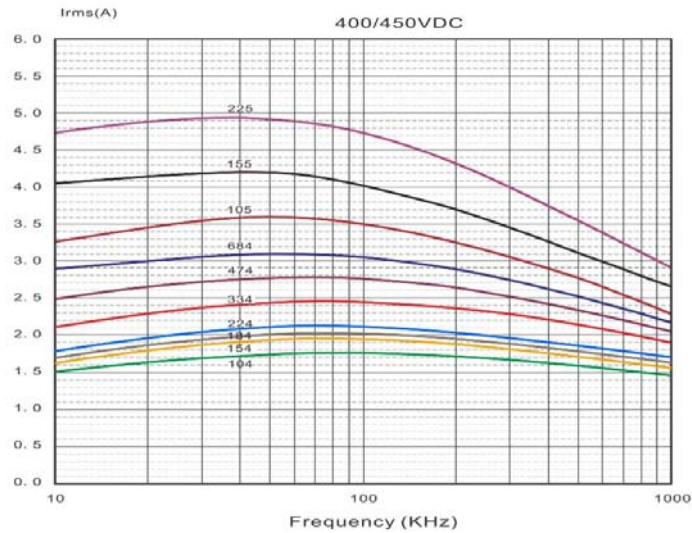
Characteristics of permissible current (Arms)Vs Frequency -

(sinusoidal wave , $\Delta T \leq 12^{\circ}\text{C}$, $T_h \leq 40^{\circ}\text{C}$)

允许电流 (Arms) 对频率特性曲线图 (正弦波 , $\Delta T \leq 12^{\circ}\text{C}$)

(正弦波 , $\Delta T \leq 12^{\circ}\text{C}$, $T_h \leq 40^{\circ}\text{C}$)

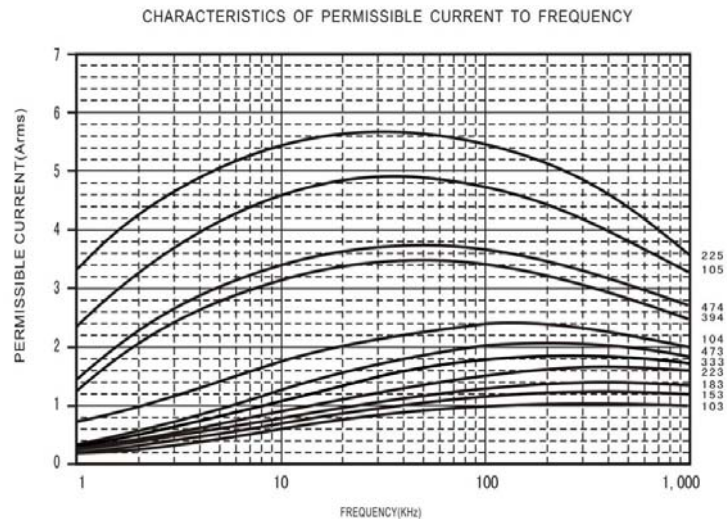
MPC 400V (2G) /450V (2Y) SERIES



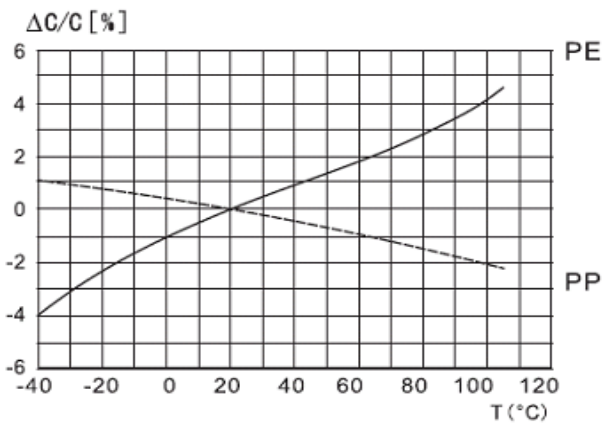
MPC 500V (2H) /550V (2X) SERIES



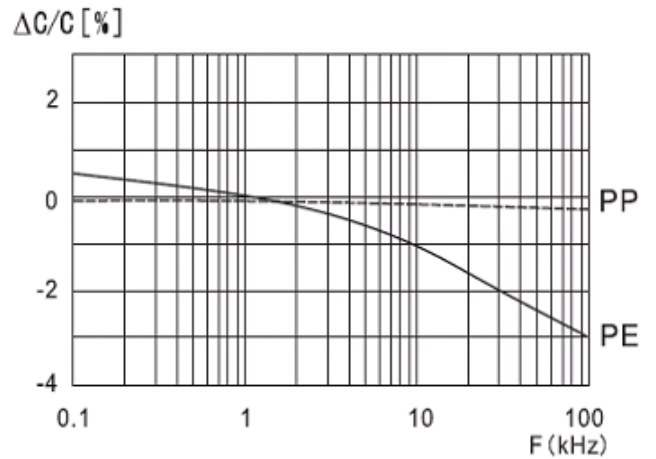
MPC 630V (2J) SERIES



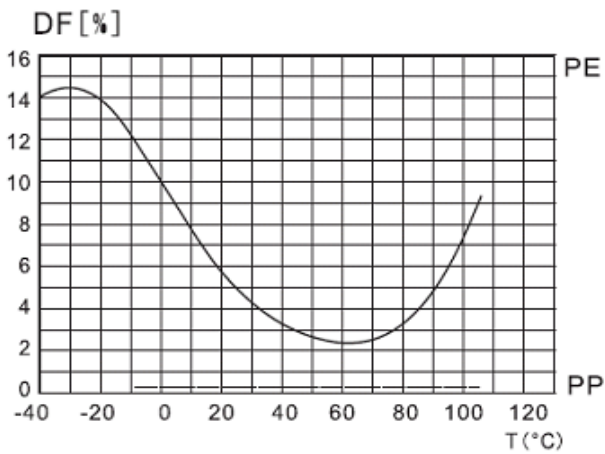
14. Product electrical characteristic graph 产品电气特性图



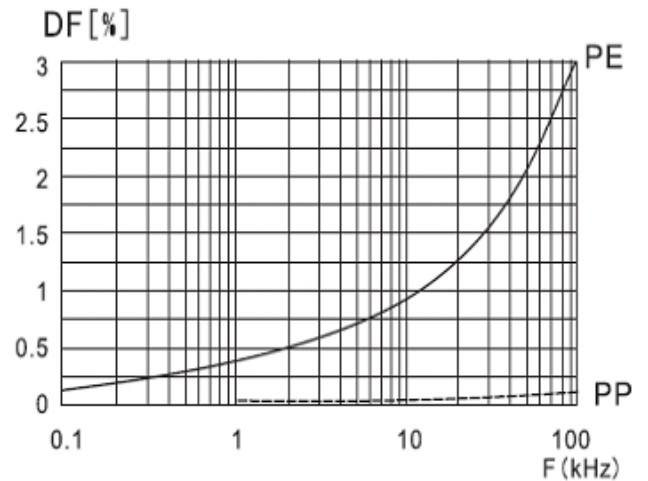
Capacitance vs. temperature at 1kHz



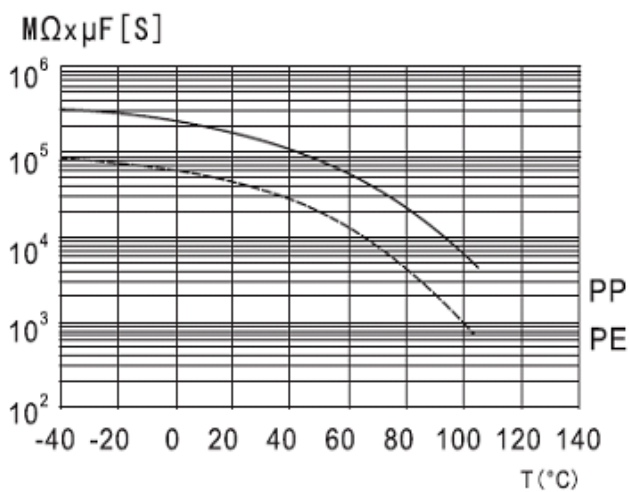
Capacitance vs. frequency (Room temperature)



Dissipation factor vs. temperature at 1KHz



Dissipation factor vs. frequency (Room temperature)



I.R. vs. temperature

----- 聚丙烯膜 (Polypropylene Film)
 ————— 聚旨薄膜 (Polyester Film)

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