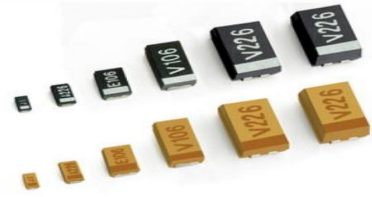


■ 表面贴装固体钽电解电容器

Surface mount solid tantalum capacitor


◆ 特征

Feature

贴片式，体积小、容量大，可靠性高，有极性，
 Smd type, small size, high capacity, high reliability, polarized.

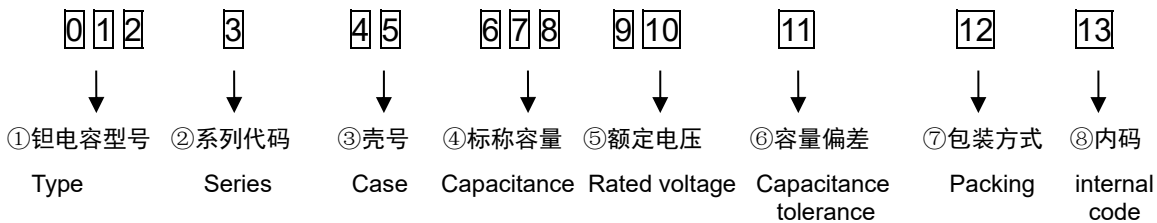
◆ 应用

Application

常用于消费电子、通讯、医疗、工业等领域的电子设备，主要用途有 DC/DC 滤波、去耦、储能等
 Usually used in consumer electronics, communication, medical, industrial and other fields of electronic equipment. Main uses include C/DC filtering, decoupling, energy storage and time delay.

◆ 型号表示法

Part Number



①：表示钽电容型号 Type

T 4 5 : 片式钽电容 Molded chip solid tantalum electrolytic capacitor

②：表示系列代码 Series code

| 代码 Code | 系列 Series |
|---------|----------------------|
| 0 | 标准型 general purposes |
| 1 | 低阻型 low impedance |

③：表示外形尺寸 Shape and dimensions

| 代码 Code | 尺寸 Size (max) | 代码 Code | 尺寸 Size (max) |
|---------|---------------|---------|---------------|
| A1 | Φ 4.0×6.5 | D1 | Φ 6.0×9.5 |
| B1 | Φ 4.5×7.5 | E1 | Φ 7.0×10.5 |
| C1 | Φ 5.2×8.5 | F1 | Φ 8.2×12.5 |

④：表示标称容量 (C) Rated capacitance (C)

| 标称容量 (μF) Rated capacitance | 代 码 Code | 标称容量 (μF) Rated capacitance | 代 码 Code |
|--------------------------------|-------------|--------------------------------|-------------|
| 0.1 | 104 | 4.7 | 475 |
| 0.15 | 154 | 6.8 | 685 |
| 0.22 | 224 | 10 | 106 |
| 0.33 | 334 | 15 | 156 |
| 0.47 | 474 | 22 | 226 |
| 0.68 | 684 | 33 | 336 |

| | | | |
|-----|-----|-----|-----|
| 1 | 105 | 47 | 476 |
| 1.5 | 155 | 68 | 686 |
| 2.2 | 225 | 100 | 107 |
| 3.3 | 335 | 150 | 157 |

⑤：表示额定工作电压 (WV) Rated working voltage

| 电压 Voltage | 代码 Code | 电压 Voltage | 代码 Code |
|------------|---------|------------|---------|
| 4 | 0G | 20 | 1D |
| 6.3 | 0J | 25 | 1E |
| 10 | 1A | 35 | 1V |
| 16 | 1C | 50 | 1T |

⑥：表示容量偏差 Capacitance tolerance

| 代码 Code | 公差 Tolerance | 代码 Code | 公差 Tolerance |
|---------|--------------|---------|--------------|
| J | ±5% | Q | -10~+30% |
| K | ±10% | T | -10~+50% |
| M | ±20% | Z | -20~+80% |
| V | -10~+20% | A | 特殊 Special |

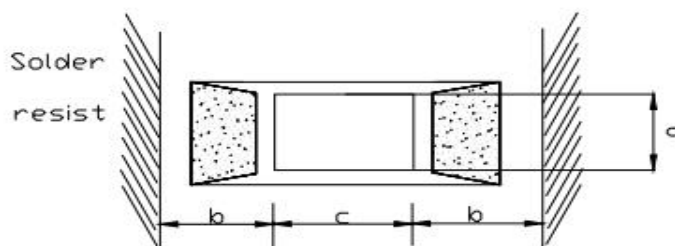
⑦：表示包装方式

| 代码 Code | 包装方式 |
|---------|-----------|
| B | 散装 Bulk |
| P | 编带 Taping |

⑧：表示内部识别码 Internal code

1：标准品 Standard 2：特殊品 Special grade

◆. 贴装尺寸
Lard Size



| 壳号 | Flow Soldering | | | Reflow Soldering | | |
|----|----------------|-----|-----|------------------|-----|-----|
| | a | b | c | a | b | c |
| A | 1.6 | 2.6 | 1.3 | 1.6 | 1.5 | 1.3 |
| B | 2.6 | 2.8 | 1.5 | 2.6 | 1.6 | 1.5 |
| C | 2.8 | 3.8 | 2.8 | 2.8 | 2.2 | 2.8 |
| D | 3.8 | 4.5 | 4.0 | 2.8 | 2.4 | 4.0 |

◆. 额定电压、类别电压、标称电容量、容量代码、外壳代号对应表

Rated voltage,Catalog voltage, Nominal capacitance,Capacity code,Case code。

| 额定电压 Rated voltag (V) | | 4 | 6.3 | 10 | 16 | 20 | 25 | 35 | 50 |
|-------------------------------------|--|------------------|-----|-------|-------|----|-----|-----|-----|
| 电压代码 | | 0G | 0J | 1A | 1C | 1D | 1E | 1V | 1T |
| 浪涌电压 (85℃) 85℃ Surge voltage (V) | | 5.2 | 8 | 13 | 20 | 26 | 32 | 46 | 65 |
| Cap (μF) | 降额电压 (125℃) 125℃ Derated Voltage(V) | 2.5 | 4 | 6.3 | 10 | 13 | 16 | 22 | 32 |
| | Code | 外壳代号 (Case code) | | | | | | | |
| 0.1 | 104 | | | | | | | A | A |
| 0.15 | 154 | | | | | | | A | B |
| 0.22 | 224 | | | | | | | A | B |
| 0.33 | 334 | | | | | | | A | B |
| 0.47 | 474 | | | | | | | A | B |
| 0.68 | 684 | | | | | | | A | B |
| 1.0 | 105 | | | | P | | | A.B | B.C |
| 1.5 | 155 | | | | | | A | B.C | C.D |
| 2.2 | 225 | | | P | A | | A.B | A.B | D |
| 3.3 | 335 | | | | A | | B | B.C | D |
| 4.7 | 475 | | | | A.B | | A.B | C | D |
| 6.8 | 685 | | | | A | | C | D | D |
| 10 | 106 | | | A | A.B | B | B.C | C.D | D |
| 22 | 226 | | A | A | A.B | B | C.D | D | E |
| 33 | 336 | | A | A.B | B.C | D | D | E | |
| 47 | 476 | | A.B | A.B | B.C.D | | D | E | |
| 68 | 686 | | B. | C. | C.D | D | E | | |
| 100 | 107 | A | A.B | B.C.D | C.D | D | E | | |
| 220 | 227 | | B.C | C.D | E | | | | |
| 330 | 337 | | D | D.E | E | | | | |
| 470 | 477 | | D | E | | | | | |

◆. 电容性能
Performance Specification

| 项 目 Item | 主 要 特 性 Performance Characteristics |
|--|--|
| 使用温度范围 Operating Temperature Range | -55~+125℃ (>85℃时, 施加类别电压使用) -55~+125℃(Max. operating temperature at rated voltage shall be up to 85℃) |
| 标称容量偏差 Capacitance tolerance | K: ±10 % M: ±20 % |
| 额定工作电压 Rated voltage | 4V~50V |
| 降额电压 (125℃) 125℃ Derated voltage(V) | 见表一 To table 1 |

| | | |
|--|---|---|
| 漏电流 (25℃) Leakage current (25℃) | ·施加额定工作电压 1 分钟: $I \leq 0.01C_R U_R \mu A$ 或 $0.5 \mu A$ 取较大值。 ·After 1minute's application of rated voltage, leakage current at 25℃ is not more than $0.01C_R U_R \mu A$ or $0.5 \mu A$., whichever is greater. | |
| 损耗角正切值(tgδ) Dissipation Factor | 测试频率 120Hz Test frequency 120Hz | |
| 0.1~1 uF 4% Max、1.5~68 uF 6% Max 100 uF ~ 8% Max | 在 85℃ 环境中, 电容器接 1000Ω 电阻, 加上浪涌电压(见表一), 以 30 秒开, 30 秒关为一个周期, 共经 1000 个周期实验后, 电容器的性能符合下列要求: After application of surge voltage (table 1) in series with a 1000Ω resistor in 30 seconds ON, 30 seconds OFF, for 1000 successive test cycles at 85℃, capacitors meet the characteristics requirements listed below. | |
| | 标称容量变化 Capacitance Change | 初始值的±5%以内 Within±5% of initial value |
| 浪涌电压(85℃) 85℃ Surge voltage(V) | 损耗角正切值 Dissipation Factor | 不大于初始规定值 Initial specified value or less |
| | 漏电流 Leakage Current | 不大于初始规定值 Initial specified value or less |

* 表 1 Table 1

| 额定工作电压 (V) Rated voltage (V) | 浪涌电压 (85℃) 85℃ Surge voltage (V) | 降额电压 (125℃) 125℃ Derated voltage (V) |
|---------------------------------|-------------------------------------|---|
| 4 | 5.2 | 2.5 |
| 6.3 | 8 | 4 |
| 10 | 13 | 6.3 |
| 16 | 20 | 10 |
| 20 | 26 | 13 |
| 25 | 32 | 16 |
| 35 | 46 | 22 |

◆ 可靠性

Reliability Data

| 项目 Item | 主要特性 Performance Characteristics | |
|---|--|---|
| 耐焊热接 Resistance to Soldering Heat | 将电容器端子线浸入 260±5℃ 的锡液中距本体 2~2.5mm, 经 3±0.5 秒后, 电容器性能符合下列要求: After immersing the Bottom parts of capacitor bodies by 2~2.5mm in a solder pot at 260±5℃ for 3±0.5 seconds. | |
| | 标称容量变化 Capacitance Change | 初始值的±3%以内 Within±3% of initial value |
| | 损耗角正切值 Dissipation Factor | 不大于初始规定值 Initial specified value or less |
| | 漏电流 Leakage Current | 不大于初始规定值 Initial specified value or less |

| | | |
|--------------------------------|--|---|
| 可焊性 Solder ability | 将端头 3/4 浸入 230±5℃ 锡液, 3±0.5 秒, 获得光亮、平滑的锡层。 Dipping 3/4 of the termination into the solder (230±5℃) for 3±0.5 sec to get a fresh and smooth surface. | |
| 耐湿性 Humidity Resistance | 在 40℃, 相对湿度为 90~95% R.H., 经过 500 小时后 (不充电), 电容器的性能符合下列要求: At 40℃, 90~95%R.H., For 500hours (No voltage applied). | |
| | 标称容量变化 Capacitance Change | 初始值的±12%以内 Within±12% of initial value |
| | 损耗角正切值 Dissipation Factor | 不大于初始规定值 Initial specified value or less |
| 高温负荷特性 Load Life | 电容器接上 3Ω 电阻, 在 +85℃ 和 +125℃ 环境中施加额定工作电压 1000 小时后, 电容器的性能符合下列要求: After 1000 hour's application of rated voltage in series with a 3Ω resistor at +85℃ or +125℃, capacitance meet the characteristics requirements listed below. | |
| | 标称容量变化 Capacitance Change | 初始值的±10%以内 Within±10% of initial value |
| | 损耗角正切值 Dissipation Factor | 不大于初始规定值 Initial specified value or less |
| 漏电流 Leakage Current | 不大于初始规定值 Initial specified value or less | |
| | 漏电流 Leakage Current | Initial specified value or less |
| 附着力测试 Shear test | 将产品焊在铝基板上, 朝电容侧面无电极边中心位置水平施加 5N 的压力并保持 10±1 秒, 产品端子应无被剥离、刮伤等现象。 After applying the pressure load of 5N for 10±1 seconds horizontally to the center of capacitor side body which has no electrode and has been soldered beforehand on an aluminum substrate. Neither exfoliation nor its sign shall be found at the terminal electrode. | |
| 端面镀层的结合强度 Terminal strength | 将电容表面安装于倒置的基板上, 并使基板的两个支撑点离电容中心 45mm, 用一个模具朝基板中心施加一个压力, 使该基板弯曲 1mm, 电容端子应无明显异常。 Keeping a capacitor surface-mounted on a substrate upside down and supporting the substrate at both of the opposite bottom points 45mm apart from the center of the capacitor, the pressure load is applied with a specified lig at the center of the substrate so the substrate may bend by 1 mm. Then, there shall be found no remarkable abnormality on the capacitor terminals. | |

◆ 储存方法

Storage Methods

- * 确保钽电容包装贮存, 不宜外露、受阳光直照及灰尘污染。正常温度 (5—35℃)、湿度 (75%RH 以下) 条件下存放。一般制造后可存放 2.5 年。若产品超过贮存周期, 使用前重新进行检验, 确保没有任何异常。

Store the capacitors in the package not to be exposed to direct sunlight and dust. Store in the environment holding ording temperture (5—35℃) and ordinary humidty (75% RH or less). Storing period is 2years and 6months after manufacturing in principle. As for products stored for more than the storing period,perform re-examination and confirm no abnormality of the products befor use.

◆ 使用注意事项

Precautions For Use

- *在超过额定温度下使用时: 电容器在 >85℃, 而 ≤125℃ 下使用时, 施加电压不得超过规定的降额电压。

Usage over rated temperature: $85^{\circ}\text{C} < \text{operating temperature} \leq 125^{\circ}\text{C}$ 。 Voltage applied can not exceed derated voltage.

*在低阻抗或有瞬间充电的电路中使用:

In circuit with low impedance or instant charging and discharging:

a) 在低阻抗电路中使用, 其施加的电压应不大于 $1/3 U_R$ (额定电压)。

In low impedance circuit: Voltage applied not exceed $1/3 U_R$ (rated voltage) .

b) 在开关或有瞬时充电的电路中使用, 要串联附加电阻, 其值为每加 1V 为 3Ω , 以限制电流在 300mA 以下。

In switching or instant charging and discharging circuit: Connect in series an additional resistor. The value is 3Ω for every 1V increasing to limit current under 300mA.

*固体钽电容器为极性电容器, 不适宜在加反向电压条件下使用。

Solid tantalum capacitors are polar capacitor. Reverse voltage is not permissible.

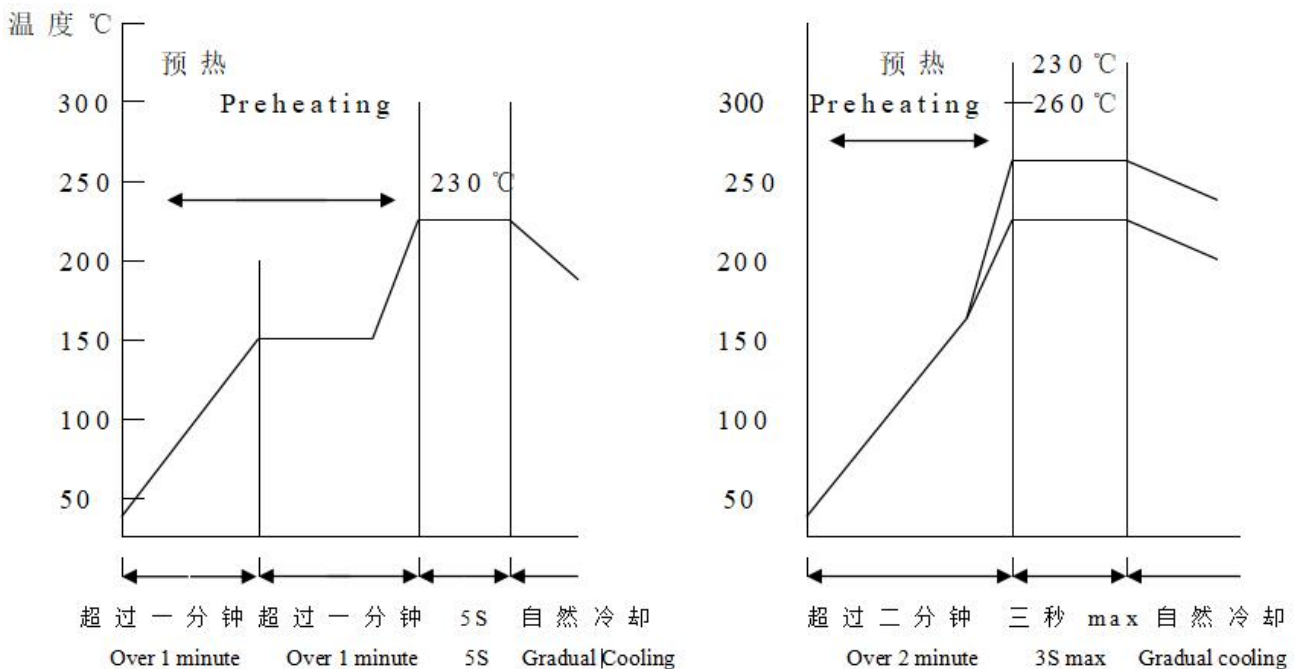
*焊接温度曲线图

The temperature profile in the adjacent graph

回流焊接(Re-flow soldering)

波峰焊接 (Wave soldering)

Temperature



◆ 包装

Packing

| 壳号 | 盘/只 |
|----|------|
| A | 2000 |
| B | 2000 |
| C | 500 |
| D | 500 |
| E | 400 |