# PRODUCT / PROCESS CHANGE NOTIFICATION

| 1. PCN basic data | |
|---|---|
| 1.1 Company | STMicroelectronics International N.V |
| 1.2 PCN No. | EMBEDDED PROCESSING/26/16068 |
| 1.3 Title of PCN | ASE Kaohsiung (Taiwan) LQFP 14x14 package Copper Palladium bonding wire introduction on STM32G47x and STM32G48x listed products. |
| 1.4 Product Category | STM32G471x, STM32G473x, STM32G474x, STM32G483x and STM32G484x. |
| 1.5 Issue date | 2026-06-16 |

| 2. PCN Team | |
|---|---|
| 2.1 Contact supplier | |
| 2.1.1 Name | |
| 2.1.2 Phone | |
| 2.1.3 Email | |
| 2.2 Change responsibility | |
| 2.2.1 Product Manager | |
| 2.1.2 Marketing Manager | |
| 2.1.3 Quality Manager | |

| 3. Change | | |
|---|---|---|
| 3.1 Category | 3.2 Type of change | 3.3 Manufacturing Location |
| Materials | Direct Material: Bond Wire - Metallurgy (metallic composition/ raw material) | ASE KaoHsiung (Taiwan) |

| 4. Description of change | | |
|---|---|---|
| | Old | New |
| 4.1 Description | Current Wire bonding material:<br>- Amkor ATP (Philippines) gold wire<br>- ASE KaoHsiung (Taiwan) gold wire | Current Wire bonding material:<br>- Amkor ATP (Philippines) gold wire<br>- ASE KaoHsiung (Taiwan) gold wire<br>New Wire bonding material :<br>- ASE KaoHsiung (Taiwan) copper palladium wire |
| 4.2 Anticipated Impact on form,fit, function, quality, reliability or processability? | no impact on form, Fit, Function | |

| 5. Reason / motivation for change | |
|---|---|
| 5.1 Motivation | To improve service |
| 5.2 Customer Benefit | SERVICE IMPROVEMENT |

| 6. Marking of parts / traceability of change | |
|---|---|
| 6.1 Description | Traceability ensured by ST Internal tools |

| 7. Timing / schedule | |
|---|---|
| 7.1 Date of qualification results | 2026-04-30 |
| 7.2 Intended start of delivery | 2026-07-10 |
| 7.3 Qualification sample available? | Upon Request |

| 8. Qualification / Validation | | | |
|---|---|---|---|
| 8.1 Description | 16068 MDG-GPM-RER2304-PCN16068 V5.0-ASE LQFP7x7 to 20x20 CuPd-Rel Eval Report.pdf | | |
| 8.2 Qualification report and qualification results | Available (see attachment) | Issue Date | 2026-06-16 |

| 9. Attachments (additional documentations) |
|---|
| 16068 Public product.pdf<br>16068 MDG-GPM-RER2304-PCN16068 V5.0-ASE LQFP7x7 to 20x20 CuPd-Rel Eval Report.pdf<br>16068 _Additional information.pdf |

| 10. Affected parts | | |
|---|---|---|
| 10. 1 Current | | 10.2 New (if applicable) |
| 10.1.1 Customer Part No | 10.1.2 Supplier Part No | 10.1.2 Supplier Part No |
| | STM32G474QET3 | |

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

Subject to any contractual arrangement in force with you or to any industry standard implemented by us, STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

## Public Products List

Publict Products are off the shelf products. They are not dedicated to specific customers, they are available through ST Sales team, or Distributors, and visible on ST.com

***PCN Title :*** ASE Kaohsiung (Taiwan) LQFP 14x14 package Copper Palladium bonding wire introduction on STM32G47x and STM32G48x listed products.
***PCN Reference :*** EMBEDDED PROCESSING/26/16068

***Subject :*** Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change.

| | | |
|---|---|---|
| STM32G473QCT3TR | STM32G484QET3 | STM32G474QBT6 |
| STM32G473QCT3 | STM32G473QET6TR | STM32G473QET6 |
| STM32G473QCT6 | STM32G483QET6 | STM32G484QET6 |
| STM32G474QCT6 | STM32G474QET6TR | STM32G473QBT6 |
| STM32G474QET6 | STM32G484QET6TR | |

**IMPORTANT NOTICE – PLEASE READ CAREFULLY**

Subject to any contractual arrangement in force with you or to any industry standard implemented by us, STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

life.augmented

# PRODUCT/PROCESS CHANGE NOTIFICATION PCN16068 – Additional information

# ASE Kaohsiung (Taiwan) LQFP 14x14 package Copper Palladium bonding wire introduction on STM32G47x and STM32G48x listed products.

## MRDF – General Purpose and Automotive Microcontrollers (GPAM)

**What are the changes?**

Introduction of an additional assembly line to continue our path through the deployment of our Low-cost wire strategy to secure our supply chain.

**Table_1: Bill of material change description for LQFP 128L 14x14 package**

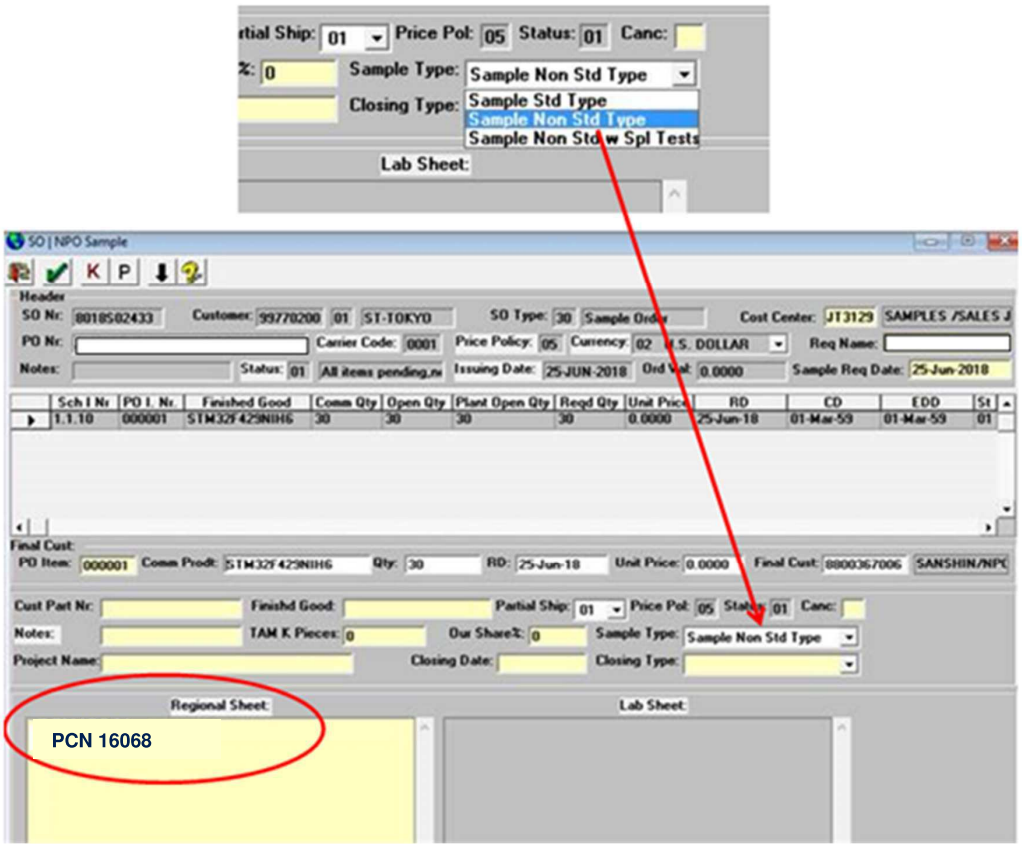
| LQFP 128L 14x14 | Existing back-End assembly lines | | New Added line |
|---|---|---|---|
| | **Amkor ATP (Philippines)** | **ASE Kaohsiung (Taiwan)** | |
| Molding Compound (2) | Sumitomo G631HQ | Sumitomo G631SH | |
| Die attach Glue | Evertech AP4200 | SUMITOMO CRM 1076WA | HITACHI EN4900G |
| Bonding Wire | Gold 0.8 Mils | | CuPd 0.8 Mils |
| Leadframe | Copper, post-plated | | |
| Leadfinishing (1) | Pure Tin (e3) | | |
| Marking composition | 2D Marking | | |

(1) Lead color and surface finishing may slightly vary depending on lead finishing.
(2) Package darkness or chromaticity may change depending on molding compound.
Pin1 identifier may change in terms of size and positioning however remaining near pin1's edge.
Marking position and size may be different upon assembly site, without any loss of information.

**How to order samples?**

For all samples request linked to this PCN, please:

- place a **Non-standard** sample order (choose Sample Non Std Type from pull down menu).
- insert the PCN number "**PCN16068**" into the NPO Electronic Sheet/**Regional Sheet.**
- request sample(s) through Notice tool, indicating a single Commercial Product for each request.



IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics International NV and its affiliates (“ST”) reserve the right to make changes corrections, enhancements, modifications, and improvements to ST products and/or to this document any time without notice. This document is provided solely for the purpose of obtaining general information relating to an ST product. Accordingly, you hereby agree to make use of this document solely for the purpose of obtaining general information relating to the ST product. You further acknowledge and agree that this document may not be used in or in connection with any legal or administrative proceeding in any court, arbitration, agency, commission or other tribunal or in connection with any action, cause of action, litigation, claim, allegation, demand or dispute of any kind. You further acknowledge and agree that this document shall not be construed as an admission, acknowledgement or evidence of any kind, including, without limitation, as to the liability, fault or responsibility whatsoever of ST or any of its affiliates, or as to the accuracy or validity of the information contained herein, or concerning any alleged product issue, failure, or defect. ST does not promise that this document is accurate or error free and specifically disclaims all warranties, express or implied, as to the accuracy of the information contained herein. Accordingly, you agree that in no event will ST or its affiliates be liable to you for any direct, indirect, consequential, exemplary, incidental, punitive, or other damages, including lost profits, arising from or relating to your reliance upon or use of this document.

Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement, including, without limitation, the warranty provisions thereunder.

In that respect please note that ST products are not designed for use in some specific applications or environments described in above mentioned terms and conditions.
Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.
Information furnished is believed to be accurate and reliable. However, ST assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license, express or implied, to any intellectual property right is granted by ST herein.
Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.
ST and ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously in any prior version of this document.

# Reliability Evaluation Report

# MDG-GPM-RER2304

## ASEKH LQFP7x7 to LQFP20x20 Copper Palladium wire

| General Information | |
|---|---|
| Commercial Product | STM32L433VCT6, STM32H723ZGT6<br>STM32F427VIT6, STM32F217ZGT6<br>STM32L552VET6, STM32F767ZIT6<br>STM32G030C8T6, STM32U535RET6<br>STM32H533ZET6, STM32H742VGT6<br>STM32G474QET6 |
| Product Line | 435X66, 483X66, 419X66, 411X66<br>472X66, 451X66, 466X66, 455X66,<br>478X66, 450X66, 469X66 |
| Die revision | 435 cut1.1, 483 cut1.1, 419 cut2.2<br>411 cut2.4, 472 cut 2.1, 451 cut1.1<br>466 cut1.2, 455 cut1.1, 478 cut1.0,<br>450 cut2.2, 469 cut2.3 |
| Product Description | STM32L4, STM32H7, STM32F4<br>STM32F2, STM32L5, STM32F7<br>STM32G0, STM32U5, STM32H5,<br>STM32H7, STMG4 |
| Package | LQFP 100 14x14x1.4<br>LQFP 144 20X20X1.4<br>LQFP 48 7x7x1.4<br>LQFP 64 10x10x1.4<br>LQFP 128 14x14x1.4 |
| Silicon Technology | TN090, CMOSM40, CMOSM10,<br>TN040, CMOSE40 |
| Division | MDRF-GPAM |

| Traceability | |
|---|---|
| Diffusion Plant | TSMC Fab14 / Crolles 300/<br>HHGRACE |
| Assembly Plant | ASEKH - TAIWAN |

| Reliability Assessment | |
|---|---|
| Pass | X |
| Fail | |

| Release | Date | Author | Function |
|---|---|---|---|
| 1.0 | 12/06/2023 | Gabin BOSCO | GPAM BE Q&R |
| 2.0 | 25/08/2023 | Berengere ROUTIER-SCAPPUCCI | GPAM BE Q&R |
| 3.0 | 05/07/2024 | Celine NAVARRO | GPAM BE Q&R |
| 4.0 | 28/10/2025 | Celine NAVARRO | GPAM BE Q&R |
| 4.1 | 21/01/2026 | Celine NAVARRO | GPAM BE Q&R |
| 4.2 | 04/03/2026 | Celine NAVARRO | GPAM BE Q&R |
| 5.0 | 16/04/2026 | Celine NAVARRO | GPAM BE Q&R |

## Approved by:

| Approval list V1.0 | | | |
|---|---|---|---|
| **Name** | **Function** | **Location** | **Date** |
| Berengere ROUTIER-SCAPPUCCI | GPAM BE Q&R Manager | ROUSSET | 16/06/2023 |
| Pascal NARCHE | Subgroup Quality Manager | ROUSSET | 19/06/2023 |
| **Approval list V2.0** | | | |
| Pascal NARCHE | Subgroup Quality Manager | ROUSSET | 25/08/2023 |
| **Approval list V3.0** | | | |
| Berengere ROUTIER-SCAPPUCCI | GPAM BE Q&R Manager | ROUSSET | 12/07/2024 |
| **Approval list V4.0** | | | |
| Berengere ROUTIER-SCAPPUCCI | GPAM BE Q&R Manager | ROUSSET | 29/10/2025 |
| **Approval list V4.1** | | | |
| Berengere ROUTIER-SCAPPUCCI | GPAM BE Q&R Manager | ROUSSET | 21/01/2026 |
| **Approval list V4.2** | | | |
| Berengere ROUTIER-SCAPPUCCI | GPAM BE Q&R Manager | ROUSSET | 04/03/2026 |
| **Approval list V5.0** | | | |
| Berengere ROUTIER-SCAPPUCCI | GPAM BE Q&R Manager | ROUSSET | 30/04/2026 |

This report is a summary of the reliability trials performed in good faith by STMicroelectronics. This report does not imply for STMicroelectronics expressly or implicitly any contractual obligations other than as set forth in STMicroelectronics General Terms and Conditions of Sale.

## RELIABILITY EVALUATION OVERVIEW

- **OBJECTIVE**

The aim of this report is to present the reliability evaluation performed for the qualification of ASEKH (Taiwan) LQFP7x7/LQFP10x10/LQFP14x14/LQFP20X20 with copper-palladium wires on M10 TSMC/Crolles, M40/E40 Crolles and N90/N40 TSMC.

**PCN13841** changes are described here below:

| | Existing back-end line | Added back-end line |
|---|---|---|
| **Assembly site** | ASE KaoHsiung (Taiwan) | |
| **Wire** | Gold 0.8mil | CuPd 0.8mil |
| **GLUE** | Sumitomo CRM 1076WA | HITACHI EN4900G(1) |
| **Marking composition** | Without 2D | With 2D marking |

**PCN14224** changes are described here below:

| | Existing back-end line | Added back-end line |
|---|---|---|
| **Assembly site** | AMKOR ATP (Philippines) | ASE KaoHsiung (Taiwan) |
| **Wire** | Gold 0.8mil | CuPd 0.8mil |
| **GLUE** | Evertech AP4200 | HITACHI EN4900G(1) |
| **Resin** | SUMITOMO EME-G631SHQ | SUMITOMO EME-G631SH |
| **Marking composition** | Without 2D | With 2D marking |

**PCN 14728** changes are described here below:

| | Existing back-end line | | Added back-end line |
|---|---|---|---|
| **Assembly site** | ASE KaoHsiung (Taiwan) | | |
| **Wire** | Gold 0.8mil | | CuPd 0.8mil |
| **GLUE** | Sumitomo CRM 1076WA | | HITACHI EN4900G |
| **Marking composition** | Without 2D | With 2D Marking | With 2D marking |

(1)Sumitomo CRM 1076WA and HITACHI EN4900G glues were used during qualification phase however production will be on HITACHI EN4900G.

**PCN 15910** changes are described here below:

| LQFP 10x10 64L | Existing back-end line | | | Added back-end line |
|---|---|---|---|---|
| Assembly site | StatsChipPAC JSCC Jiangyin (China) | | | ASE KaoHsiung (Taiwan) |
| Wire | Gold 0.8mil | Ag 96.5 0.8mil | CuPd 0.8 mil | CuPd 0.8 mil |
| Leadframe | Copper, Post plated | | | Copper, Post plated |
| Lead Finishing | Pure Tin (e3) | | | Pure Tin (e3) |
| Mold Compound | G631SHQ | G631SHQ | G700LALA | G631SH |
| Glue | Ablestik 3230 | Ablestik 3230 | EN4900GC | EN4900G |
| PP code marking | GQ | | | AA |

**PCN 16068** changes are described here below:

**Table_1: Bill of material change description for LQFP 128L 14x14 package**

| LQFP 128L 14x14 | Existing back-End assembly lines | | New Added line |
|---|---|---|---|
| | **Amkor ATP (Philippines)** | **ASE Kaohsiung (Taiwan)** | |
| Molding Compound (2) | Sumitomo G631HQ | Sumitomo G631SH | |
| Die attach Glue | Evertech AP4200 | SUMITOMO CRM 1076WA | HITACHI EN4900G |
| Bonding Wire | Gold 0.8 Mils | | CuPd 0.8 Mils |
| Leadframe | Copper, post-plated | | |
| Leadfinishing (1) | Pure Tin (e3) | | |
| Marking composition | 2D Marking | | |

(1) Lead color and surface finishing may slightly vary depending on lead finishing.
(2) Package darkness or chromaticity may change depending on molding compound.
Pin1 identifier may change in terms of size and positioning however remaining near pin1's edge.
Marking position and size may be different upon assembly site, without any loss of information.

- **CONCLUSION**

All reliability tests have been completed with positive results. Neither functional nor parametric rejects were detected at final electrical testing.

Package oriented tests have not put in evidence any criticality. Physical analysis performed on samples submitted to tests has not put in evidence any issue. ESD CDM are in accordance with ST spec.

Based on the overall results obtained, products below have positively passed reliability evaluation:

| Line code | Commercial product | Diff plant | Assy plant |
|---|---|---|---|
| 435x66 | STM32L433VCT6 | TSMC FAB14 | ASEKH (TAIWAN) |
| 483x66 | STM32H723ZGT6 | Crolles 300 | |
| 419x66 | STM32F427VIT6 | TSMC FAB14 | |
| 411x66 | STM32F217ZGT6 | Crolles 300 | |
| 472x66 | STM32L552VET6 | TSMC FAB14 | |
| 451x66 | STM32F767ZIT6 | Crolles 300 | |
| 466x66 | STM32G030C8T6 | TSMC FAB14 | |
| 455x66 | STM32U535RET6 | TSMC FAB14 | |
| 478x66 | STM32H533ZET6 | Crolles 300 | |
| 450x66 | STM32H742VGT6 | HHGRACE | |
| 469x66 | STM32G474QET6 | Crolles 300 | |

All reliability tests are completed with good results for all Finished Goods diffused in M10 TSMC/Crolles, M40/E40 Crolles, M40 HHGRACE, N90 TSMC/Crolles/Agrate, N40 TSMC and assembled in LQFP7x7 to LQFP20x20 at ASEKH (Taiwan) in copper-palladium wire.

Refer to Section 3.0 for reliability test results.

**TABLE OF CONTENT**

# 1. RELIABILITY STRATEGY

Reliability trials performed as part of this reliability evaluation are in agreement with ST 0061692 specification, in full compliancy with the JESD-47 international standard.

PCN 15910 is covered by M10 Crolles technology qualified on ASE LQFP line with 2 reliability lots of 411 and 451 in LQ20x20 144L with same technology than STM32F446RCT6 (421 LQ64). Biggest packages size cover smaller package size qualification.

For details on test conditions, generic data used and specifications references, refer to test results summary in section 3.

# 2. PRODUCT OR TEST VEHICLE CHARACTERISTICS

## 2.1. Generalities

| Package line | Partial rawline code | Number of lots |
|---|---|---|
| LQFP 100 14x14x1.4 | 1L*435 | 1 |
| | 1L*419 | 1 |
| | 1L*472 | 1 |
| LQFP 144 20X20X1.4 | 1A*483 | 1 |
| | 1A*411 | 1 |
| | 1A*451 | 1 |
| | 1A*478 | 1 |
| LQFP 48 7x7x1.4 | 5B*466 | 1 |
| LQFP 64 10x10x1.4 | 5W*455 | 1 |
| LQFP 100 14x14x1.4 | 1L*450 | 1 |
| LQFP 128 14x14x1.4 | TC*469 | 1 |

## 2.2. Traceability

### 2.2.1.Wafer Fab Information

**Die 435**

| Wafer Fab Information | |
|---|---|
| **FAB1** | |
| Wafer fab name / location | TSMC Fab14 / Taiwan |
| Wafer diameter (inches) | 12 |
| Wafer thickness (µm) | 775±25 |
| Silicon process technology | TN090 |
| Number of masks | 45 |
| Die finishing front side (passivation) materials / thickness | PSG+NITRIDE / 1,75µm |
| Die finishing back side Materials | RAW SILICON |
| Die area (Stepping die size) | 10.045 mm² (3176.4µm, 3162.4µm) |
| Die pad size | **Geometry**: Rectangular; **Open(X,Y)**: 123,59 µm |
| Sawing street width (X,Y) (µm) | 80,80 |
| Metal levels/Materials/Thicknesses | |

| Wire bond pad metal | Composition | Thickness |
|---|---|---|
| 1 | TaN/Ta/CuSeed/Cu | 0.24 µm |
| 2 | TaN/Ta/CuSeed/Cu | 0.31 µm |
| 3 | TaN/Ta/CuSeed/Cu | 0.31 µm |
| 4 | TaN/Ta/CuSeed/Cu | 0.31 µm |
| 5 | TaN/Ta/CuSeed/Cu | 0.31 µm |
| 6 | TaN/Ta/CuSeed/Cu | 0.85 µm |
| 7 | AlCu | 1.45 µm |

## Die 483

<table>
<tr><th colspan="2">Wafer Fab Information</th></tr>
<tr><th colspan="2">FAB1</th></tr>
<tr><td>Wafer fab name / location</td><td>Crolles 300 / France</td></tr>
<tr><td>Wafer diameter (inches)</td><td>12</td></tr>
<tr><td>Wafer thickness (µm)</td><td>775±25</td></tr>
<tr><td>Silicon process technology</td><td>CMOSM40</td></tr>
<tr><td>Number of masks</td><td>51</td></tr>
<tr><td>Die finishing front side (passivation) materials / thickness</td><td>PSG+NITRIDE / 1,75µm</td></tr>
<tr><td>Die finishing back side Materials</td><td>RAW SILICON</td></tr>
<tr><td>Die area (Stepping die size)</td><td>15.67 mm² (3753µm, 4175µm)</td></tr>
<tr><td>Die pad size</td><td>
<table>
<tr><th>Geometry</th><th>Open(X,Y)</th></tr>
<tr><td>Rectangular</td><td>54.9,54.4 µm</td></tr>
</table>
</td></tr>
<tr><td>Sawing street width (X,Y) (µm)</td><td>80,80</td></tr>
<tr><td>Metal levels/Materials/Thicknesses</td><td>
<table>
<tr><th>Wire bond pad metal</th><th>Composition</th><th>Thickness</th></tr>
<tr><td>1</td><td>TaN/Ta/CuSeed/Cu</td><td>0.13 µm</td></tr>
<tr><td>2</td><td>TaN/Ta/CuSeed/Cu</td><td>0.14 µm</td></tr>
<tr><td>3</td><td>TaN/Ta/CuSeed/Cu</td><td>0.14 µm</td></tr>
<tr><td>4</td><td>TaN/Ta/CuSeed/Cu</td><td>0.14 µm</td></tr>
<tr><td>5</td><td>TaN/Ta/CuSeed/Cu</td><td>0.14 µm</td></tr>
<tr><td>6</td><td>TaN/Ta/CuSeed/Cu</td><td>0.85 µm</td></tr>
<tr><td>7</td><td>TaN/Ta/CuSeed/Cu</td><td>0.85 µm</td></tr>
<tr><td>8</td><td>Ta/TaN/AlCu</td><td>1.525 µm</td></tr>
</table>
</td></tr>
</table>

## Die 411

<table>
<tr><th colspan="2">Wafer Fab Information</th></tr>
<tr><th colspan="2">FAB1</th></tr>
<tr><td>Wafer fab name / location</td><td>Crolles 300 / France</td></tr>
<tr><td>Wafer diameter (inches)</td><td>12</td></tr>
<tr><td>Wafer thickness (µm)</td><td>775±25</td></tr>
<tr><td>Silicon process technology</td><td>CMOSM10</td></tr>
<tr><td>Number of masks</td><td>42</td></tr>
<tr><td>Die finishing front side (passivation) materials / thickness</td><td>PSG+NITRIDE / 1,75µm</td></tr>
<tr><td>Die finishing back side Materials</td><td>RAW SILICON</td></tr>
<tr><td>Die area (Stepping die size)</td><td>14.71mm² (4006µm, 3674µm)</td></tr>
<tr><td>Die pad size</td><td>
<table>
<tr><th>Geometry</th><th>Open(X,Y)</th></tr>
<tr><td>Rectangular</td><td>59,123 µm</td></tr>
<tr><td>Rectangular</td><td>63,73 µm</td></tr>
</table>
</td></tr>
<tr><td>Sawing street width (X,Y) (µm)</td><td>80,80</td></tr>
<tr><td>Metal levels/Materials/Thicknesses</td><td>
<table>
<tr><th>Wire bond pad metal</th><th>Composition</th><th>Thickness</th></tr>
<tr><td>1</td><td>TaN/CuSeed/Cu</td><td>0.24 µm</td></tr>
<tr><td>2</td><td>TaN/CuSeed/Cu</td><td>0.33 µm</td></tr>
<tr><td>3</td><td>TaN/CuSeed/Cu</td><td>0.33 µm</td></tr>
<tr><td>4</td><td>TaN/CuSeed/Cu</td><td>0.33 µm</td></tr>
<tr><td>5</td><td>TaN/CuSeed/Cu</td><td>0.33 µm</td></tr>
<tr><td>6</td><td>TaN/CuSeed/Cu</td><td>0.85 µm</td></tr>
<tr><td>7</td><td>AlCu/TinArc</td><td>1.45 µm</td></tr>
</table>
</td></tr>
</table>

## Die 419

<table>
<tr><th colspan="2">Wafer Fab Information</th></tr>
<tr><th colspan="2">FAB1</th></tr>
<tr><td>Wafer fab name / location</td><td>TSMC Fab14 / Taiwan</td></tr>
<tr><td>Wafer diameter (inches)</td><td>12</td></tr>
<tr><td>Wafer thickness (µm)</td><td>775±25</td></tr>
<tr><td>Silicon process technology</td><td>CMOSM10</td></tr>
<tr><td>Number of masks</td><td>44</td></tr>
<tr><td>Die finishing front side (passivation) materials / thickness</td><td>USG + NITRIDE / 1.1µm</td></tr>
<tr><td>Die finishing back side Materials</td><td>RAW SILICON</td></tr>
<tr><td>Die area (Stepping die size)</td><td>25.43 mm² (5582µm, 4556µm)</td></tr>
<tr><td>Die pad size</td><td>
<table>
<tr><th>Geometry</th><th>Open(X,Y)</th></tr>
<tr><td>Rectangular</td><td>59,123 µm</td></tr>
</table>
</td></tr>
<tr><td>Sawing street width (X,Y) (µm)</td><td>80,80</td></tr>
<tr><td>Metal levels/Materials/Thicknesses</td><td>
<table>
<tr><th>Wire bond pad metal</th><th>Composition</th><th>Thickness</th></tr>
<tr><td>1</td><td>TaN/Ta/CuSeed/Cu</td><td>0.22 µm</td></tr>
<tr><td>2</td><td>TaN/Ta/CuSeed/Cu</td><td>0.28 µm</td></tr>
<tr><td>3</td><td>TaN/Ta/CuSeed/Cu</td><td>0.28 µm</td></tr>
<tr><td>4</td><td>TaN/Ta/CuSeed/Cu</td><td>0.28 µm</td></tr>
<tr><td>5</td><td>TaN/Ta/CuSeed/Cu</td><td>0.28 µm</td></tr>
<tr><td>6</td><td>Ta/TaN/AlCu</td><td>0.73 µm</td></tr>
<tr><td>7</td><td>AlCu</td><td>1.2 µm</td></tr>
</table>
</td></tr>
</table>

## Die 472

<table>
<tr><th colspan="2">Wafer Fab Information</th></tr>
<tr><th colspan="2">FAB1</th></tr>
<tr><td>Wafer fab name / location</td><td>TSMC Fab14 / Taiwan</td></tr>
<tr><td>Wafer diameter (inches)</td><td>12</td></tr>
<tr><td>Wafer thickness (µm)</td><td>775±25</td></tr>
<tr><td>Silicon process technology</td><td>TN090</td></tr>
<tr><td>Number of masks</td><td>45</td></tr>
<tr><td>Die finishing front side (passivation) materials / thickness</td><td>USG + NITRIDE / 1,75µm</td></tr>
<tr><td>Die finishing back side Materials</td><td>RAW SILICON</td></tr>
<tr><td>Die area (Stepping die size)</td><td>17.999 mm² (4099.2, 4391.0)</td></tr>
<tr><td>Die pad size</td><td>
<table>
<tr><th>Geometry</th><th>Open(X,Y)</th></tr>
<tr><td>Rectangular</td><td>123,59 µm</td></tr>
</table>
</td></tr>
<tr><td>Sawing street width (X,Y) (µm)</td><td>80,80</td></tr>
<tr><td>Metal levels/Materials/Thicknesses</td><td>
<table>
<tr><th>Wire bond pad metal</th><th>Composition</th><th>Thickness</th></tr>
<tr><td>1</td><td>TaN/Ta/CuSeed/Cu</td><td>0.24 µm</td></tr>
<tr><td>2</td><td>TaN/Ta/CuSeed/Cu</td><td>0.31 µm</td></tr>
<tr><td>3</td><td>TaN/Ta/CuSeed/Cu</td><td>0.31 µm</td></tr>
<tr><td>4</td><td>TaN/Ta/CuSeed/Cu</td><td>0.31 µm</td></tr>
<tr><td>5</td><td>TaN/Ta/CuSeed/Cu</td><td>0.31 µm</td></tr>
<tr><td>6</td><td>TaN/Ta/CuSeed/Cu</td><td>0.85 µm</td></tr>
<tr><td>7</td><td>AlCu</td><td>1.45 µm</td></tr>
</table>
</td></tr>
</table>

## Die 451

<table>
<tr><th colspan="2">Wafer Fab Information</th></tr>
<tr><th colspan="2">FAB1</th></tr>
<tr><td>Wafer fab name / location</td><td>Crolles 300 / France</td></tr>
<tr><td>Wafer diameter (inches)</td><td>12</td></tr>
<tr><td>Wafer thickness (µm)</td><td>775±25</td></tr>
<tr><td>Silicon process technology</td><td>CMOSM10</td></tr>
<tr><td>Number of masks</td><td>43</td></tr>
<tr><td>Die finishing front side (passivation) materials / thickness</td><td>PSG + NITRIDE / 1.1µm</td></tr>
<tr><td>Die finishing back side Materials</td><td>RAW SILICON</td></tr>
<tr><td>Die area (Stepping die size)</td><td>34.15 mm² (6130, 5572)</td></tr>
<tr><td>Die pad size</td><td>
<table>
<tr><th>Geometry</th><th>Open(X,Y)</th></tr>
<tr><td>Rectangular</td><td>59,123 µm</td></tr>
</table>
</td></tr>
<tr><td>Sawing street width (X,Y) (µm)</td><td>80,80</td></tr>
<tr><td>Metal levels/Materials/Thicknesses</td><td>
<table>
<tr><th>Wire bond pad metal</th><th>Composition</th><th>Thickness</th></tr>
<tr><td>1</td><td>TaN/CuSeed/Cu</td><td>0.24 µm</td></tr>
<tr><td>2</td><td>TaN/CuSeed/Cu</td><td>0.33 µm</td></tr>
<tr><td>3</td><td>TaN/CuSeed/Cu</td><td>0.33 µm</td></tr>
<tr><td>4</td><td>TaN/CuSeed/Cu</td><td>0.33 µm</td></tr>
<tr><td>5</td><td>TaN/CuSeed/Cu</td><td>0.33 µm</td></tr>
<tr><td>6</td><td>TaN/CuSeed/Cu</td><td>0.85 µm</td></tr>
<tr><td>7</td><td>AlCu/TinArc</td><td>1.45 µm</td></tr>
</table>
</td></tr>
</table>

## Die 466

| Wafer Fab Information | |
|---|---|
| **FAB1** | |
| Wafer fab name / location | TSMC Fab14 / Taiwan |
| Wafer diameter (inches) | 12 |
| Wafer thickness (µm) | 775±25 |
| Silicon process technology | TN090 |
| Number of masks | 45 |
| Die finishing front side (passivation) materials / thickness | USG + NITRIDE / 1.1µm |
| Die finishing back side Materials | RAW SILICON |
| Die area (Stepping die size) | 4.0921 mm² (1889.6, 2165.6) |
| Die pad size | **Geometry**: **Open(X,Y)**<br>Rectangular: 65,59 µm<br>Rectangular: 123,59 µm |
| Sawing street width (X,Y) (µm) | 80,80 |
| Metal levels/Materials/Thicknesses | **Wire bond pad metal** / **Composition** / **Thickness**<br>1: TaN/Ta/CuSeed/Cu: 0.24 µm<br>2: TaN/Ta/CuSeed/Cu: 0.31 µm<br>3: TaN/Ta/CuSeed/Cu: 0.31 µm<br>4: TaN/Ta/CuSeed/Cu: 0.31 µm<br>5: TaN/Ta/CuSeed/Cu: 0.31 µm<br>6: TaN/Ta/CuSeed/Cu: 0.85 µm<br>7: AlCu: 1.45 µm |

## Die 455

<table>
<tr><th colspan="2">Wafer Fab Information</th></tr>
<tr><th colspan="2">FAB1</th></tr>
<tr><td>Wafer fab name / location</td><td>TSMC Fab14 / Taiwan</td></tr>
<tr><td>Wafer diameter (inches)</td><td>12</td></tr>
<tr><td>Wafer thickness (µm)</td><td>775±25</td></tr>
<tr><td>Silicon process technology</td><td>N40</td></tr>
<tr><td>Number of masks</td><td>48</td></tr>
<tr><td>Die finishing front side (passivation) materials</td><td>Oxide + Nitride</td></tr>
<tr><td>Die finishing back side Materials</td><td>RAW SILICON</td></tr>
<tr><td>Die area (Stepping die size)</td><td>11.6035 mm² (3406.4, 3406.4)</td></tr>
<tr><td>Die pad size</td><td>
<table>
<tr><th>Geometry</th><th>Open(X,Y)</th></tr>
<tr><td>Rectangular</td><td>54.9,55.38 µm</td></tr>
<tr><td>Square</td><td>54.9,54.9 µm</td></tr>
</table>
</td></tr>
<tr><td>Sawing street width (X,Y) (µm)</td><td>80,80</td></tr>
<tr><td>Metal levels/Materials/Thicknesses</td><td>
<table>
<tr><th>Wire bond pad metal</th><th>Composition</th><th>Thickness</th></tr>
<tr><td>1</td><td>Cu</td><td>0.125 µm</td></tr>
<tr><td>2</td><td>Cu</td><td>0.145 µm</td></tr>
<tr><td>3</td><td>Cu</td><td>0.145 µm</td></tr>
<tr><td>4</td><td>Cu</td><td>0.145 µm</td></tr>
<tr><td>5</td><td>Cu</td><td>0.145 µm</td></tr>
<tr><td>6</td><td>Cu</td><td>0.850 µm</td></tr>
<tr><td>7</td><td>Cu</td><td>3.500 µm</td></tr>
<tr><td>8</td><td>Al</td><td>1.500 µm</td></tr>
</table>
</td></tr>
</table>

## Die 478

| Wafer Fab Information | |
|---|---|
| **FAB1** | |
| Wafer fab name / location | Crolles 300 / France |
| Wafer diameter (inches) | 12 |
| Wafer thickness (µm) | 775±25 |
| Silicon process technology | CMOSE40 |
| Number of masks | 51 |
| Die finishing front side (passivation) materials / thickness | PSG+NITRIDE / 1,75µm |
| Die finishing back side Materials | RAW SILICON |
| Die area (Stepping die size) | 7.817 mm² (2785µm, 2807µm) |
| Die pad size | 54.9,54.9 µm |
| Sawing street width (X,Y) (µm) | 80,80 |
| Metal levels/Materials/Thicknesses | |

| Wire bond pad metal | Composition | Thickness |
|---|---|---|
| 1 | TaN/Ta/CuSeed/Cu | 0.145 µm |
| 2 | TaN/Ta/CuSeed/Cu | 0.130 µm |
| 3 | TaN/Ta/CuSeed/Cu | 0.130 µm |
| 4 | TaN/Ta/CuSeed/Cu | 0.130 µm |
| 5 | TaN/Ta/CuSeed/Cu | 0.130 µm |
| 6 | TaN/Ta/CuSeed/Cu | 0.850 µm |
| 7 | TaN/Ta/CuSeed/Cu | 0.850 µm |
| 8 | Ta/TaN/AlCu | 1.525 µm |

## Die 450

| Wafer Fab Information | |
|---|---|
| **FAB1** | |
| Wafer fab name / location | HHGRACE Wuxi / HHGRACE WUXI DIFF |
| Wafer diameter (inches) | 12 |
| Wafer thickness (µm) | 775±25 |
| Silicon process technology | CMOSM40MI |
| Number of masks | 51 |
| Die finishing front side (passivation) materials / thickness | Oxide Nitride |
| Die finishing back side Materials | RAW SILICON |
| Die area (Stepping die size) | 23.23 mm² (4983, 4662) |
| Die pad size | 54.9,54.4 µm |
| Sawing street width (X,Y) (µm) | 72,72 |
| Metal levels/Materials/Thicknesses | |

| Wire bond pad metal | Composition | Thickness |
|---|---|---|
| 1 | TaN/Ta/Cu | 0.13 µm |
| 2 | TaN/Ta/Cu | 0.14 µm |
| 3 | TaN/Ta/Cu | 0.14 µm |
| 4 | TaN/Ta/Cu | 0.14 µm |
| 5 | TaN/Ta/Cu | 0.14 µm |
| 6 | TaN/Ta/Cu | 0.85 µm |
| 7 | TaN/Ta/Cu | 0.85 µm |
| 8 | TaN/Ta/Ti/AlCu | 1.525 µm |

## Die 469

| Wafer Fab Information | |
|---|---|
| **FAB1** | |
| Wafer fab name / location | Crolles 300 / France |
| Wafer diameter (inches) | 12 |
| Wafer thickness (µm) | 775±25 |
| Silicon process technology | TN090CE |
| Number of masks | 43 |
| Die finishing front side (passivation) materials / thickness | PSG+NITRIDE / 1,75µm |
| Die finishing back side Materials | RAW SILICON |
| Die area (Stepping die size) | 17.390 mm² (4298.4, 4045.6) |
| Die pad size | 123,59 µm |
| Sawing street width (X,Y) (µm) | 80,80 |

Metal levels/Materials/Thicknesses

| Wire bond pad metal | Composition | Thickness |
|---|---|---|
| 1 | Ta/Tan/Cu | 0.24 µm |
| 2 | TaN/Ta/Cu | 0.33 µm |
| 3 | TaN/Ta/Cu | 0.33 µm |
| 4 | TaN/Ta/Cu | 0.33 µm |
| 5 | Ta/Tan/Cu | 0.33 µm |
| 6 | TaN/Ta/Cu | 0.9 µm |
| 7 | TaN/Ta/Ti/AlCu | 1.45 µm |

### 2.2.2.Assembly Information

| Assembly Information | | | |
|---|---|---|---|
| **Package 1: LQFP 100 14x14x1.4** | 435 | 419 | 472 - 450 |
| Assembly plant name / location | ASE Taiwan | | |
| Pitch (mm) | 0,5 | | |
| Die thickness after back-grinding (µm) | 375±25 | | |
| Die sawing method | Laser groove + mechanical sawing | | |
| **Bill of Material elements** | | | |
| Lead frame/ material/ reference | LF LQ14 100L Pure Tin C7025 6.6sq Slot | | |
| Lead frame finishing (material/thickness) | Pure Tin (e3): Tolerance 7 to 20µm | | |
| Die attach material/ glue /supplier | GLUE SUMITOMO EPOXY CRM 1076WA | | HITACHI EN4900G |
| Wire bonding material/diameter | Wire CuPd 0.8 mils | | |
| Molding compound material/supplier/reference | MOLDING RESIN SUMITOMO EME-G631SH | | |
| Package Moisture Sensitivity Level (JEDEC J-STD020D) | 3 | | |

| Assembly Information | | | | |
|---|---|---|---|---|
| **Package 2: LQFP 144 20X20X1.4** | 483 | 411 | 451 | 478 |
| Assembly plant name / location | ASE Taiwan | | | |
| Pitch (mm) | 0.5 | | | |
| Die thickness after back-grinding (µm) | 375±25 | | | |
| Die sawing method | Laser groove + mechanical sawing | | | |
| **Bill of Material elements** | | | | |
| Lead frame/material/reference | LF LQ20 144L Pure Tin C7025 6.6sq | | | |
| Lead frame finishing (material/thickness) | Pure Tin (e3): Tolerance 7 to 20µm | | | |
| Die attach material/glue/supplier | SUMITOMO EPOXY CRM 1076WA | | HITACHI EN4900G | |
| Wire bonding material/diameter | Wire CuPd 0.8 mils | | | |
| Molding compound material/supplier/reference | MOLDING RESIN SUMITOMO EME-G631SH | | | |
| Package Moisture Sensitivity Level (JEDEC J-STD020D) | 3 | | | |

| Assembly Information | |
|---|---|
| **Package 3: LQFP 48 7x7x1.4** | |
| Assembly plant name / location | ASE Taiwan |
| Pitch (mm) | 0.5 |
| Die thickness after back-grinding (µm) | 375±25 |
| Die sawing method | Laser groove + mechanical sawing |
| **Bill of Material elements** | |
| Lead frame/material/reference | LF LQ48L Pur tin C7025 4.092sq |
| Lead frame finishing (material/thickness) | Pure Tin (e3): Tolerance 7 to 20µm |
| Die attach material/glue/supplier | HITACHI EN4900G |
| Wire bonding material/diameter | Wire CuPd 0.8 mils |
| Molding compound material/supplier/reference | MOLDING RESIN SUMITOMO EME-G631SH |
| Package Moisture Sensitivity Level (JEDEC J-STD020D) | 3 |

| Assembly Information | |
|---|---|
| **Package 4: LQFP 64 10x10x1.4** | |
| Assembly plant name / location | ASE Taiwan |
| Pitch (mm) | 0.5 |
| Die thickness after back-grinding (µm) | 375±25 |
| Die sawing method | Laser groove + mechanical sawing |
| **Bill of Material elements** | |
| Lead frame/material/reference | LF LQ64 Pure Tin C7025 5.7sq |
| Lead frame finishing (material/thickness) | Pure Tin (e3): Tolerance 7 to 20µm |
| Die attach material/glue/supplier | HITACHI EN4900G |
| Wire bonding material/diameter | Wire CuPd 0.8 mils |
| Molding compound material/supplier/reference | MOLDING RESIN SUMITOMO EME-G631SH |
| Package Moisture Sensitivity Level (JEDEC J-STD020D) | 3 |

| Assembly Information | |
|---|---|
| **Package 5: LQFP 128 14x14x1.4** | |
| Assembly plant name / location | ASE Taiwan |
| Pitch (mm) | 0.4 |
| Die thickness after back-grinding (µm) | 375±25 |
| Die sawing method | Laser groove + mechanical sawing |
| **Bill of Material elements** | |
| Lead frame/material/reference | LQ14 128L Pure Tin C7025 5.5sq |
| Lead frame finishing (material/thickness) | Pure Tin (e3): Tolerance 7 to 20µm |
| Die attach material/glue/supplier | HITACHI EN4900G |
| Wire bonding material/diameter | Wire CuPd 0.8 mils |
| Molding compound material/supplier/reference | MOLDING RESIN SUMITOMO EME-G631SH |
| Package Moisture Sensitivity Level (JEDEC J-STD020D) | 3 |

### 2.2.3.Reliability testing information

| Reliability Testing Information | |
|---|---|
| Reliability laboratory name / location | Grenoble Rel Lab, Rousset MDG Rel Lab, Shenzhen BE Lab, Muar BE Lab, ASE Rel Lab |

Note: ST is ISO 9001 certified. This induces certification of all internal and subcontractor labs. ST certification document can be downloaded under the following link: http://www.st.com/content/st_com/en/support/quality-and-reliability/certifications.html

# 3. TEST RESULTS SUMMARY

## 3.1. Lot information

| Lot # | Diffusion Lot | Die Revision (Cut) | Trace Code | Raw Line | Package |
|---|---|---|---|---|---|
| Lot 1 | 9R113962 | Cut1.1 | AA136031 | 211L*435CSXZ | LQFP 100 14x14x1.4 |
| Lot 2 | 3R31C302 | Cut 1.1 | AA143030 | 221A*483CSXZ | LQFP 144 20X20X1.4 |
| Lot 3 | VQ112465 | Cut 2.4 | AA136033 | 201A*411CSX2 | LQFP 144 20X20X1.4 |
| Lot 4 | 9R121544 | Cut 2.2 | AA136032 | 201L*419CSX5 | LQFP 100 14x14x1.4 |
| Lot 5 | 9R23159 | Cut 2.1 | AA248173 | 211L*472QCXZ | LQFP 100 14x14x1.4 |
| Lot 6 | Q229850 | Cut 1.1 | AA306008 | 201A*451QCXZ | LQFP 144 20X20X1.4 |
| Lot 7 | 9R230180 | Cut 1.2 | AA249007 | 235B*466QCXY | LQFP 48 7x7x1.4 |
| Lot 8 | 9R247270 | Cut 1.1 | AA351004 | 235W*455QCXZ | LQFP 64 10x10x1.4 |
| Lot 9 | VQ311272 | Cut 1.0 | AA345005 | 201A*478CSXA | LQFP 144 20X20X1.4 |
| Lot 10 | Y5452001 | Cut 2.2 | AA520072 | 241L*450QCX2 | LQFP 100 14x14x1.4 |
| Lot 11 | VQ522388 | Cut 2.3 | AA603027 | 20TC*469QCX2 | LQFP 128 14x14x1.4 1.0 |

### 3.2. Test results summary

**ACCELERATED ENVIRONMENT STRESS TESTS**

| Test code | Stress method | Stress Conditions | Lots Qty | S.S. | Total | Results/Lot Fail/S.S. | Comments:(N/A =Not Applicable) |
|---|---|---|---|---|---|---|---|
| PC | JSTD 020 JESD 22-A113 7191395 | 24h bake@125°C, MSL3 (192h/30°C/60%RH) 3x Reflow simulation Peak Reflow Temp= 260°C | 10 | 308 Lot10: 231 | 3003 | Lot 1: 0/308 Lot 5: 0/308 Lot 2: 0/308 Lot 6: 0/308 Lot 3: 0/308 Lot 7: 0/308 Lot 4: 0/308 Lot 8: 0/308 Lot 9: 0/308 Lot10: 0/231 | NA |
| HTSL | JESD22-A103 | Ta= 150°C Duration= 1000hrs ☑ After PC (excepted lot10) | 10 | 77 | 770 | Lot 1: 0/77 Lot 5: 0/77 Lot 2: 0/77 Lot 6: 0/77 Lot 3: 0/77 Lot 7: 0/77 Lot 4: 0/77 Lot 8: 0/77 Lot 9: 0/77 Lot10: 0/77 | NA |
| TC | JESD22-A104 | Ta= -65/150°C Cyc= 500 ☑After PC | 10 | 77 | 770 | Lot 1: 0/77 Lot 5: 0/77 Lot 2: 0/77 Lot 6: 0/77 Lot 3: 0/77 Lot 7: 0/77 Lot 4: 0/77 Lot 8: 0/77 Lot 9: 0/77 Lot10: 0/77 | NA |
| THB | JESD22-A101 | Ta=85°C/85%RH VDD=3v6 Duration= 1000hrs ☑After PC | 10 | 77 | 770 | Lot 1: 0/77 Lot 5: 0/77 Lot 2: 0/77 Lot 6: 0/77 Lot 3: 0/77 Lot 7: 0/77 Lot 4: 0/77 Lot 8: 0/77 Lot 9: 0/77 Lot10: 0/77 | NA |
| UHAST | JESD22-A118 | Ta=130°C ,85% RH, 2 Atm Duration= 96hrs ☑ After PC | 10 | 77 | 770 | Lot 1: 0/77 Lot 5: 0/77 Lot 2: 0/77 Lot 6: 0/77 Lot 3: 0/77 Lot 7: 0/77 Lot 4: 0/77 Lot 8: 0/77 Lot 9: 0/77 Lot10: 0/77 | NA |

**ELECTRICAL TEST VERIFICATION**

| Test code | Stress method | Stress Conditions | Lots Qty | S.S. | Total | Results/Lot Fail/S.S. | Comments:(N/A =Not Applicable) |
|---|---|---|---|---|---|---|---|
| CDM | JEDEC JS-002 | Voltage=500V for 411/466/ 455 (except PC15 250V)/ 478 Voltage=250V for 435/483/419/472/451/450/469 | 11 | 3 | 33 | Lot 1: 0/3 Lot 5: 0/3 Lot 2: 0/3 Lot 6: 0/3 Lot 3: 0/3 Lot 7: 0/3 Lot 4: 0/3 Lot 8: 0/3 Lot 9: 0/3 Lot10: 0/3 Lot11: 0/3 | NA |

**PACKAGE ASSEMBLY INTEGRITY TESTS**

| Test code | Stress method | Stress Conditions | Lots Qty | S.S. | Total | Results/Lot Fail/S.S. | Comments:(N/A =Not Applicable) |
|---|---|---|---|---|---|---|---|
| CA | Construction analysis including<br>-Wire bond shear<br>-Wire bond pull | ST internal specifications | 11 | 50 | 550 | Lot 1: 0/50<br>Lot 2: 0/50<br>Lot 3: 0/50<br>Lot 4: 0/50<br>Lot 5: 0/50<br>Lot 6: 0/50<br>Lot 7: 0/50<br>Lot 8: 0/50<br>Lot 9: 0/50<br>Lot10: 0/50<br>Lot11: 0/50 | SHZ-CA_21_00299<br>SHZ-CA_22_00003<br>SHZ-CA_21_00351<br>SHZ-CA_21_00298<br>SHZ-CA_23_00132<br>SHZ-CA_23_00275<br>SHZ-CA_23_00075<br>MDG Muar_24_00011<br>SHZ - CA_24_00066<br>SHZ - CA_25_00375<br>MDG Muar_26_00013 |

Note: Test method revision reference is the one active at the date of reliability trial execution.

## 4. APPLICABLE AND REFERENCE DOCUMENTS

| Reference | Short description |
|---|---|
| JESD47 | Stress-Test-Driven Qualification of Integrated Circuits |
| SOP2.4.4 | Record Management Procedure |
| SOP2.6.2 | Internal Change Management |
| SOP2.6.7 | Finished Good Maturity Management |
| SOP2.6.9 | Package & Process Maturity Management in BE |
| SOP2.6.11 | Program Management for Product Development |
| SOP2.6.17 | Management of Manufacturing Transfers |
| SOP2.6.19 | Front-End Technology Platform Development and Qualification |
| DMS 0061692 | Reliability Tests and Criteria for Product Qualification |
| JEDEC JS-002 | Electrostatic discharge (ESD) sensitivity testing charge device model (CDM) |
| JESD 22-A103 | High Temperature Storage Life |
| J-STD-020 | Moisture/reflow sensitivity classification for non-hermetic solid state surface mount devices |
| JESD22-A113 | Preconditioning of non-hermetic surface mount devices prior to reliability testing |
| JESD22-A118 | Unbiased Highly Accelerated temperature & humidity Stress Test |
| JESD22-A104 | Temperature cycling |
| JESD22-A101 | Temperature Humidity Bias |

## 5. GLOSSARY

| | |
|---|---|
| **ESD-CDM** | Electrostatic Discharge - Charged device model |
| **CA** | Construction analysis |
| **HTSL** | High Temperature Storage Life |
| **PC** | Preconditioning |
| **TC** | Temperature Cycling |
| **THB** | Temperature Humidity Bias |
| **UHAST** | Unbiased HAST (Highly Accelerated Stress Test) |
| **DMS** | ST Advanced Documentation Controlled system/ Documentation Management system |

## 6. REVISION HISTORY

| Release | Date | Description |
|---|---|---|
| 1.0 | 19/06/2023 | Initial Release |
| 2.0 | 16/06/2023 | Added PCN14224 |
| 3.0 | 25/08/2023 | Added PCN14728 with die 455 and 478 |
| 4.0 | 28/10/2025 | Added PCN15910 (for die 421) |
| 4.1 | 21/01/2026 | Typo error page 15 |
| 4.2 | 04/03/2026 | Typo error page 1 |
| 5.0 | 16/04/2026 | Added PCN16068 with results die 469 + results die 450 |

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics International NV and its affiliates (“ST”) reserve the right to make changes corrections, enhancements, modifications, and improvements to ST products and/or to this document any time without notice.

This document is provided solely for the purpose of obtaining general information relating to an ST product. Accordingly, you hereby agree to make use of this document solely for the purpose of obtaining general information relating to the ST product. You further acknowledge and agree that this document may not be used in or in connection with any legal or administrative proceeding in any court, arbitration, agency, commission or other tribunal or in connection with any action, cause of action, litigation, claim, allegation, demand or dispute of any kind. You further acknowledge and agree that this document shall not be construed as an admission, acknowledgement or evidence of any kind, including, without limitation, as to the liability, fault or responsibility whatsoever of ST or any of its affiliates, or as to the accuracy or validity of the information contained herein, or concerning any alleged product issue, failure, or defect. ST does not promise that this document is accurate or error free and specifically disclaims all warranties, express or implied, as to the accuracy of the information contained herein. Accordingly, you agree that in no event will ST or its affiliates be liable to you for any direct, indirect, consequential, exemplary, incidental, punitive, or other damages, including lost profits, arising from or relating to your reliance upon or use of this document.

Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement, including, without limitation, the warranty provisions thereunder.

In that respect please note that ST products are not designed for use in some specific applications or environments described in above mentioned terms and conditions.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

Information furnished is believed to be accurate and reliable. However, ST assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and ST logo are trademarks of ST. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously in any prior version of this document.