

# RER1810 for PCN 10548 & PCN10689 ASE Kaohsiung (Taiwan) additional source for LQFP 7x7/10x10/14x14/20x20

## Reliability Evaluation Plan

January 15<sup>th</sup>, 2019

MDG MCD Quality & Reliability Department

# RER1810 ASE Kaohsiung (Taiwan) additional source for LQFP 7x7/10x10/14x14/20x20 - Package Test Vehicles & Strategy

Test vehicles are selected by Change Review Board based on key parameters such as die size and volumes allowing to qualify the entire product family in LQFP.

Similarity strategy will be applied to cover all combinations of Diffusion Plant, Diffusion Process and LQFP packages listed below:

- TSMC 0.18μm / TSMC M10 / TSMC 90 / Crolles CR300 M10 / Crolles CR300 M40 / Rousset R8 F9GO2 / Rousset R8 F9GO2s diffusion process
- LQFP7x7 / 10x10 / 14x14 / 20x20 on the same assembly line and using same materials for bonding wires, die attach glue and mold compound

| Package line | Assembly Line | Package | Device<br>(Partial RawLine Code) | Diffusion Plants &<br>Process | Number of Reliability Lots |
|--------------|---------------|---------|----------------------------------|-------------------------------|----------------------------|
| LQFP         | LQFP 7*7      | 48L     | STM32(5B*422)                    | TSMC 0.18μm                   | 1                          |
|              |               |         | STM8(5B*764)                     | Rousset R8 F9GO2              | 1                          |
|              | LQFP 10*10    | 64L     | STM32(5W*411)                    | TSMC M10                      | 1                          |
|              |               |         | STM32(5W*417)                    | Rousset R8 F9GO2s             | 1                          |
|              | LQFP 14*14    | 100L    | STM32(1L*436)                    | Rousset R8 F9GO2              | 1                          |
|              |               |         | STM32(1L*448)                    | TSMC 0.18μm                   | 1                          |
|              |               |         | STM32(1L*411)                    | TSMC M10                      | 1                          |
|              |               |         | STM32(1L*435)                    | TSMC 90nm                     | 1                          |
|              | LQFP 20*20    | 144L    | STM32(1A *450)                   | Crolles CR300 M40             | 1                          |
|              |               |         | STM32(1A *413)                   | Crolles CR300 M10             | 1                          |
|              |               |         | STM32(1A *414)                   | TSMC 0.18μm                   | 1                          |

# RER1810 ASE Kaohsiung (Taiwan) additional source for LQFP 7x7/10x10/14x14/20x20 - Package Reliability Trials

| Reliability Trial & Standard | Test Conditions   | Pass Criteria  | Unit per Lot        | Lot qty |                                       |
|------------------------------|---|--|---------------------|---------|---------------------------------------|
| PC                           | Pre Conditioning: Moisture Sensitivity<br>Jedec Level 3<br><br>J-STD-020/ JESD22-A113                                       | Bake (125°C / 24 hrs)<br>Soak (30°C / 60% RH / 192 hrs) for level 3<br>Convection reflow: 3 passes | 3 passes MSL3       | 308     | 1 per device                          |
| Uhast(*)                     | UnBiased Highly Accelerated<br>Temperature and Humidity Stress<br>JESD22 A118   | 130°C, 85%RH, 2 atm  | 96h                 | 77      | 1 per device(**)                      |
| TC(*)                        | Thermal Cycling<br><br>JESD22 A104  | -50°C, +150°C<br>Or equivalent<br>-65°C +150°C   | 1000Cy<br><br>500Cy | 77      | 1 per device(**)                      |
| THB (*)<br>Or<br>HAST (*)    | Temperature Humidity Bias<br>JESD22-A101<br>Or<br>Biased Highly Accelerated<br>temperature & humidity stress<br>JESD22 A110 | 85°C, 85% RH, bias<br>Or<br>110°C, 1.2 atm , 85% RH<br>bias  | 1000h<br>Or<br>264h | 77      | 1 per device(**)                      |
| HTSL (*)                     | High Temperature Storage Life<br><br>JESD22 A103  | 150°C- no bias   | 1000h               | 77      | 1 per device(**)                      |
| Construction analysis        | JESD 22B102<br>JESDB100/B108  | including Solderability, Physical<br>dimensions for<br>LQFP10*10, LQFP14*14, LQFP20*20             | 15<br>10            |         | 1 per device FE techno and<br>package |
| ESD                          | ESD Charge Device Model<br>ANSI/ESD STM5.3.1<br>Or JESD22-C101<br>Or JEDEC JS-002   | Aligned with device datasheet  | 250V to 500V        | 3       | 1 per device                          |

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**PRODUCT/PROCESS  
CHANGE NOTIFICATION  
PCN 10689 – Additional information**

**ASE Kaohsiung (Taiwan) additional source  
for LQFP 14x14 package products**

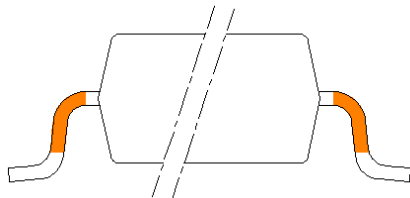
**MDG - Microcontrollers Division (MCD)**

**What are the changes?**

Changes described in the below table:

|                                  | Existing back-end sites |                         |                          | Added back-end site     |
|----------------------------------|-------------------------|-------------------------|--------------------------|-------------------------|
| Assembly site                    | ST<br>Muar Malaysia     | ST<br>Muar Malaysia     | Amkor ATP<br>Philippines | ASE<br>Kaohsiung Taiwan |
| Leadframe                        | Pre Plated Frame        | Copper Frame<br>Spot Ag | Copper Frame<br>Spot Ag  | Copper Frame<br>Spot Ag |
| Leadfinishing (1)                | Ni Pd Au (e4)           | Pure Tin (e3)           | Pure Tin (e3)            | Pure Tin (e3)           |
| Resin (2)                        | Sumitomo<br>EME-G700L   | Sumitomo<br>EME-G700LS  | Sumitomo<br>EME-G631HQ   | Sumitomo<br>EME-G631SH  |
| Glue                             | Henkel 3280T            | Henkel ABP8302          | Evertech AP4200          | Sumitomo<br>CRM 1076WA  |
| Wire                             | 1.0mil Au               | 0.8mil Ag               | 0.8mil Au                | 0.8mil Au               |
| Enhanced traceability in marking | No digit                | 2 digits                | No digit                 | 2 digits                |

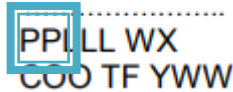
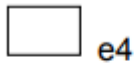
(1) Lead color and surface finish change depending on leadfinishing.



(2) Package darkness changes depending on molding compound.

## How can the change be seen?

The standard marking is:



**PP** code indicates the assembly traceability plant code.

Please refer to the [DataSheet](#) for marking details.

The marking is changing as follows:

| Existing |                       | Additional |                      |
|----------|-----------------------|------------|----------------------|
| PP code  | Fab                   | PP code    | Fab                  |
| 9H       | ST Muar Malaysia      | AA         | ASE Kaohsiung Taiwan |
| 7B       | Amkor ATP Philippines |            |                      |

## 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 "**PCN 10689**" into the NPO Electronic Sheet/**Regional Sheet**
- request sample(s) through Notice tool, indicating a single Commercial Product for each request

Partial Ship: 01 Price Pol: 05 Status: 01 Canc:   
 %: 0 Sample Type: Sample Non Std Type  
 Closing Type: Sample Std Type  
 Sample Non Std Type  
 Sample Non Std w Spl Tests  
 Lab Sheet:

SO | NPO Sample

Header  
 SO Nr: 8018S02433 Customer: 99770200 01 ST-TOKYO SO Type: 30 Sample Order Cost Center: JT3129 SAMPLES /SALES J  
 PD Nr: JT3129/Tokumitsu/AXIS\_NidecSank Carrier Code: 0001 Price Policy: 05 Currency: 02 U.S. DOLLAR Req Name: Tokumitsu  
 Notes: Status: 01 All items pending,ni Issuing Date: 25-JUN-2018 Ord Vat: 0.0000 Sample Req Date: 25-Jun-2018

| Sch I Nr | PD I. Nr. | Finished Good | Comm Qty | Open Qty | Plant Open Qty | Reqd Qty | Unit Price | RD        | CD        | EDD       | St |
|----------|-----------|---------------|----------|----------|----------------|----------|------------|-----------|-----------|-----------|----|
| 1.1.10   | 000001    | STM32F429NIH6 | 30       | 30       | 30             | 30       | 0.0000     | 25-Jun-18 | 01-Mar-59 | 01-Mar-59 | 01 |

Final Cust: PO Item: 000001 Comm Prod: STM32F429NIH6 Qty: 30 RD: 25-Jun-18 Unit Price: 0.0000 Final Cust: 8800367006 SANSHIN/NPC

Cust Part Nr: Finishd Good: Partial Ship: 01 Price Pol: 05 Status: 01 Canc:   
 Notes: TAM K Pieces: 0 Our Share%: 0 Sample Type: Sample Non Std Type  
 Project Name: Closing Date: Closing Type:

Regional Sheet: Lab Sheet:  
 PCN 10595