东莞市科雅电子科技有限公司

規 格 承 認 書

SPECIFICATIONS FOR APPROVAL

客 戶 名 稱: CUSTOMER	
產 品 名 稱: ITEM	金属化聚丙烯盒式薄膜电容(DPB)直流支撑
產 品 類 型 CUSTOMER'S PART NO.	DC-Link 系列（料号：C3D405K2K2702P）
產 品 規 格 CUSTOMER'S P/N:	MKP-DL 405K800V P27.5 31*25*14 KYET 灰壳 0.8CU L=15
日 期 ISSUED DATE	2026/9/1

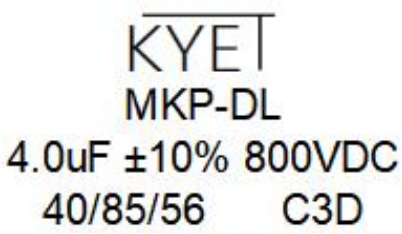
承认印（APPROVAL STAMP）	
供应商（VENDER）	客户（CUSTOMER）
东莞市科雅电子科技有限公司 工程部 承认书专用章	

- 如果您有特殊要求请联系我们，我们将提供符合您要求的产品。
- If your requirement is special please contact us, we will test products as per your requirement.

版次	日期	变更内容
V1.0	2026/9/1	新产品承认书

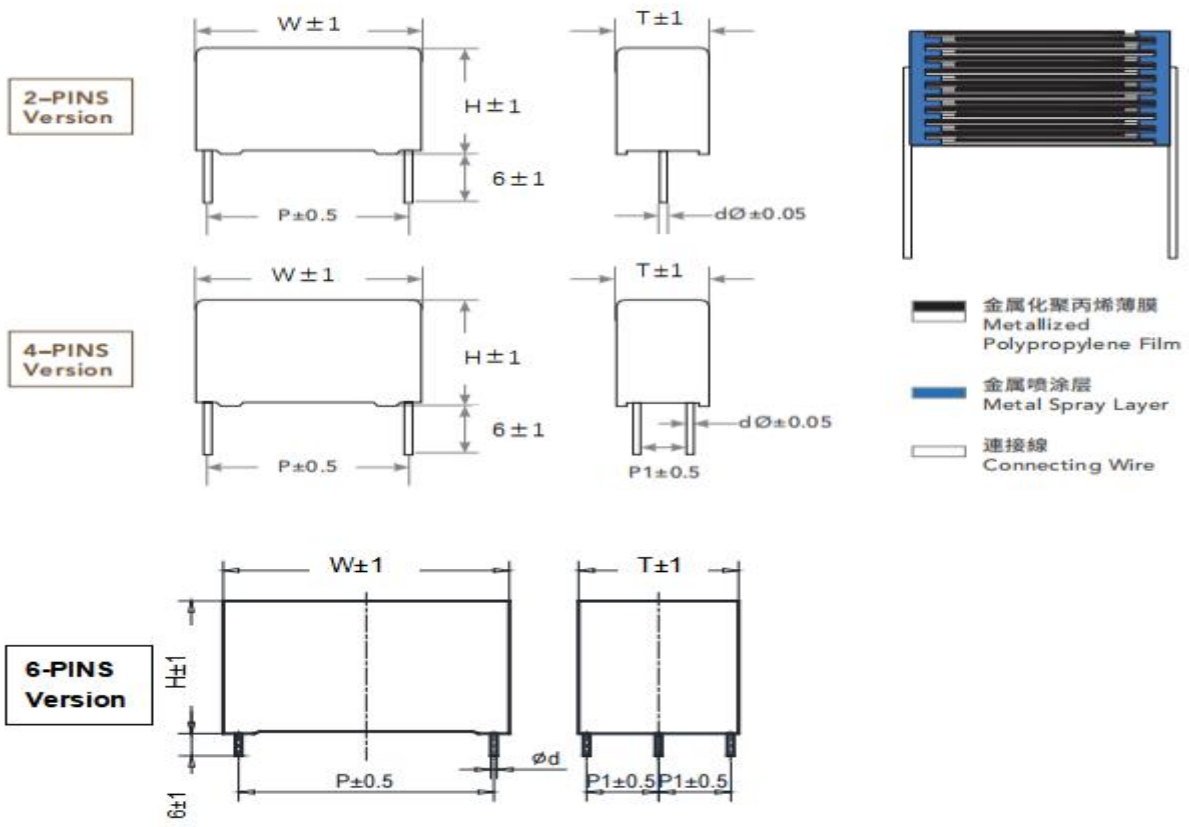
正面激光印字

Front laser printing



东莞市科雅电子科技有限公司	发文部门 Issuing department：工程部	编号：KY-GCDPB
金属化聚丙烯膜电容(DPB)直流支撑 Metallized Polypropylene Film Capacitor-Radial（DPB） DC-Link	拟制/Prepared by：周潇潇	制定日期 set date： 2026/9/1
	审核/Audit：刘大鹏	版 本/Version：V1.0

外形及结构图



结构 Construction:

电介质：金属化聚丙烯薄膜
Dielectric: Metallized Polypropylene Film
绕卷：低感式
Winding: Low inductive type
导线：镀锡线
Leads: Tinned Wire
外层：阻燃塑胶外壳， 环氧树脂填充
Outer Coating: Flame retarding plastic case and epoxy filled

特点 Feature:

高电容密度
High Capacitance Density
高纹波电流
High Ripple Current
良好的自愈性
Self–healing properties

推荐应用 Recommended Application:

高性能直流滤波应用	太阳能逆变器	变频器
High performance DC filtering applications	Solar inverters	Frequency converters

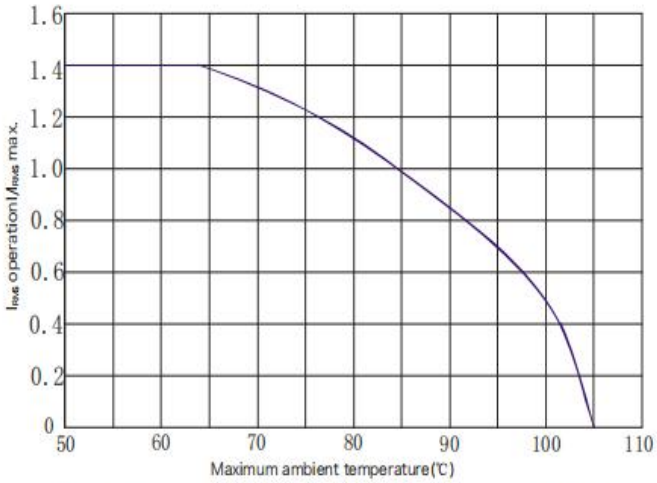
电气特性 Electrical Characteristics:

引用标准 Related Documents	IEC 61071/60068							
额定电压 Rated Voltage	V_{NDC} 85°C	450V	500V	600V	800V	900V	1000V	1100V
	V_{OPDC} 70°C	500V	600V	700V	900V	1000V	1100V	1200V
额定温度 Rated Temperature	–40°C ~+85°C							
最大运行温度(外壳) Maximum Operating Temperature (Case)	105℃							
容量范围 Capacitance Range	1.0uF~120uF							
容量误差 Capacitance Tolerance	±5% (J), ±10% (K)							
绝缘电阻 Insulation Resistance	Terminal to Terminal: (at 20°C ±5°C), Voltage charge time: 1 minute. Voltage: 100VDC IR*C≥10000S							
耐压 Withstand Voltage	Terminal to Terminal: (at 20°C ±5°C) 1.5 × VR applied for 10sec.							
自感 (Ls) Self inductance (Ls)	＜1 nH per mm of lead spacing							
最大峰值电流 Î Maximum peak current Î (A)	Î = C.dv/dt							

注：若用于户外或长期湿度较大场合，建议选用防潮设计。

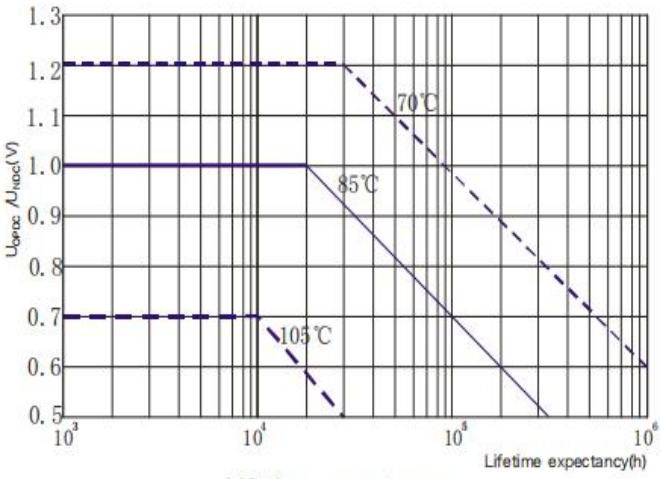
V_{NDC} 85°C =800VDC, V_{OPDC} 70°C = 900VDC											
Cap (uF)	Dimensions(mm)			P ±0.5	P1 ±0.5	d ±0.05	dV/dt (V/us)	Tanδ(%)		ESR 10KHz mΩ	Irms 10KHz A	料号 Part Number
	W	H	T					1KHz	10KHz			
4.0	31	25	14	27.5	--	0.8	65	0.1	0.95	22.8	5.8	C3D405K2K2702P
备注：产品外观颜色为灰色盒子灰色环氧树脂												

纹波电流降额曲线



Maximum I_{RMS} current in function of the ambient temperature

预计寿命曲线

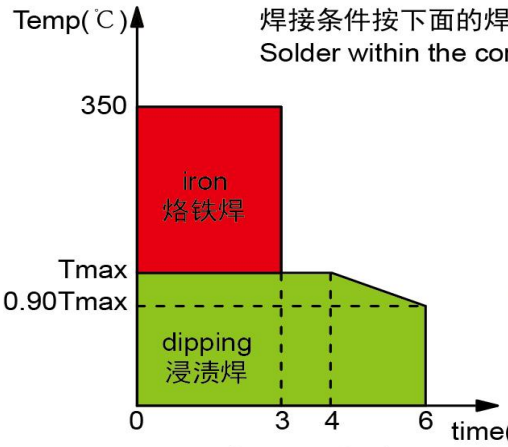


Lifetime expectancy
(typicalcurve)

可靠性试验要求：

项目	性能要求	试验方法
引出端强度 IEC 60068-2-21	外观无可见损伤	拉力试验：Ua1： 0.5＜φd≤0.8mm；10N 0.8＜φd≤1.2mm；20N
耐焊接热 IEC 60068-2-20	外观无可见损伤，标志清晰 Capacitanceat1 kHz Tanδat10kHz |ΔC/C|≤0.5% Increase of tanδ≤0.0050	Solder bath Temperature at :260°C ±5°C Immersion time :10s ±1 s
耐久性 IEC 61071	Capacitanceat1 kHz Tanδat10kHz |Δ C/C| ≤ 3.0 % Increase of tan δ ≤150*10^{-4}(10KHz) IR≥初始值*50%	1.3x UNDC atTmax. = 85°C Duration 500h 1000×discharge at 1.4× Ipeak(maximum Repetitive peak current in continuous Operation) 1.3x UNDC at Tmax. = 85°C Duration 500h
温度变化 IEC 60068-2-14	Capacitanceat1 kHz Tanδat10kHz |Δ C/C| ≤ 2.0 % Increase of tan δ ≤0.0150 IR≥初始值*50%	Test Nb Tmax. = 85°C Tmin. = -40°C Transition time:1 h, equivalent to1 °C/min
耐湿性 IEC 60068-2-78	Capacitanceat1 kHz Tanδat10kHz |Δ C/C| ≤ 2 % Increase of tan δ ≤150*10^{-4}(10KHz) IR≥初始值*50%	Tmax. = 40°C ±2 °C RH = 93% ±3% Duration：56 days
耐湿负荷 AEC-Q200	Capacitanceat1 kHz Tanδat10kHz |Δ C/C| ≤ 5.0 % Increase of tan δ ≤150*10^{-4}(10KHz) IR≥初始值*50%	Tmax. = 60°C ±2 °C RH = 93% ±3% at U_{NDC} Duration：1000h
自愈性测试 IEC 61071	Capacitanceat1 kHz Tanδat10kHz |Δ C/C|≤ 0.5% tanδ≤1.2×initial tanδ+ 0.0001	1.5x UNDC Duration10s Number of clearings≤5 Increase the voltage at100V/still 5, With max. of 2.5x U_{NDC} fora duration of 10s
放电试验 IEC 61071	Capacitanceat1 kHz Tanδat10kHz |Δ C/C| ≤ 1.0 % Increase of tan δ ≤0.0150 IR≥初始值*50%	1.1x U_{NDC} Number of discharges: 5 Time lapse: every 2 min (10mintotal)

7. 焊接 Welding



焊接条件按下面的焊接图表：
Solder within the conditions mentioned in the following diagram.

	Tmax	Time	Note
预热 Pre-heating	110℃	1min	
	100℃	1min	MPP P≤7.5
焊接 Soldering	270℃	4s	
	260℃	4s	MPP P≤7.5

如果需要焊接两次，第二焊接必须等到电容器恢复到常温。
If re-working or dipping twice in necessary, it should be done after the capacitor returned to the normal temparature.

a. 手工焊接时，MPP 薄膜电容器是全部元件里面耐温最差的元件，请特别注意焊接时间，尽量不超过 5 秒，焊点尽量离本体远一些，另外不适合回流焊焊接，否则产品会因薄膜热收缩导致性能问题；

During manual welding, MPP film capacitor is the worst temperature resistance component among all components, please pay special attention to the welding time, try not to exceed 5 seconds, solder spot as far as possible from the body, in addition, it is not suitable for reflow welding, otherwise the product will cause performance problems due to the thermal shrinkage of the film;

b. 波峰焊锡时，电容不宜卧式安装，直插 PC 板为宜,防止焊锡时，锡波烫伤电容器内部材料；焊锡载具建议不要加盖，尽量降低电容过锡炉的温度；预热三段温度 80-100℃之间，温度 260℃+/-5；（温度越低越安全）焊锡时间 5S 内完成；（双波峰焊总时间）焊锡过程不得有停顿/卡料，导致焊锡成品板受热时间和焊锡时间变长,造成烫伤潜在隐患；（其他焊锡方式，都需遵循此要求）

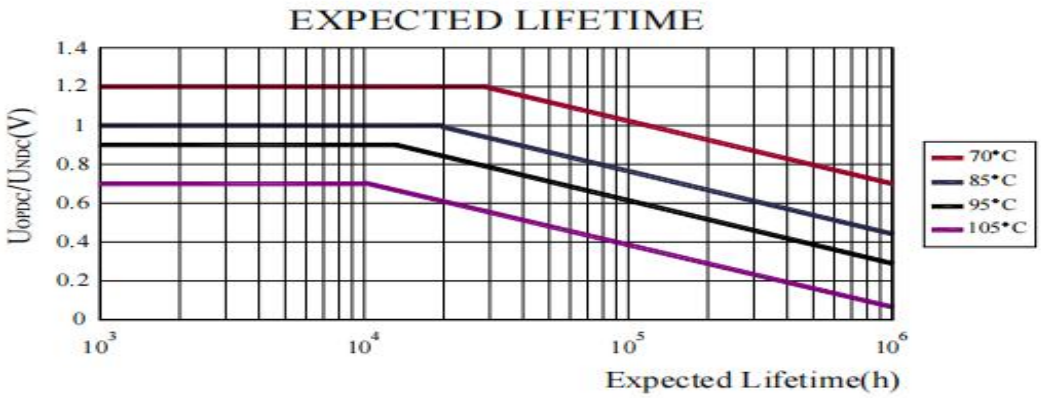
Wave soldering, capacitor is not horizontal installation, direct plug PC board is appropriate, to prevent soldering, tin wave scald capacitor internal materials; It is recommended not to cover the solder carrier,

reduce the temperature of capacitor through the tin furnace as far as possible; The temperature of the third stage of preheating is between 80-100℃, and the temperature is 260℃+/-5. (The lower the temperature, the safer) soldering time within 5S; (double wave soldering total time) Solder process should not stop/stuck material, resulting in long soldering time and soldering time of finished plate, resulting in potential risks of scald; (For other soldering methods, follow this requirement)

c. 金属化薄膜电容器环境温度在≧85℃时，远离高热元件，防止其他元件热量影响电容器正常工作。

When the ambient temperature of metallized film capacitor ≧85℃, keep away from high-heat components to prevent the heat of other components from affecting the normal operation of the capacitor.

7. 电容工作温度与额定电压降低比例 Ratio of capacitor operating temperature to rated voltage reduction

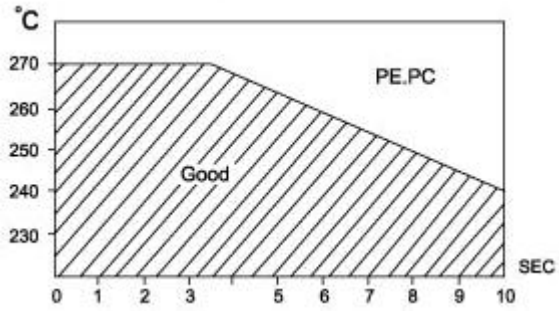


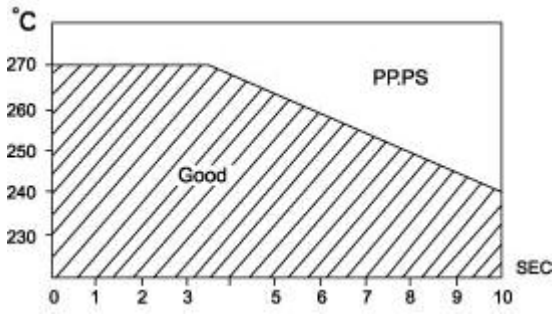
The temperatures-curves are the case-temperatures measured at the hottest point of the capacitor has reached its thermal equilibrium.

薄膜电容性能参数 Electrical Characteristics of Film Capacitor

1.焊接温度与时间对比

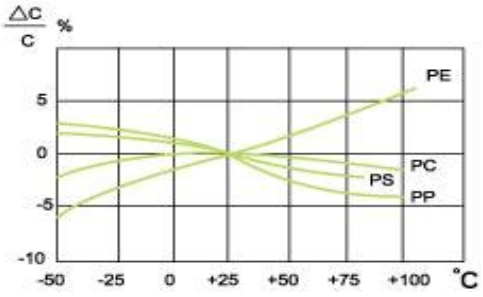
Soldering Temperature VS Time





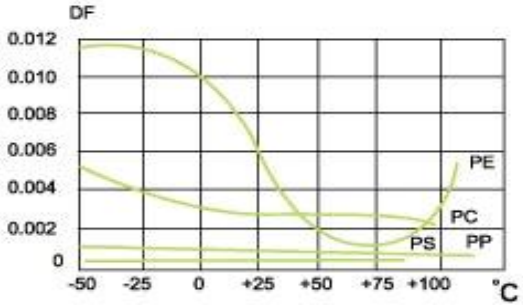
2.温度性能

Temperature Characteristic



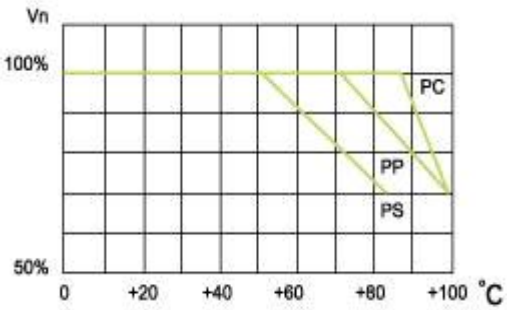
容量变化率与温度的关系

Capacitance vs. Temperature



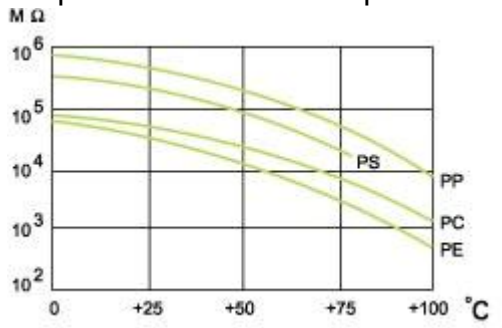
损耗角正切与温度的关系

Dissipation Factor vs. Temperature



使用电压与温度的关系

Operation voltage vs. Temperature

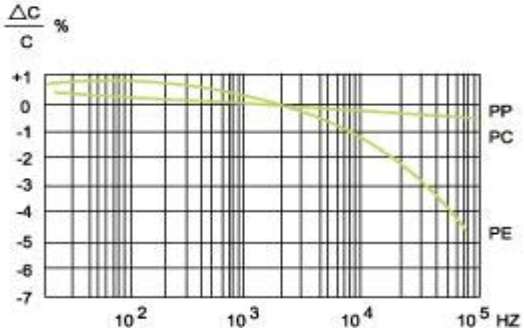


绝缘电阻与温度的关系

(CR value) IR vs. Temperature

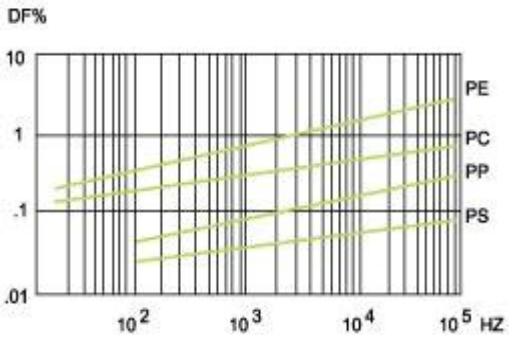
3.频率性能

Frequency Characteristics



容量变化率与频率的关系

Capacitance vs. Frequency



损耗角正切与频率的关系

Dissipation Factor vs. Frequ