

# 深圳市华微讯半导体有限公司

## 承 认 书

### SPECIFICATION FOR APPROVAL

|                               |           |
|-------------------------------|-----------|
| 客户名称<br>Customer name         |           |
| 客户料号<br>Customer material No. |           |
| 产品名称<br>Product name          | PTC自恢复保险丝 |
| 产品型号/规格<br>specification      |           |
| 送样日期<br>Deliver date          |           |

#### 本司确认（HWX APPROVAL）

|                  |                    |                |                 |
|------------------|--------------------|----------------|-----------------|
| 检验<br>Inspection | 校对<br>Proofreading | 批准<br>Approval | 签章<br>Signature |
| 张淑敏              | 张伟杰                |                |                 |

#### 客户确认（CUSTOMER APPROVAL）

|                  |                    |                |                 |
|------------------|--------------------|----------------|-----------------|
| 检验<br>Inspection | 校对<br>Proofreading | 批准<br>Approval | 签章<br>Signature |
|                  |                    |                |                 |

确认结果Verify the results:

☐ 合格Qualified

☐ 不合格Unqualified

☐ 其他Other

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## 1、Description

|      |   |     |   |             |   |   |   |              |   |   |   |      |   |   |   |
|------|---|-----|---|-------------|---|---|---|--------------|---|---|---|------|---|---|---|
| H    | S | M   | D | 1           | 8 | 1 | 2 | —            | 2 | 5 | 0 | —    | 1 | 2 | V |
| Logo |   | SMD |   | 1812 Series |   |   |   | Hold Current |   |   |   | Vmax |   |   |   |

### Solderability:

Meets EIA specification RS186-9E and ANSI/J-STD-002 Category 3



| A    |      | B    |      | C    |      | D    |      | E    | Marking  |
|------|------|------|------|------|------|------|------|------|----------|
| MIN  | MAX  | MIN  | MAX  | MIN  | MAX  | MIN  | MAX  | MIN  |          |
| 4.37 | 4.73 | 3.07 | 3.41 | 0.35 | 1.50 | 0.30 | 1.20 | 0.20 | D250/D25 |

## 2、Electrical performance

| Part Number  | Vmax | I <sub>max</sub> | I <sub>hold</sub> | I <sub>trip</sub> | P <sub>dmax</sub> | Max Time T <sub>rip</sub> |      | Resistance       |                   |
|--------------|------|------------------|-------------------|-------------------|-------------------|---------------------------|------|------------------|-------------------|
|              | (V)  | (A)              | (A)               | (A)               | (W)               | (A)                       | (s)  | R <sub>min</sub> | R <sub>1max</sub> |
|              |      |                  |                   |                   |                   |                           |      | (Ω)              | (Ω)               |
| HSMD1812-250 | 12   | 100              | 2.50              | 5.00              | 1.0               | 8.00                      | 5.00 | 0.015            | 0.075             |

**I<sub>h</sub>:** Maximum operating current of the HPTC at an ambient temperature of 25°C

**I<sub>t</sub>:** The HPTC initiated the minimum current for protection at an ambient temperature of 25°C

**V<sub>max</sub>:** Maximum operating voltage of the HPTC

**I<sub>max</sub>:** Maximum current that the HPTC can withstand

**R<sub>min</sub>:** Minimum resistance at 25°C of stationary air

**R<sub>1max</sub>:** Maximum resistance of product

## 3、Table of Operating Current with Temperature (A) (for reference only)

| Model        | Ambient Operating Temperature |       |      |      |      |      |      |      |      |
|--------------|-------------------------------|-------|------|------|------|------|------|------|------|
|              | -40°C                         | -20°C | 0°C  | 25°C | 40°C | 50°C | 60°C | 70°C | 85°C |
| HSMD1812-250 | 3.27                          | 3.04  | 2.88 | 2.50 | 2.21 | 2.07 | 1.92 | 1.78 | 1.57 |

#### 4、 Test Procedures And Requirements

| test                         | Test Condition                                                   | Accept/Reject Criteria               |
|------------------------------|------------------------------------------------------------------|--------------------------------------|
| Resistance                   | In still air @ 25°C                                              | $R_{min} \leq R \leq R_{max}$        |
| Time to Trip                 | Specified current, $V_{max}$ , 25°C                              | $T \leq \text{maximum Time to Trip}$ |
| Trip Cycle Life              | $V_{max}$ , $I_{max}$ , 100cycles                                | No arcing or burning                 |
| Trip Endurance               | $V_{max}$ , 1 hours                                              | No arcing or burning                 |
| Terminal materials :         | Tin-Plated Nickle-copper                                         |                                      |
| Soldering zone               | Meets EIA specification RS 186-9E and ANSI/J-STD-002 Category 3. |                                      |
| Environmental Specifications |                                                                  |                                      |
| Passive aging                | 85°C, 1000hours                                                  | $\pm 10\%$                           |
| Humidity aging               | 85°C/85%RH. 1000 hours                                           | $\pm 5\%$                            |
| Thermal shock                | MIL-STD-202, Method 107G +85°C/-40°C, 20times                    | -30% typical resistance change       |
| Solvent Resistance           | MIL-STD-202, Method 215                                          | No change                            |
| Vibration                    | ML-STD-883C, Test Condition A                                    | No chage                             |

#### 5、 Soldering parameters



| Profile Feature                                      |                                  |                   |
|------------------------------------------------------|----------------------------------|-------------------|
| Average Ramp-Up Rate ( $T_{s(max)}$ to $T_P$ )       |                                  | 3°C/second max    |
| Pre Heat:                                            | Temperature Min ( $T_{s(min)}$ ) | 150°C             |
|                                                      | Temperature Max ( $T_{s(max)}$ ) | 200°C             |
|                                                      | Time (Min to Max) ( $t_s$ )      | 60 – 180 secs     |
| Time Maintained Above:                               | Temperature ( $T_L$ )            | 217°C             |
|                                                      | Temperature ( $t_L$ )            | 60 – 150 seconds  |
| Peak / Classification Temperature ( $T_P$ )          |                                  | 260 $^{+0/-5}$ °C |
| Time within 5°C of actual peak Temperature ( $t_p$ ) |                                  | 20 – 40 seconds   |
| Ramp-down Rate                                       |                                  | 6°C/second max    |
| Time 25°C to peak Temperature ( $T_P$ )              |                                  | 8 minutes Max.    |

- ◆ All temperature refer to topside of the package, measured on the package body surface
- ◆ If reflow temperature exceeds the recommended profile, devices may not meet the performance requirements
- ◆ Recommended reflow methods: IR, vapor phase oven, hot air oven, N2 environment for lead
- ◆ Recommended maximum paste thickness is 0.25mm (0.010inch)
- ◆ Devices can be cleaned using standard industry methods and solvents

## 6、 Package Information

### storage condition:

**Storage conditions: 30° C max, 60% R.H.Devices may not meet specified performance if storage conditions are exceeded.**

|         |               |
|---------|---------------|
| W       | 12.0±0.10     |
| F       | 5.50±0.05     |
| E1      | 1.75±0.10     |
| D0      | 1.55±0.05     |
| D1      | 1.50 min      |
| P0      | 4.0±0.10      |
| P1      | 8.0±0.10      |
| P2      | 2.0±0.05      |
| A0      | 3.58±0.10     |
| B0      | 4.93±0.10     |
| T       | 0.25±0.05     |
| K0      | 0.87±0.10     |
| Leader  | 390mm         |
| Trailer | 160mm         |
| Q'ty    | 1,500pcs/Reel |

| REEL DIMENSIONS: EIA-481-1 (mm) |           |
|---------------------------------|-----------|
| C                               | Ø178±1.0  |
| D                               | Ø60.2±0.5 |
| W                               | 9.0±1.5   |
| H                               | 11.0±0.5  |



## 7、 WARNING

- 1、 Use PPTC exceed by the maximum rating and improper use may result in device damage and possible electrical arcing and flame.
- 2、 PPTC are designed for protection against over current or temperature fault conditions and should not be used when repeated fault conditions or prolonged trip events are anticipated.
- 3、 Device performance can be impacted negatively if devices are handled in a manner inconsistent with recommended electronic, thermal, and mechanical procedures for electronic components.
- 4、 Use PPTC with a large inductance in circuit will generate a circuit voltage above the rated voltage of the PPTC.
- 5、 Avoid impact PPTC device its thermal expansion like placed under pressure or installed in limited space.
- 6、 If any quality problems caused by improper use mentioned above,our company is not responsible.