

# 规格承认书

## SPECIFICATION

编号(No): .....

日期(Date): .....

客户 (Customer): .....

品名(Product Name): **Chip Varistor for High Surge Current Suppression**

恭成料号 (QAM Part Number) : QV1210H300KT

客户规格(Customer's Part Number): .....

| 客户承认 CUSTOMER CONFIRM |               |             |                  |
|-----------------------|---------------|-------------|------------------|
| 承认章<br>STAMP          | 核准<br>APPROVE | 审核<br>CHECK | 经办人<br>SIGNATURE |
|                       |               |             |                  |

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## 1 外形尺寸和部件组成 Shape & Dimensions and Parts &Components

- 外形尺寸：见图 1 和表 1
- 部件组成：见图 2 和表 2

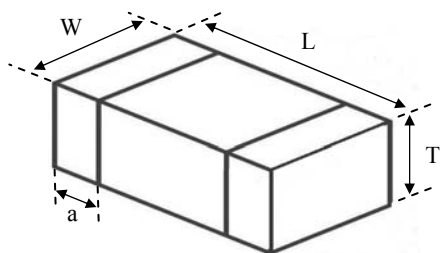


图 1 Fig.1

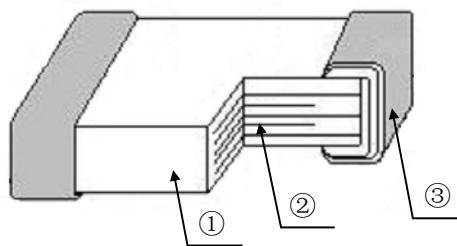


图 2 Fig.2

表 1 (Table 1)

| 类型 Type | L (mm)    | W (mm)    | T (mm)   | a (mm)    |
|---------|-----------|-----------|----------|-----------|
| 1210    | 3.2 ±0.30 | 2.5 ±0.25 | 1.5 Max. | 0.50±0.25 |

表 2 (Table 2)

| 部分 Part      | ①                                                                    | ②                                                          | ③                                                                     |
|--------------|----------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------|
| 组成 Component | 片式压敏电阻用 ZnO 半导体陶瓷<br>ZnO Semiconductor Ceramics for<br>Chip Varistor | 内电极<br>(Ag 或 Ag-Pd)<br>Internal Electrode<br>(Ag or Ag-Pd) | 端电极<br>(Ag/Ni/Sn 三层)<br>Terminal Electrode<br>(Ag/Ni/Sn three layers) |

## 2 产品标识（料号） Product Identification(Part Number)

QV      1210      H      300      K      T  
①          ②          ③          ④          ⑤          ⑥

| ① 类别 Type |                      |
|-----------|----------------------|
| QV        | 片式压敏电阻 Chip Varistor |

| ② 外形尺寸 inch (mm) External Dimension L×W |                     |
|-----------------------------------------|---------------------|
| 1206                                    | 0.12×0.06 (3.2×1.6) |
| 1210                                    | 0.12×0.10 (3.2×2.5) |

| ③ 应用代号 Application Code |                                           |
|-------------------------|-------------------------------------------|
| H                       | 大浪涌电流抑制<br>High Surge Current Suppression |

| ④ 最大直流工作电压<br>Maximum DC Operating Voltage |     |
|--------------------------------------------|-----|
| 090                                        | 9V  |
| 300                                        | 30V |

| ⑤ 压敏电压公差<br>Tolerance of Varistor Voltage |      |
|-------------------------------------------|------|
| K                                         | ±10% |
| L                                         | ±15% |

| ⑥ 包装 Packaging |         |
|----------------|---------|
| T              | 编带 Tape |

### 3 电气特性 Electrical Characteristics

| 型号<br>Part No. | 最大工作电压<br>Max. Working Voltage |                     | 压敏电压<br>Varistor Voltage<br>@1mA DC |                 | 最大限位电压<br>Max. Clamping<br>Voltage<br>(8/20μs) |                    | 峰值电流<br>Peak<br>Current<br>(8/20μs) | 能量耐量<br>Energy<br>(10/1000μs) |
|----------------|--------------------------------|---------------------|-------------------------------------|-----------------|------------------------------------------------|--------------------|-------------------------------------|-------------------------------|
|                | V <sub>DC</sub> (V)            | V <sub>AC</sub> (V) | V <sub>B</sub> (V)                  | ΔV <sub>B</sub> | V <sub>c</sub> (V)                             | I <sub>c</sub> (A) | I <sub>p</sub> (A)                  | W <sub>T</sub> (J)            |
| QV1210H300KT   | 30                             | 25                  | 41                                  | ± 10%           | 70                                             | 2.5                | 400                                 | 1.5                           |

元件工作及储存温度: -55~+125℃

Operating and storage temperature range: -55~+125℃

### 4 检验和测试程序

#### • 测试条件

如无特别规定, 检验和测试的标准大气环境条件如下:

- 环境温度: 20±15℃;
- 相对湿度: 65±20%;
- 气压: 86 kPa~106 kPa

如果对测试结果有异议, 则在下述条件下测试:

- 环境温度: 25±2℃;
- 相对湿度: 65±5%RH;
- 气压: 86kPa ~ 106kPa

#### • 检查设备

外观检查: 20 倍放大镜;

压敏电压测试: 压敏电阻测试仪

### 4 Test and Measurement Procedures

#### • Test Conditions

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

- Ambient Temperature: 20±15℃
- Relative Humidity: 65±20%
- Air Pressure: 86kPa to 106kPa

If any doubt on the results, measurements/tests should be made within the following limits:

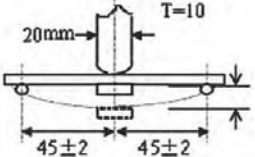
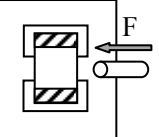
- Ambient Temperature: 25±2℃
- Relative Humidity: 65±5%
- Air Pressure: 86kPa to 106kPa

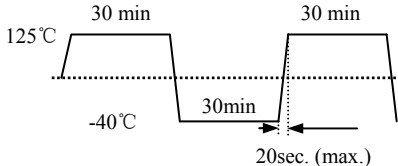
#### • Inspection Equipment

Visual Examination: 20× magnifier

Varistor Voltage test: Varistor teste

### 5 可靠性试验 Reliability Test

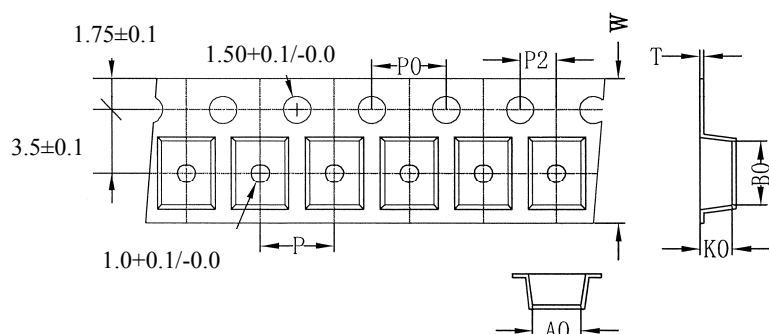
| 序号<br>No | 项目<br>Items                   | 测试条件/方法<br>Test conditions / Methods                                                                                                                    | 要求<br>Requirements                                                                           |
|----------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 1        | 抗弯强度<br>Bending<br>Resistance | 弯曲度 Warp: 2mm<br>速度 Speed<0.5mm/s<br>保持时间 Duration: 10s<br>          | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 试验前后压敏电压变化率 ≤ 5%。<br>  ΔV1mA / V1mA   ≤ 5%. |
| 2        | 端电极强度<br>Terminal<br>Strength | 速度 Speed<0.5mm/s<br>作用力 Apply force: 10N<br>保持时间 Duration: 10±1s<br> | 端电极无脱落。<br>No removal or split of the termination                                            |

|    |                                        |                                                                                                                                                                                                 |                                                                                                                                    |
|----|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 3  | 可焊性<br>Solderability                   | 焊接温度 Solder temperature: $240\pm 5^{\circ}\text{C}$ ;<br>浸渍时间 Dipping Duration: $3\pm 0.3\text{s}$ ;                                                                                            | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 元件端电极的焊锡覆盖率大 90%。<br>Wetting shall exceed 90% coverage.                           |
| 4  | 耐焊性<br>Resistance to<br>Soldering Heat | 焊接温度 Solder temperature: $260\pm 5^{\circ}\text{C}$ ;<br>浸渍时间 Dipping Duration: $5\pm 1\text{s}$ ;                                                                                              | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 试验前后压敏电压变化率 $\leq 10\%$ 。<br>$ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 10\%$ . |
| 5  | 热冲击<br>Thermal Shock                   | 高低温交替冲击 100 次。<br>High and low temperatures Transform for 100 Cycles.<br>                                      | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 试验前后压敏电压变化率 $\leq 10\%$ 。<br>$ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 10\%$ . |
| 6  | 高温存放<br>High Temp.<br>Storage          | 温度 Temperature: $125\pm 2^{\circ}\text{C}$<br>保持时间 Duration: $1000\pm 24\text{ h}$ .                                                                                                            | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 试验前后压敏电压变化率 $\leq 10\%$ 。<br>$ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 10\%$ . |
| 7  | 低温存放<br>Low Temp.<br>Storage           | 温度 Temperature: $-40\pm 2^{\circ}\text{C}$<br>保持时间 Duration: $1000\pm 24\text{ h}$ .                                                                                                            | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 试验前后压敏电压变化率 $\leq 10\%$ 。<br>$ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 10\%$ . |
| 8  | 高温负载<br>High Temp. Load                | 温度 Temperature: $85\pm 2^{\circ}\text{C}$<br>加载电压 Loading Voltage: $V_{\text{DC}}$ .<br>保持时间 Duration: $1000\pm 24\text{ h}$ .                                                                  | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 试验前后压敏电压变化率 $\leq 10\%$ 。<br>$ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 10\%$ . |
| 9  | 湿热负载<br>Damp Heat Load                 | 温度 Temperature: $40\pm 2^{\circ}\text{C}$<br>湿度 Humidity: 90% ~ 95% RH.<br>加载电压 Loading Voltage: $V_{\text{DC}}$ .<br>保持时间 Duration: $500\pm 12\text{ h}$ .                                     | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 试验前后压敏电压变化率 $\leq 10\%$ 。<br>$ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 10\%$ . |
| 10 | 最大浪涌电流<br>Maximum Surge<br>Current     | 脉冲波形 Pulse waveform: 8/20 us<br>冲击次数: 正反各 1 次<br>Number of hit: each 1 time of +/- polarity<br>冲击电流: 最大浪涌电流<br>Applied current: maximum surge current ( $I_p$ )                                 | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 试验前后压敏电压变化率 $\leq 10\%$ 。<br>$ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 10\%$ . |
| 11 | 最大浪涌能量<br>Maximum Surge<br>Energy      | 脉冲波形 Pulse waveform: 10/1000 us<br>冲击次数: 正反各 1 次<br>Number of hit: each 1 time of +/- polarity<br>冲击电流: 最大浪涌能量( $W_{\text{max}}$ )<br>Applied current: maximum surge energy( $W_{\text{max}}$ ) | ① 无可见机械损伤;<br>No visible mechanical damage.<br>② 试验前后压敏电压变化率 $\leq 10\%$ 。<br>$ \Delta V_{1\text{mA}}/V_{1\text{mA}}  \leq 10\%$ . |

## 6 编带 Taping

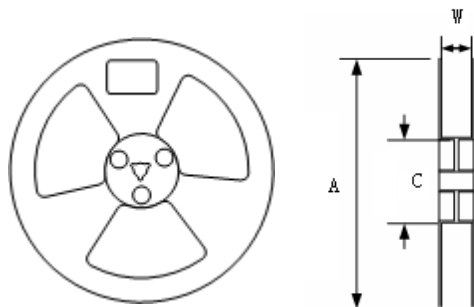
### (1) 载带尺寸 (单位: mm)

### Carrier tape dimensions. (Unit: mm)



| 类型 Type | A0<br>(±0.2) | B0<br>(±0.2) | K0<br>(±0.2) | T<br>(±0.05) | W<br>(±0.2) | P0<br>(±0.2) | P<br>(±0.2) | P2<br>(±0.2) |
|---------|--------------|--------------|--------------|--------------|-------------|--------------|-------------|--------------|
| 1210    | 2.8          | 3.5          | 1.5          | 0.22         | 8.0         | 4.0          | 4.0         | 2.0          |

### (2) 卷盘尺寸 Taping reel dimensions



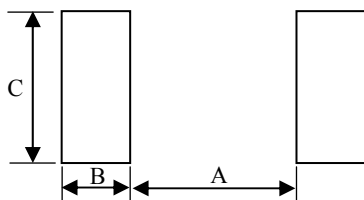
| 类型<br>Type | 规格<br>Spec. | 尺寸 Dimensions(mm) |              |      |
|------------|-------------|-------------------|--------------|------|
|            |             | A                 | W            | C    |
| 1210       | 7"          | 178±2             | 8.4+2.0/-0.0 | 58±2 |

### (3) 包装数量 Packaging quantity

| 类型<br>Type | 载带<br>Tape        | 每盘数量 (片)<br>Quantity(pcs/reel) |
|------------|-------------------|--------------------------------|
| 1210       | 塑载带 Embossed Tape | 3K                             |

## 7 焊接建议 Soldering Recommendation

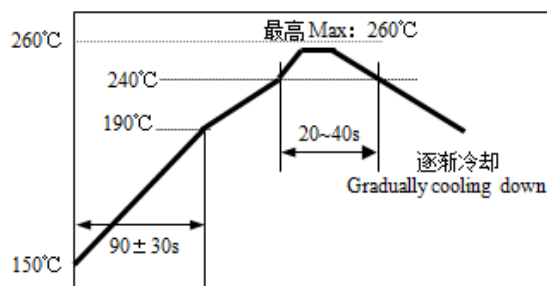
### (1) 建议基板 Recommended Land pattern



| 类型 Type | A (mm)  | B (mm)  | C (mm)  |
|---------|---------|---------|---------|
| 1210    | 1.8~2.5 | 1.3~2.0 | 2.2~3.0 |

## (2) 建议焊接曲线 Recommended Soldering Profile

- 无铅锡膏: Sn/Ag/Cu (96.5/3.0/0.5)
- Pb Free Solder Paste: Sn/Ag/Cu (96.5/3.0/0.5).
- 最高温度时最长焊接时间: 10s
- Max time at max temp: 10sec.
- 允许回流焊次数: 最多 2 次
- Allowed Reflow time: 2x Max



## 8 注意事项 Notes & Warnings

- 储存**
  - 初始包装贮存温度:  $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ 。
  - 相对湿度:  $\leq 70\% \text{RH}$ 。
  - 远离腐蚀性气体和阳光。
  - 储存期: 12 个月。
- Storage**
  - Storage temperature in original packaging:  $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$ .
  - Relative Humidity:  $\leq 70\% \text{RH}$ .
  - Keep away from corrosive atmosphere and sunlight.
  - Period of Storage: 12 Months.