

Report No.: WeEnNC2023070003

# 检测报告

## Test Report

|                    |                 |
|--------------------|-----------------|
| 委托方                | 江苏晟驰微电子有限公司     |
| Name of product    |                 |
| 地址                 | 海安经济开发区康华路 55 号 |
| Address            |                 |
| 产品型号               | TPSMD40CA       |
| Part No.           |                 |
| 产品批号               | HJK220721-008   |
| Lot No.            |                 |
| 封装形式               | SMD             |
| Package Type       |                 |
| 收样日期               | 2022/8/22       |
| Receive Data       |                 |
| 检测开始日期             | 2022/8/24       |
| Testing Start Date |                 |
| 检测完成日期             | 2022/10/17      |
| Test End           |                 |



编制：赵良  
Prepared By

审核：刘佳  
Checked by

批准：李西  
Approved by

日期：2023.7.5  
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日期：2023.7.5  
Data

日期：2023.7.7  
Data

瑞能半导体科技股份有限公司实验中心

WeEn Semiconductors Technology Co., Ltd. Experiment Center

地址：江西省南昌市南昌县小蓝经济开发区尚荣医疗健康产业园 C4

Add: Building C4, Shangrong Medical Health Economic Industrial Park, Xiaolan Economic Development Zone, Nanchang, Nanchang, Jiangxi, China

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The results only apply to the device under test

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If the customer has any objection to the test report, it shall raise it in writing to the test Center within 15 days after receiving the report.

7. 带有认可标志的检测报告，其检测项目已被相应认可机构认可，带\*标记项目为非认证项目。

If the test report was marked with certification logo, its test items have been certificated by corresponding institution, the items marked “\*” are not the certificated ones.

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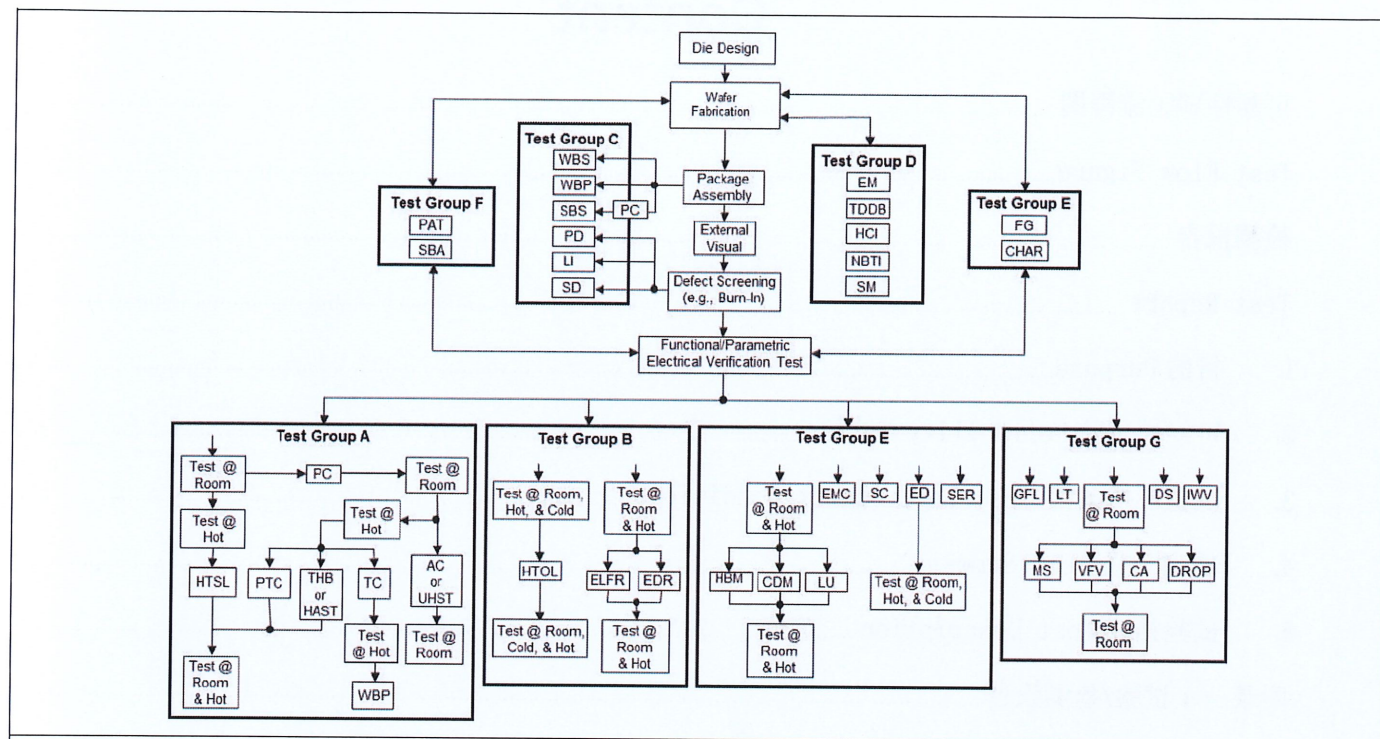
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## 可靠性试验流程图

Test Flow Figure



## 检测报告

### Test Report

#### 1. 目的 Purpose

产品可靠性认证。

Production Reliability qualification.

#### 2. 可靠性试验 Reliability Test

##### 1.1 样品信息 Sample Information

| 产品型号<br>Part No. | 产品批号<br>Lot No. | 封装形式<br>Package Type | 试验数量<br>Sample size | 试验编号<br>Lab nr |
|------------------|-----------------|----------------------|---------------------|----------------|
| TPSMD40CA        | HJK220721-008   | SMD                  | 242PCS              | W223001C-3     |

#### 3. 试验环境条件 Test Environment Conditions

温度 Temp.: 10°C ~ 30°C;

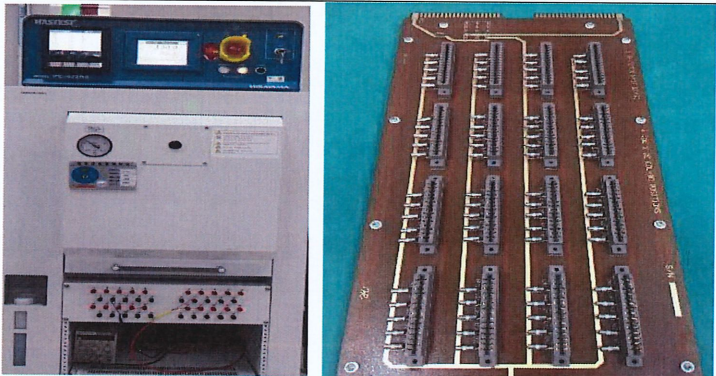
湿度 Humi.: 30%RH ~ 75%RH

#### 4. 试验汇总 Test Summary

| 试验项目<br>Test Items | 参考标准<br>Reference standard                             | 试验条件<br>Test condition             | 数量/<br>批<br>SS/lot | 批次<br>Lots    | 总数量<br>Total | 判定标准<br>Acc/Re | 试验结果<br>Test result | 备注<br>Remark |
|--------------------|--------------------------------------------------------|------------------------------------|--------------------|---------------|--------------|----------------|---------------------|--------------|
| 高速老化寿命试验 HAST      | JESD22-A110                                            | 130°C/85%RH<br>VD=42V 96hrs        | 80 pcs             | HJK220711-013 | 80           | 0 Fail         | PASS                |              |
| 稳态湿热 H3TRB         | JESD22-A101                                            | 85°C/85%RH<br>VD=100V, 1000hrs     | 80 pcs             | HJK220711-013 | 80           | 0 Fail         | PASS                |              |
| 耐焊接热 RSH           | JESD22-A111                                            | 260°C/10S                          | 30 pcs             | HJK220711-013 | 30           | 0 Fail         | PASS                |              |
| 可焊性 SD             | EIA/IPC/JEDEC<br>J-STD-002                             | 245°C/5S                           | 30 pcs             | HJK220711-013 | 30           | 0 Fail         | PASS                |              |
| 湿气敏感等级试验 MSL1      | J-STD-020                                              | 85°C/85%RH<br>168hrs<br>3 x reflow | 22 pcs             | HJK220711-013 | 22           | 0 Fail         | PASS                |              |
| 电参数测试 ATE          | GB/T 4023-201<br>GB/T 15291-<br>2015 GB/T<br>4587-1994 | Per users'<br>SPEC                 | A11                | A11           | A11          | 0 Fail         | PASS                |              |

## 5. 试验描述 Test Description

### 5.1 高速老化寿命试验 (HAST) High Accelerated Temperature and Humidity

|                                   |                                                                                                                                                                               |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 测试项目<br>Test Item                 | 高速老化寿命试验(HAST)<br>High Accelerated Temperature and Humidity                                                                                                                   |
| 测试参考标准<br>Test reference standard | JESD22-A110E.01 : MAY 2021                                                                                                                                                    |
| 测试日期<br>Test Data                 | 2022/9/5-2022/9/9                                                                                                                                                             |
| 样本数量<br>Quantities of Specimens   | 80 pcs                                                                                                                                                                        |
| 测试条件<br>Test Condition            | 1) Preconditioning test is performed before HAST.<br>2) Biased Voltage: 42V<br>3) Temp : 130C°<br>4) Relative Humidity: 85%RH,Absolute pressure: 17.7 psi<br>5) Time 96 hours |
| 测试图片<br>Test photos               |                                                                                           |

### 测试结果 Test result

|                           |                                 |              |
|---------------------------|---------------------------------|--------------|
| 检查项目<br>Check Item        | 样本数量<br>Quantities of Specimens | 结果<br>Result |
| 外观检查<br>Visual inspection | ---                             | ---          |
| 电特性测试<br>Electrical Test  | 80                              | Pass         |

## 5.2 稳态湿热(H3TRB) Steady-State Temperature-Humidity

|                                   |                                                                                                                                                                                                     |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 测试项目<br>Test Item                 | 稳态湿热 (H3TRB)<br>Steady-State Temperature-Humidity (H3TRB)                                                                                                                                           |
| 测试参考标准<br>Test reference standard | JESD22-A101D.01 : JAN 2021                                                                                                                                                                          |
| 测试日期<br>Test Data                 | 2022/9/5-2022/10/17                                                                                                                                                                                 |
| 样本数量<br>Quantities of Specimens   | 80 pcs                                                                                                                                                                                              |
| 测试条件<br>Test Condition            | 1) Preconditioning test is performed before H3TRB<br>2) Temp : 85C°<br>3) Relative Humidity: 85%RH<br>4) Biased Voltage: 100V<br>5) Time 1000 hours<br>6) Readpoint: 168 hours,500 hours,1000 hours |
| 测试图片<br>Test photos               |                             |

## 测试结果 Test result

|                           |                                 |              |
|---------------------------|---------------------------------|--------------|
| 检查项目<br>Check Item        | 样本数量<br>Quantities of Specimens | 结果<br>Result |
| 外观检查<br>Visual inspection | ---                             | ---          |
| 电特性测试<br>Electrical Test  | 80                              | Pass         |

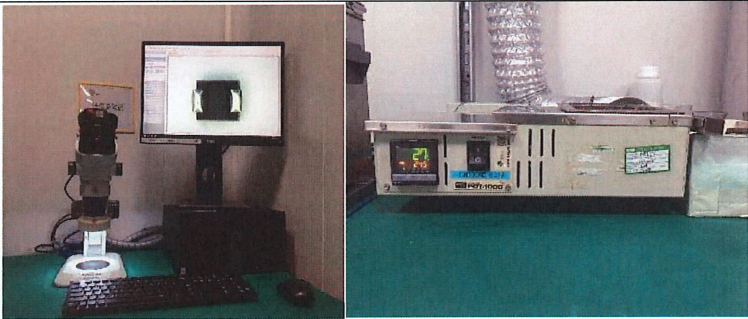
### 5.3 耐焊接热(RSH) Solder Heat

|                                   |                                                                                                                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 测试项目<br>Test Item                 | 耐焊接热 (RSH)<br>Solder Heat (RSH)                                                                                                                                                   |
| 测试参考标准<br>Test reference standard | JESD22-A111B MARCH 2018                                                                                                                                                           |
| 测试日期<br>Test Data                 | 2022/9/3-2022/9/5                                                                                                                                                                 |
| 样本数量<br>Quantities of Specimens   | 30 pcs                                                                                                                                                                            |
| 测试条件<br>Test Condition            | 1) High temperature baking conditions : Temp 125C° Time 24hrs<br>2) hygroscopic conditions : Temp 85C° Humidity 85% Time 168hrs<br>3) On tin requirements : Temp 260C° Time 10sec |
| 测试图片<br>Test photos               |              |

### 测试结果 Test result

|                           |                                 |              |
|---------------------------|---------------------------------|--------------|
| 检查项目<br>Check Item        | 样本数量<br>Quantities of Specimens | 结果<br>Result |
| 外观检查<br>Visual inspection | 30                              | Pass         |
| 电特性测试<br>Electrical Test  | 30                              | Pass         |

#### 5.4 可焊性试验(SD) Solderability

|                                   |                                                                                                                                                                                                                                                         |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 测试项目<br>Test Item                 | 可焊性试验<br>Solderability                                                                                                                                                                                                                                  |
| 测试参考标准<br>Test reference standard | EIA/IPC/JEDEC J-STD-002E NOVEMBER 2017                                                                                                                                                                                                                  |
| 测试日期<br>Test Data                 | 2022/9/19-2022/9/23                                                                                                                                                                                                                                     |
| 样本数量<br>Quantities of Specimens   | 30 pcs                                                                                                                                                                                                                                                  |
| 测试条件<br>Test Condition            | 1) Visual inspection 30 pcs<br>2) Solderability : 0 hrs 10 pcs<br>3) High temperature aging conditions : Temp 155C° Time 4hrs 10 pcs<br>4) Steam aging conditions : Temp 93C° Time 8 hrs 10 pcs<br>5) On tin requirements : Temp 245C° Time 5sec/30 pcs |
| 测试图片<br>Test photos               |                                                                                                                                                                     |

#### 测试结果 Test result

|                           |                                 |              |
|---------------------------|---------------------------------|--------------|
| 检查项目<br>Check Item        | 样本数量<br>Quantities of Specimens | 结果<br>Result |
| 外观检查<br>Visual inspection | 30                              | Pass         |
| 电特性测试<br>Electrical Test  | ---                             | ---          |

## 5.5 湿气敏感度等级试验(MSL) Moisture sensitivity level test

|                                   |                                                                                                                                                                                                                                                                         |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 测试项目<br>Test Item                 | 湿气敏感度等级试验 (MSL)<br>Moisture sensitivity level test                                                                                                                                                                                                                      |
| 测试参考标准<br>Test reference standard | IPC/JEDEC J-STD-020E December 2014                                                                                                                                                                                                                                      |
| 测试日期<br>Test Data                 | 2022/8/27-2022/9/8                                                                                                                                                                                                                                                      |
| 样本数量<br>Quantities of Specimens   | 22 pcs                                                                                                                                                                                                                                                                  |
| 测试条件<br>Test Condition            | 1) C-Sam and Electrical parameter testing<br>2) Visual inspection<br>3) Baking temperature : Temp 125C°, Time 24hrs<br>4) Moisture permeation : Temp 85C° Humidity 85%, Time 168hrs<br>5) 3Xreflow<br>6) Visual inspection<br>7) Electrical parameter testing and C-Sam |
| 测试图片<br>Test photos               |                                                                                                                                                                                     |

## 测试结果 Test result

|                           |                                 |              |
|---------------------------|---------------------------------|--------------|
| 检查项目<br>Check Item        | 样本数量<br>Quantities of Specimens | 结果<br>Result |
| 外观检查<br>Visual inspection | 22                              | Pass         |
| 电特性测试<br>Electrical Test  | 22                              | Pass         |

## 附录一：试验/检测设备

## Appendix One: Test/Inspection Equipment

| 型号 Type            | 名称 Name    | 编号 No.         | 计量有效期<br>Calibration Validity |
|--------------------|------------|----------------|-------------------------------|
| HIRAYAMA PC-422R8  | 高加速寿命试验箱   | UH01#          | 2023-6-6                      |
| BTR-E671           | 高温高湿反偏试验系统 | RB04#          | 2023-6-6                      |
| VOTSCH C4-180 Pro  | 气候试验箱      | RB06#          | 2023-6-6                      |
| BTU PYRAMAX125N    | 回流焊炉       | Reflow01#      | 2023-3-25                     |
| GOOT POT-100C      | 熔锡炉        | SH01#          | 2023-6-6                      |
| SONOSCAN D9600     | 超声波扫描仪     | SAM01#         | /                             |
| TESEC 3620-TT      | 电参数测试机     | Tester01#      | 2023-6-24                     |
| OLYMPUS Microscope | 显微镜        | Microscope 01# | /                             |

——The End——