# 规格承认书

## Specification for Approval

| | |
|---|---|
| 产品名称 Product Name | 高压金属化聚丙烯膜电容器 High-voltage metallized polypropylene film capacitor |
| 型号规格 Type & Spec. | CBB28-1250V-223-P10 |
| 万盛料号 Walson's P/N | C283B223A5P40001 |
| 文件编号 Document No. | WSCRS-2025122738 |
| 客　　户 Customer | 立创商城 |
| 客户料号 Customer's P/N | C53223854 |

| 供方确认 Supplier confirmation | 客户承认 Customer Approval |
|---|---|
| 无锡万盛电子有限公司 承认书专用 | |

请于承认后签章回执一份
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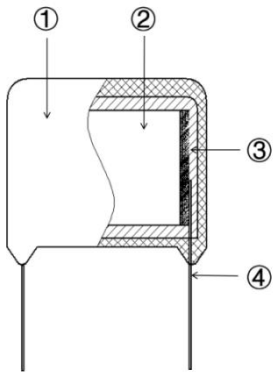
无锡万盛电子有限公司
WUXI WALSON ELECTRONICS CO., LTD.

地址: 江苏无锡江阴市长泾镇兴业路 22 号　电话 Tel.: +86-510-88719928
Addr. : No.22, Xingye RD, Changjing Town, Jiangyin City, Jiangsu, China
E-Mail: walson@walson-elec.com　　Website: www.walson-elec.com

## 1. 结构 Construction

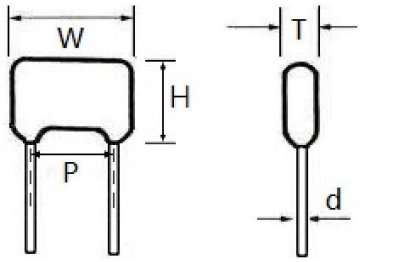



本产品由金属化高温聚丙烯薄膜、铝箔、高温聚丙烯薄膜卷绕而成，端面喷涂无铅金属并焊接引线，外部采用阻燃环氧树脂包封。

The product is winding by metallized high-temperature polypropylene film, aluminum foil, and high-temperature polypropylene film.Both end faces of the core sprayed with lead-free metal and welded with leads, and the exterior is wrapped with flame-retardant epoxy resin.

① 环氧包封料 Encapsulating Material
② 芯子 Core
③ 喷金层 Spraied Metal Layer
④ 引出线 Lead Wire

## 2. 外形尺寸 Dimensions




引线成型图示 Forming Lead Shapes

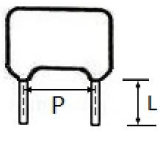



Fig. 1

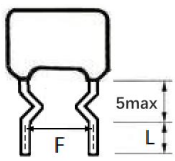



Fig. 2

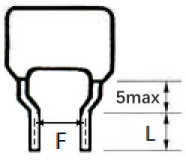



Fig. 3

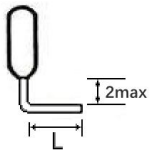



Fig. 4

| 客户料号 Customer's P/N | 规格型号 & 料号 Spec. & Walson's P/N | 容量偏差 Tol.±% | 外形尺寸 Outline Dimensions (mm) | | | | | | | 图示 Fig. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | W Max | H Max | T Max | P ±0.5 | F ±0.5 | d ±0.1 | L Min | |
| C53223854 | **CBB28-1250V-223-P10** C283B223A5P40001 | 5 | 13 | 12 | 7 | 10 | - | 0.6 | 20 | 1 |

## 3. 特点及主要用途 Feature and Application

### ☆ 主要用途

- 大屏幕显视器行逆程电路
- 适用于高脉冲,大电流电路
- 适用于电子镇流器

### ☆ Application

- Horizontal resonance circuits of large screen monitor
- Suitable for high pulse and high current loading circuit
- Suitable for electronic ballast

### ☆ 特点

- 金属化聚丙烯膜箔式，卷绕结构
- 损耗小，内部温升小
- 负电容量温度系数
- 阻燃环氧粉末包封（UL94/V-0）

### ☆ Characteristics

- Metallized polypropylene film/foil,wound construction
- Low loss and small inherent temperature rise
- Negative temperature coefficient of capacitance
- Flame retardant epoxy resin powder coating(UL94/V-0)

### ☆ 技术要求 Specifications

| | | |
|---|---|---|
| 引用标准<br>Reference Standard | GB/T 10190-2012 （IEC60384-16） | |
| 工作温度范围<br>Operating Temperature Range | -40 ℃ ~ +105 ℃ | |
| 额定温度<br>Rated Temperature | 85 ℃<br>(+85 ℃ to +105 ℃ decreasing factor 1.25 % per ℃ for $U_R$ ) | |
| 额定电压<br>Rated Voltage | 630/1000/1250/1600/2000/2500 VDC | |
| 电容量范围<br>Capacitance Range | 0.0010 μF ~ 0.036 μF | |
| 电容量偏差<br>Capacitance Tolerance | ±5 % (J)、±10 % (K) | (20 , 1 kH, 1 V) |
| 耐电压<br>Voltage Proof | 1.6 $U_R$ | (20 ℃, 5 s) |
| 损耗角正切值<br>Dissipation Factor | ≤0.0010 | (20℃, 1 kHz, 1 V) |
| 绝缘电阻<br>Insulation Resistance | ≥25000 MΩ $C_R$≤0.33 μF<br>≥7500 s $C_R$ > 0.33 μF | (20 ℃, 100 V, 1 min) |

## 4. 可靠性测试 Reliability Test

| 序号 No. | 测试项目 Test Item | | 测试方法 Test method | 要求 Requirement |
|---|---|---|---|---|
| 1 | 外部检查 Outline check | | 目视检查，卡尺测量<br>Visual inspection and capliper measurement | 外形规整，无可见损伤；标志端正、清晰、无误<br>The appearance is regular without visible damage; The mark is regular, clear and correct. |
| | 初始测量 Initial measurement | | 电容量 C：20 ℃, 1 kHz, 1 V<br>损耗角正切 Tan δ：20 ℃, 1 kHz, 1V | |
| | 引出端强度 Terminal Strength | 拉力 Pull | 拉力:5 N<br>方向：180 °<br>时间：10±1 s<br><br>Pull: 5 N<br>Direction: 180 °<br>Time: 10±1 s | 无可见损伤<br><br>No visible damage |
| | | 弯曲 The pull of bend | 拉力：2.5 N<br>方向：90 °<br>次数：2 次<br><br>The pull of bend: 2.5 N<br>Direction: 90 °<br>Times: 2 | 无可见损伤<br><br>No visible damage |
| | 耐焊接热 Soldering Heat Resistance | | 焊槽温度：+260 ℃±5 ℃<br>浸入时间：10 s±1 s<br>浸入深度离安装面 2+0/-0.5 mm，采用厚度为 1.5 mm±0.5 mm 的绝热屏蔽板<br><br>Solder temperature: 260 °C±5 °C<br>Immersion time: 10 s±1 s<br>Immersion depth is 2+0/-0.5 mm away from the installation surface, and insulation shielding plate with a thickness of 1.5mm ± 0.5 mm is used | 无可见损伤<br><br>No visible damage |
| | 最后测量 Final measurement | | | 容量变化：｜ΔC/C｜≤3 %<br>损耗变化：ΔTan δ≤0.004（1 kHz）<br><br>｜ΔC/C｜≤3 %<br>ΔTan δ≤0.004（1 kHz） |
| 2 | 初始测量 Initial measurement | | 电容量 C：20 ℃, 1 kHz, 1 V<br>损耗角正切 Tan δ：20 ℃, 1 kHz, 1V | |
| | 可焊性 Solderability | | 焊槽温度：235 ℃±5 ℃<br>浸入时间：2.0 s±0.5 s<br><br>Solder temperature: 235 °C ±5 °C<br>Immersion time: 2.0 s±0.5 s | 引线表面浸锡良好，焊层面积达 95 %以上<br><br>The surface of the lead wire is well tinned, and the welding layer area reaches over 95 % |

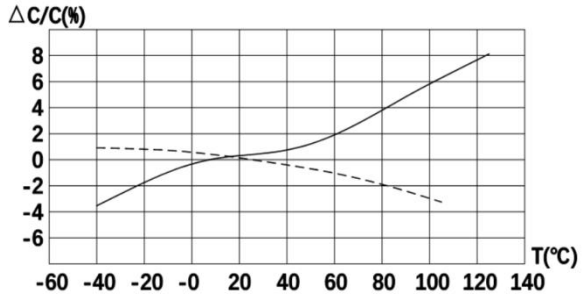
| 序号<br>No. | 测试项目<br>Test Item | | 测试方法<br>Test method | 要求<br>Requirement |
|---|---|---|---|---|
| 2 | 温度快速变化<br>Rapid Change of Temperature | | θA=-40 ℃<br>θB=+105 ℃<br>循环次数：5 次，<br>持续时间 t=30 min<br><br>θA=-40 °C<br>θB =+105 °C<br>5 cycles<br>Duration: t=30 min | 无可见损伤<br><br>No visible damage |
| | 振动<br>Vibration | | 频率范围：10--500 Hz<br>振幅 ：0.75 mm<br>试验安装方向： X, Y, Z.<br>试验每个方向持续时间 ：2 h<br><br>Frequency range: 10Hz to 500 Hz<br>Amplitude: 0.75 mm<br>Test installation direction: X,Y,Z,<br>Test duration in each direction: 2 h | 无可见损伤<br><br>No visible damage |
| | 碰撞<br>Bump | | 碰撞次数：4000 次<br>加速度：390 m/S²<br>脉冲持续时间：6 ms<br><br>Times of collisions: 4000 times<br>Acceleration: 390 m/s2<br>Pulse duration: 6 ms | 无可见损伤<br><br>No visible damage |
| | 最后测量<br>Final measurement | | | 无可见损伤<br>容量变化：｜ΔC/C ｜≤3 %<br>损耗变化：ΔTan δ≤0.004（1 kHz）<br>绝缘电阻：≥初始测量值的 50 %<br><br>No visible damage<br>｜ΔC/C ｜≤3 %<br>ΔTan δ≤0.004（1 kHz）<br>I.R.≥50 % of the rated value |
| 3 | 气候顺序<br>Climate Sequence | 干热<br>Dry Heat | +105 ℃, 16 h | |
| | | 循环湿热<br>Damp Heat Cyclic | 湿热试验 Db,严酷度 b 第一次循环<br><br>Test Db, Severity: b, the first cycle | |
| | | 寒冷<br>Cold | -40 ℃, 2 h | |
| | | 循环湿热<br>Damp Heat Cyclic | 试验 Db,严酷度 b 其余循环<br><br>Test Db, Severity b, the other cycles, | |
| | | 最后测量<br>Final Measurement | | 外观无可见损伤，标志清晰<br>电容量变化：｜ΔC/C ｜≤5 %,<br>损耗角正切的增加:ΔTan δ≤0.005(1 kHz)<br>绝缘电阻：≥额定值的 50 %<br><br>There shall be no evidence of deterioration and the marking shall be legible.<br>｜ΔC/C ｜≤5 %<br>Increase of Tan δ≤0.005(1 kHz)<br>I.R.≥50 % of the rated value |

| 序号<br>No. | 测试项目<br>Test Item | 测试方法<br>Test method | 要求<br>Requirement |
|---|---|---|---|
| 4 | 初始测量<br>Initial measurement | 电容量 C：20 ℃, 1 kHz, 1V<br>损耗角正切 Tan δ：20 ℃, 1 kHz, 1V | |
| | 稳态湿热<br>Damp Heat Steady State | 温度：+40 ℃±2 ℃<br>相对湿度：93 %±2 %RH<br>试验周期：21 天<br><br>Temperature:+40 ℃±2 ℃<br>Humidity:93 %±2 %RH<br>Duration:21 Days | 无可见损伤<br><br>No visible damage |
| | 最后测量<br>Final measurement | | 容量变化 \| ΔC/C \| ≤5 %<br>损耗变化ΔTan δ:≤0.002（1 kHz）<br>绝缘电阻 I.R.≥初始测量值的 50%<br><br>\| ΔC/C \| ≤5 %<br>ΔTan δ≤0.002（1 kHz）<br>I.R.≥50 % of the rated value |
| 5 | 初始测量<br>Initial measurement | 电容量 C：20 ℃, 1 kHz, 1V<br>损耗角正切 Tan δ：20 ℃, 1 kHz, 1V | |
| | 耐久性<br>Endurance | 温度： +85 ℃±2 ℃<br>试验周期：1000 小时<br>施加电压：1.25 $U_R$<br><br>Temperature: +85 ℃±2 ℃<br>Duration: 1000 (h)<br>Test voltage:1.25 $U_R$ | 无可见损伤，标志清晰<br><br>No visible damage |
| | 最后测量<br>Final measurement | | 容量变化： \| ΔC/C \| ≤5 %<br>损耗变化：ΔTan δ≤0.004（1 kHz）<br>绝缘电阻：≥初始测量值的 50 %<br><br>\| ΔC/C \| ≤5 %<br>ΔTan δ≤0.004（1 kHz）<br>I.R.≥50 % of the rated value |
| 6 | 随温度而定的特性<br>Temperature Characteristic | 静态法，电容器依次保持在下述每个温度：<br>Static method, the capacitor is maintained at each of the following temperatures in sequence:<br><br>b.(20±2) ℃，d.(-40±2) ℃，f.(105±2) ℃ | 在 b,d,f 点上进行电容量测量<br>在下限类温度(-40 ℃)时的特性:<br>Measurement of capacitance at points b, d, and f,characteristics at lower limit temperature (-40 ℃):<br>0≤△C/C≤+3 %<br><br>在上限类别温度(105 ℃)时的特性:<br>Characteristics at upper limit category temperature (105 ℃):<br>-4.25 %≤△C/C≤0 |

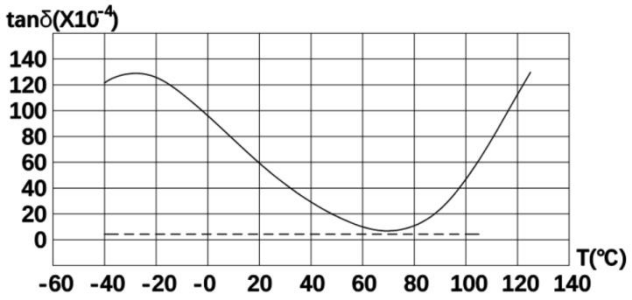
| 序号<br>No. | 测试项目<br>Test Item | 测试方法<br>Test method | 要求<br>Requirement |
|---|---|---|---|
| 7 | 初始测量<br>Initial measurement | 电容量 C：20 ℃, 1 kHz, 1V<br>损耗角正切 Tan δ：20 ℃, 1 kHz, 1V | |
| | 充电和放电<br>Charging and Discharging | 充电次数：10000 次<br>充电电压：1.0 $U_R$<br>充电时间：0.5 s<br>放电时间：0.5 s<br>充电电阻：220/$C_R$ Ω<br>放电电阻：R=10/$C_R$ 或 20 Ω取较大者 $C_R$: 额定电容量（μF）<br><br>Times: 10000<br>Charging voltage: 1.0 $U_R$<br>Duration of charging: 0.5 s<br>Duration of discharging: 0.5 s<br>Charging resistance: 220/$C_R$(Ω) or current intensity ≤ 1 A(whichever is the less current intensity)<br>Discharging resistance: R=$U_R$/($C_R$×dv/dt)<br>$C_R$: rated capacitance (μF) | |
| | 最后测量<br>Final measurement | | 容量变化：｜ΔC/C｜≤5 %<br>损耗变化：ΔTan δ≤0.005（1 kHz）<br>绝缘电阻：≥初始测量值的 50 %<br><br>｜ΔC/C｜≤5 %<br>ΔTan δ≤0.005（1 kHz）<br>I.R.≥50 % of the rated value |
| 8 | 阻燃试验<br>Flame Retardancy | 施加三次火焰，每次施加 15 秒，施加火焰时间间隔 15 秒<br><br>Apply flame three times, each time for 15 seconds, with a flame application interval of 15 seconds | 第一次和第二次施加火焰后燃烧时间≤15 秒，第三次施加火焰后燃烧时间≤60 秒<br><br>The combustion time after the first and second application of flame is ≤ 15 seconds, and the combustion time after the third application of flame is ≤ 60 seconds |

## 5. 产品特性曲线图 Graphs of Product Characteristics

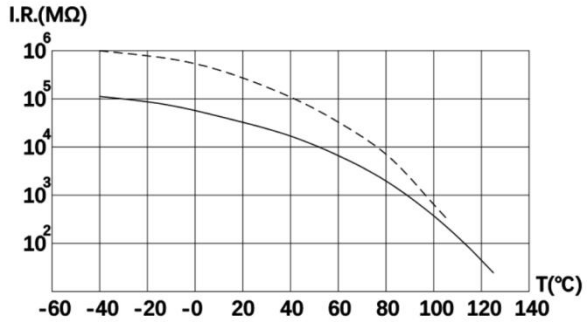
### ☆ 温度特性曲线 Temperature Characteristic Curve




Capacitance vs. Temperature at 1kHz




Dissipation Factor vs. Temperature at 1kHz




I.R. vs. Temperature

聚丙烯薄膜 Polypropylene Film
聚酯薄膜 Polyester Film

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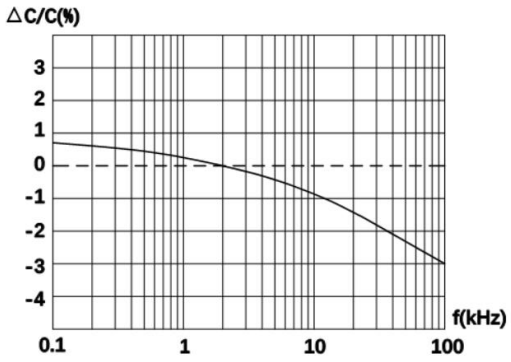
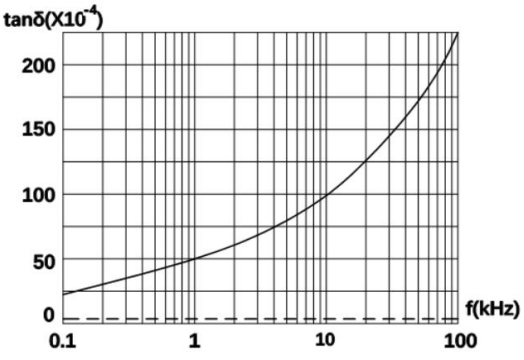
### ☆ 频率特性曲线 Frequency Characteristic Curve




Capacitance vs. Frequency（Room Temperature）




Dissipation Factor vs.Frequency（Room Temperature）

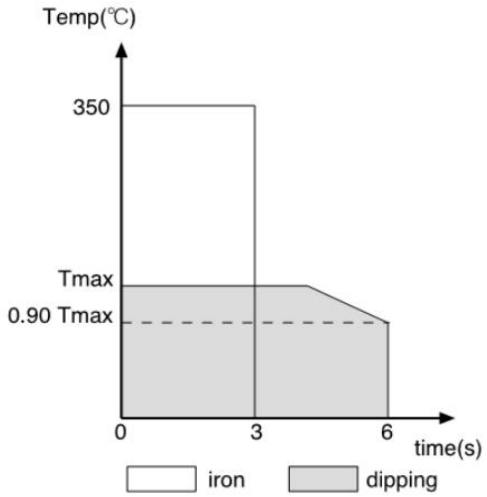
聚丙烯薄膜 Polypropylene Film
聚酯薄膜 Polyester Film

## 6. 焊接 Weld

焊接电容器时，热量会对电容器的引线和包封层产生影响，并且高温，以及长时间焊接都会对电容器的性能造成影响，甚至导致失效。

When welding, heat can have an impact on the leads and packaging layer of the capacitor, and high temperature and prolonged welding can affect the performance of the capacitor, even leading to failure.

焊接条件按下面的焊接图表:
The welding conditions are shown in the following welding chart




| | Tmax | Time | Note |
|---|---|---|---|
| Pre-heating | 110℃ | 1min | |
| | 100℃ | 1min | OPP ≤ 7.5 |
| Soldering | 270℃ | 4s | |
| | 260℃ | 4s | OPP ≤ 7.5 |