PCN # 2161

DATE: June 18, 2021

EXPECTED PCN SHIP DATE: June 18, 2021

**Quality Assurance**
160 Rio Robles
San Jose, CA 95134

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☐ **PROCESS CHANGE NOTICE**

☒ **PRODUCT CHANGE NOTICE**

**MAXIM INTEGRATED** HEREBY ISSUES NOTIFICATION OF CHANGE THAT MAY AFFECT THE FOLLOWING CATEGORIES:

| ☐ DESIGN | ☐ WAFER FAB | ☒ ASSEMBLY | ☐ TEST | ☐ ELEC/MECH SPECS |
|---|---|---|---|---|

AFFECTED PRODUCT:

| Ordering P/N: (See PN listing XLS in PCN ZIP file) |
|---|

| CHANGE FROM: - For automotive products in TQFN/TDFN packages, body size 2x2mm to 7x7mm, Au wire size 0.8/1.0/1.3/2.0 mil<br>Current mold compound Sumitomo G770HJ used at Assembler Vendor ASECL (ASE/CHUNG-LI/Taiwan). | CHANGE TO: -<br>The replacement mold compound Sumitomo G700LA will be used for these devices at the same Assembly Vendor ASECL. This mold compound is an existing standard encapsulant for many other Maxim devices at this site. |
|---|---|

JUSTIFICATION: Industry shortage of Sumitomo G770HJ requires that Maxim convert these devices to Sumitomo G700LA mold compound to ensure continuity of supply.

Maxim uses G700LA mold compound for many other automotive devices that are shipping in high volume since 2017.

- The AECQ-100 Qualification report is attached.
- Technical specification sheet G770HJ vs. G700LA is attached.
- Samples will be built upon request.
- There are no regulatory compliance changes to the material content of the devices.
- There are no changes to the form/fit/function of these devices using the new mold compound.

TRACEABILITY: Maxim Integrated maintains full traceability by device marking, packaging labels and shipment documents.

Maxim Integrated's Change Notification System is designed to keep our customer base apprised of major product, manufacturing, or facility improvements.

Nasser Ali Chaouche

Nasser AliChaouche / PCN Coordinator

For further information, please contact either of the people listed below.

**Contact your local Maxim Integrated Company Representative** or

Nasser AliChaouche, PCN Coordinator
408-601-5660 / pcn.coordinator@maximintegrated.com

# G700LA vs G770HJ

## EME-G770HJ

TYPICAL PROPERTIES:

| ITEM | TEST METHOD | UNIT | VALUES |
|---|---|---|---|
| SPIRAL FLOW | SB-U-03-003 | Cm | 160 |
| GEL TIME (at 175°C) | SB-U-03-005 | Sec | 50 |
| THERMAL EXPANSION ∝1 | SB-U-02-002 | $X\ 10^{-5}$ 1/°C | 0.8 |
| THERMAL EXPANSION ∝2 | SB-U-02-002 | $X\ 10^{-5}$ 1/°C | 4.0 |
| Tg | SB-U-02-002 | °C | 140 |
| THERMAL CONDUCTIVITY | SB-U-02-004 | W/m •°C | $100x\ 10^{-2}$ |
| FLEXURAL STRENGTH | SB-U-01-001 | $N/\ mm^2$ | |
| (at 25°C) | | | 160 |
| (at 260°C) | | | 22 |
| FLEXURAL MODULUS | SB-U-01-002 | $X\ 10^2\ N/mm^2$ | |
| (at 25°c) | | | 270 |
| (at 260°C) | | | 7.0 |
| SPECIFIC GRAVITY | SB-U-03-018 | -------------- | 2.02 |
| VOLUME RESISTIVITY (at 150°c) | SB-U-00-004 | Ω - cm | $1\ x\ 10^{11}$ |
| UL FLAME CLASS | SB-U-03-003 | UL-94 | V-0 |
| WATER ABSORPTION (boiling, 24 h) | SB-U-03-002 | % weight gain | 0.15 |
| EXTRACTED $Na^+$ | SB-U-04-043 | ppm | 1 |
| EXTRACTED $Cl^-$ | SB-U-04-043 | ppm | 5 |

*TYPICAL, NOT GUARANTEED PROPERTIES*

MOLDING AND POST MOLD CURE CONDITIONS:

| | STANDARD | RANGE |
|---|---|---|
| TRANSFER PRESSURE | $80\ x10^5$ Pa | $70\text{-}120\ x10^5$ Pa |
| MOLD TEMPERATURE | 180°C | 175-185°C |
| CURE TIME (C or A)# | A/90 sec | 70-120 sec |
| POST-MOLD CURE TEMP | 175°C | 170-180°C |
| POST-MOLD CURE TIME | 6 h | 4-8 h |

## EME-G700LA Type L-A

TYPICAL PROPERTIES:

| ITEM | TEST METHOD | UNIT | VALUES |
|---|---|---|---|
| SPIRAL FLOW | SB-U-03-003 | cm | 135 |
| GEL TIME (at 175°C) | SB-U-03-005 | sec | 50 |
| THERMAL EXPANSION ∝1 | SB-U-02-002 | $X\ 10^{-5}$ 1/°C | 1.0 |
| THERMAL EXPANSION ∝2 | SB-U-02-002 | $X\ 10^{-5}$ 1/°C | 3.9 |
| Tg | SB-U-02-002 | °C | 125 |
| THERMAL CONDUCTIVITY | SB-U-02-004 | W/m •°C | $96x\ 10^{-2}$ |
| FLEXURAL STRENGTH | SB-U-01-001 | $N/\ mm^2$ | |
| (at 25°C) | | | 170 |
| (at 260°C) | | | 18 |
| FLEXURAL MODULUS | SB-U-01-002 | $X\ 10^2\ N/mm^2$ | |
| (at 25°c) | | | 225 |
| (at 260°C) | | | 6.8 |
| SPECIFIC GRAVITY | SB-U-03-018 | -------------- | 1.99 |
| VOLUME RESISTIVITY (at 150°c) | SB-U-00-004 | Ω - cm | $1\ x\ 10^{12}$ |
| UL FLAME CLASS | SB-U-03-003 | UL-94 | V-0 |
| WATER ABSORPTION (boiling, 24 h) | SB-U-03-002 | % weight gain | 0.15 |
| EXTRACTED $Na^+$ | SB-U-04-043 | ppm | 3 |
| EXTRACTED $Cl^-$ | SB-U-04-043 | Ppm | 10 |

*TYPICAL, NOT GUARANTEED PROPERTIES*

MOLDING AND POST MOLD CURE CONDITIONS:

| | STANDARD | RANGE |
|---|---|---|
| TRANSFER PRESSURE | $100\ x10^5$ Pa | $70\text{-}120\ x10^5$ Pa |
| MOLD TEMPERATURE | 180°C | 165-185°C |
| CURE TIME (C or A)# | A/90 sec | 60-120 sec |
| POST-MOLD CURE TEMP | 175°C | 170-180°C |
| POST-MOLD CURE TIME | 6 h | 4-8 h |

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## PURPOSE

To qualify assembler ASE CHUNGLI to build 7x7 TQFN, 5X5 TQFN, 3X3 TDFN with side-wettable process.

## SUMMARY:

All qualification lots assembled in ASE CHUNGLI have passed reliability qualification (Full Qualification Requirements/Acceptance Criteria). Therefore, assembler ASE CHUNGLI is conditionally qualified to build 3x3, 5x5 and 7x7 side wettable packages. These packages as tested (MSL-1) are not moisture sensitive and do not require bake-and-bag precautions for shipment and storage.

## Package Coverage

Packages that can be covered by this qualification result in accordance with Maxim Qual By Extension (QBE) policy are all 3X3, 5X5, 7X7 side-wettable packages being assembled at ASE CHUNGLI with Au wire (G700LA + EN4900G).

## Package Material Information

| Description (Qual Type) | Maxim Std Qual |
|---|---|
| **Operating Temperature** | -40°C to +105°C / -40°C to +125°C |
| **Temperature Grade** | 2 / 1 |
| **Fab Site** | San Antonio 8 / MFN8 |
| **Fab Process** | S45JST / BCD88 |
| **Die** | AP12Z / AP35A-0C / MT06Y-4Z |
| **Die Size (mils)** | 141X141 / 104X87 |
| **Assembly Location** | ASE CHUNGLI |
| **Package** | T4877Y+11 / T2855Y+6 / T833Y+2 |
| **Wire Bond Material** | 1.3 mil Au / 2 mil Au / 1.0 mil Au |
| **Die Coat** | None |
| **Mold Compound** | G700LA |
| **Die Attach** | EN4900G |
| **Lead Frame** | Cu194 |
| **Lead Finish** | 100% Matte-Sn |

## Qualification Requirements and Results

| **Rel#** | | | **R28341A** | **R28341B** | **R28341C** |
|---|---|---|---|---|---|
| **Lot#** | | | **TANX6A086A** | **TAKS1A053A** | **J984DA084MX** |
| **Device:** | | | **MAX16924GTM/VY+** | **MAX16984SATI/VY+** | **MAX6769TALD2/VY+** |
| **Die Type:** | | | **AP12Z** | **AP35A-0C** | **MT06Y-4Z** |
| **Die Size (mils)** | | | **206 X 206** | **128 X 128** | **70X94** |
| **Package Type (code):** | | | **T4877Y+11 / 48L 7x7 TQFN** | **T2855Y+6 / 28L 5x5 TQFN** | **T833Y+2 / TDFN 3X3** |
| **Date Code:** | | | **1542** | **1542** | **1527** |
| **Topmark:** | | | **DM** | **BV** | **AW** |
| **Stress Test** | **Duration** | **Sampling Plan** | **Result** | **Result** | **Result** |
| **Convection Reflow *2,3**<br>**260°C Peak** | MSL 1, 3X | 0/320 | 0/320 | 0/320 | 0/320 |
| **HAST *1,2,3**<br>**130°C / 85% R.H.** | 96 hrs. | 0/77 | 0/77 | 0/77 | 0/77 |
| **Unbiased HAST *1,2**<br>**130°C / 85% R.H.** | 96 hrs. | 0/77 | 0/77 | 0/77 | 0/77 |
| **Temperature Cycle *1,2,3**<br>**-65°C to 150°C** | 1000 cyc | 0/77 | 0/77 | 0/77 | 0/77 |
| **High Temperature Storage *1,2,3**<br>**150°C** | 1000 hrs. | 0/77 | 0/77 | 0/77 | 0/77 |
| **HTOL *2, 3, 4** | 1000 hrs. | 0/77 | 0/77 | 0/77 | 0/77 |
| **Wire Bond Pull**<br>**Minimum 5 grams-force** | T(0) | 0/200 wires | 0/200wires | 0/200wires | 0/200wires |
| **Physical Dimension** | T(0) | 0/15 | 0/15 | 0/15 | 0/15 |
| **Solderability (Pb-Free)**<br>**8 hrs steam ageing, 245C** | T(0) | 0/15 | 0/15 | 0/15 | 0/15 |
| **CSAM** | T(0) | 0/25 | 0/25 | 0/25 | 0/25 |
| **CSAM** | MSL 1, 3X | 0/25 | 0/25 | 0/25 | 0/25 |

Note:

*1. Convection reflow is used as preconditioning for SMD packages.
*2. Electrical tests pre- and post-stress were performed at +25°C.
*3. Electrical tests pre- and post-stress were performed at +105°C / +125C.
*4. Electrical tests pre- and post-stress were performed at -40°C.

| Affected product numbers | PCN Proposed Ship Date |
| --- | --- |
| MAX16126TCA/V+T | 18-Jun-21 |
| MAX16838ATP/V+T | 18-Jun-21 |
| MAX16910CATA8/V+T | 18-Jun-21 |
| MAX16933CATIS/V+ | 18-Jun-21 |
| MAX16977RATE/V+ | 18-Jun-21 |
| MAX16984RATI/V+ | 18-Jun-21 |
| MAX16984RATI/V+T | 18-Jun-21 |
| MAX16990ATCD/V+T | 18-Jun-21 |
| MAX2769BETI/V+ | 18-Jun-21 |
| MAX9278AGTM/V+ | 18-Jun-21 |
| MAX9278AGTM/V+T | 18-Jun-21 |
| MAX9288GTM/V+ | 18-Jun-21 |
| MAX9288GTM/V+T | 18-Jun-21 |
| MAX96701GTG/V+ | 18-Jun-21 |
| MAX96701GTG/V+T | 18-Jun-21 |
| MAX9736AETJ/V+ | 18-Jun-21 |
| MAX9736AETJ/V+T | 18-Jun-21 |
| MAX98307ETE/V+T | 18-Jun-21 |
| MAX98357AGTE/V+ | 18-Jun-21 |
| MAX98357AGTE/V+T | 18-Jun-21 |