**PCN #: 1594_AMENDED**
**DATE: 18JUL2016**
**PROPOSED SHIP DATE: January 2017**

maxim integrated

**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:** | **CHANGE TO:** |
|---|---|
| Devices with WLP processing in Maxim's Dallas Texas Bump Fab | Devices to be processed for WLP at:<br>**ASEK** (Advanced Semiconductor Engineering Group, Kaohsiung Taiwan) |

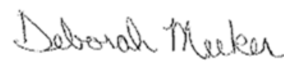
JUSTIFICATION: Maxim is closing its Dallas Texas WLP bump fab facility. The last production lots are planned for completion by the end of October CY2016. The facility is planned to close no later than the end of January CY2017. All single sourced devices processed in Dallas will be moved to ASE.

Maxim has completed qualification (CQ) of ASEK and the qualification plan and results are published in tables 1 & 2.

In addition, some devices have a bump material and/or ball size change. See the attached Table 3 for a listing of the specific devices impacted.

**TRACEABILITY:** Maxim Integrated maintains full traceability by device marking and the packaging labels or shipment packing slip.

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

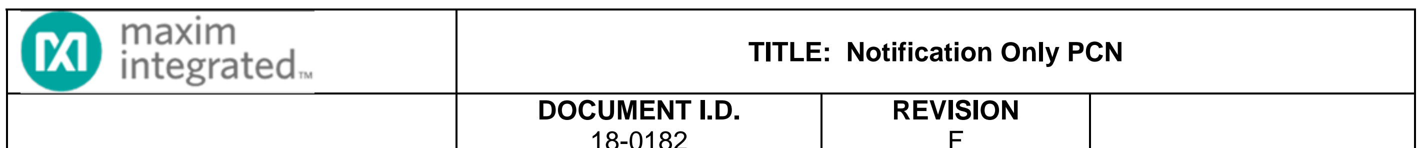


Deborah Meeker / PCN Coordinator

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

**Contact your local Maxim Integrated** or Deborah Meeker. PCN Coordinator

**Company Representative** 408-601-5618 / pcn.coordinator@maximintegrated.com



| maxim integrated | **TITLE: Notification Only PCN** | | |
|---|---|---|---|
| | **DOCUMENT I.D.**<br>18-0182 | **REVISION**<br>F | |

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Table 1:

## 1) QUALIFICATION REQUIREMENTS/ ACCEPTANCE CRITERIA FOR ASE WLP QUALS

The reliability test plan and acceptance criteria are defined as follow:

**Table 1: Qualification Tests**

| Standard Stress Tests | Test Conditions | Sampling Plan |
|---|---|---|
| **Component Level Tests:** | | |
| Convection Reflow | MSL 1 (85°C/ 85% RH, 168 hours) followed by 3X solder reflow at 260°C Tp. WLP is mounted on 0.031" FR4 PCB. | 0/150 |
| **HTOL** - High Temp. Operating Life Test | 135°C, 1000 hours. WLP is mounted on 0.031" FR4 PCB. | 0/77 |
| **THB** - Temperature Humidity Biased Test | 85°C / 85% R.H. 1000 hours. WLP is mounted on 0.031" FR4 PCB. | 0/77 |
| **TC** - Temperature Cycle | -40°C to 125°C, 500 cycles for array size 7x7 or larger, 1000 cycles for array size 6x6 and below. Slow ramp rate 11°C/min, 15 min dwell, 1 cycle/hour. WLP is mounted on 0.031" FR4 PCB. | 77 (*1) |
| **HTS** - High Temperature Storage | 150°C, 1000 hours. WLP is mounted on 0.031" FR4 PCB. | 0/77 |
| **uHAST** - Accelerated Moisture Resistance | 130°C / 85% R.H. 96 hours, unbiased | 0/77 |
| **Daisy Chain Level Tests:** | | |
| Drop Test (Daisy Chain) | Per JESD22-B111, 1500Gs, 0.5ms duration, half-sine pulse. PCB (132x77x1.0mm). 4 boards with 15 daisy chain WLP die per board. Number of drops 150. No under fill was applied to the PCB. | 60 (*2) |

Note: *1 - Failure rate lower than 5% after TCT end point with 90% probability.
*2 - Failure rate lower than 5% at 150 drops with 90% probability.

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### Table 2: Summary of Reliability Qualification (CQ) Results

| Qual Vehicle | WLP Array | Reflow | HTOL | | BHAST | THB | | TCT | | | HTS | | UHAST | Drop Test Results per Pitch & Array |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 500hrs | 1000hrs | | 500hrs | 1000hrs | 250x | 500x | 1000x | 500hrs | 1000hrs | | |
| MAX77843 CL43A-0C | 9x11 RDL | 0/148 | 0/80 | | | 0/80 | 0/80 | 0/80 | 0/80 | | 0/80 | 0/80 | 0/80 | |
| | | 0/149 | 0/74 | | | 0/80 | 0/80 | 0/80 | 0/80 | | 0/80 | 0/80 | 0/80 | |
| | | 0/148 | 0/80 | | | 0/80 | 0/80 | 0/80 | 0/80 | | 0/80 | 0/80 | 0/80 | TP90 |
| MAX98721 AX97A-0A | 5x6 RDL | 0/150 | 0/80 | | 0/80 | | | 0/80 | 0/80 | | 0/80 | 0/80 | 0/80 | (0.3, 8x8 array) |
| | | 0/150 | 0/80 | | 0/80 | | | 0/80 | 0/80 | | 0/80 | 0/80 | 0/80 | 0/60 |
| | | 0/150 | 0/80 | | 0/80 | | | 0/80 | 0/80 | | 0/80 | 0/80 | 0/80 | |
| MAX8986 PR61A-02A | 9x9 RDL | 0/149 | 0/77 | 0/77 | 0/74 | | | 0/77 | 0/77 | | 0/77 | 0/77 | 0/77 | |
| | | 0/148 | 0/77 | 0/77 | 0/76 | | | 0/77 | 0/77 | | 0/77 | 0/77 | 0/77 | |
| | | 0/150 | 0/77 | 0/77 | 0/72 | | | 0/77 | 0/77 | | 0/77 | 0/77 | 0/71 | TD92 |
| MAX5394 DP36B-0A | 2x4 RDL | 0/150 | 0/77 | 0/77 | 0/77 | | | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | (0.35 mm, 9X9 array) |
| | | 0/150 | 0/77 | 0/77 | 0/77 | | | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | 0/60 |
| | | 0/150 | 0/77 | 0/77 | 0/77 | | | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | |
| MAX98304 AX46Y Std | 3x3 RDL | 0/150 | 0/77 | 0/77 | 0/77 | | | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | |
| | | 0/150 | 0/76 | 0/76 | 0/77 | | | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | |
| | | 0/150 | 0/77 | 0/77 | 0/77 | | | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | 0/77 | TD45 |
| MAX98304 AX46Y Thin | | 0/150 | | | 0/77 | | | 0/77 | 0/77 | | 0/77 | 0/77 | 0/77 | (0.4 mm, 16X16 array) |
| | | 0/149 | | | 0/75 | | | 0/77 | 0/77 | | 0/77 | 0/77 | 0/77 | 0/60 |
| | | 0/150 | | | 0/74 | | | 0/77 | 0/77 | | 0/77 | 0/77 | 0/77 | |
| MAX9879 AX13Z | 5x6 BOP | 0/148 | 0/77 | | 0/75 | | | 0/77 | 0/77 | | 0/77 | | 0/77 | |
| | | 0/150 | 0/77 | | 0/75 | | | 0/77 | 0/77 | | 0/77 | | 0/77 | TEG0566 |
| | | 0/147 | 0/77 | | 0/70 | | | 0/77 | 0/77 | | 0/77 | | 0/77 | (0.5 mm, 12X12 array) |
| MAX8839 PR41Y | 4x4 BOP | 0/150 | | | 0/77 | | | 0/77 | 0/77 | | 0/77 | | 0/77 | 0/60 |
| | | 0/150 | | | 0/77 | | | 0/77 | 0/77 | | 0/77 | | 0/77 | |
| | | 0/150 | | | 0/77 | | | 0/77 | 0/77 | | 0/77 | | 0/77 | |

Table 3: Devices with bump material change and/or ball diameter changes

| Device | Location Move from Dallas to ASE & Bump Material change from LF45 to LF35 | Location Move from Dallas to ASE & Bump Material change from LF45 to LF35 & Ball Diameter change from 350 to 300um |
|---|---|---|
| DS2431X+U | X | |
| DS2431X-105-00+T | X | |
| DS2431X-S+ | X | |
| DS2431X-S+TW | X | |
| DS2432X+U | X | |
| DS2432X-101-4D+T | X | |
| DS2432X-S+ | X | |
| DS2432X-S+TW | X | |
| DS2482X-100+T | X | |
| DS2482X-100+U | X | |
| DS2482X-101+T | X | |
| DS2482X-101+U | X | |
| DSRB2X-C41+T&R | X | |
| DSRB2X-C71+T&R | X | |
| MAX13035EEBE+T | X | X |
| MAX13042EEBC+T | X | X |
| MAX14526EEWP+TCJ8 | X | |
| MAX16072RS29D2+ | X | |
| MAX16072RS29D2+T | X | |
| MAX16074RS17D2+T | X | |
| MAX16074RS29D3+T | X | |
| MAX1819EBL25+T | X | X |
| MAX1819EBL33+T | X | X |
| MAX3002EBP+T | X | X |
| MAX3206EEWL+T | X | |
| MAX3228AEEWV+T | X | |
| MAX3229AEEWV+T | X | |
| MAX3230AEEWV+T | X | |
| MAX3373EEBL+T | X | X |
| MAX3378EEBC+T | X | X |
| MAX3391EEBC+T | X | X |
| MAX3394EEBL+T | X | X |
| MAX4038EBL+T | X | X |
| MAX4039EBL+T | X | X |
| MAX4163EBL+T | X | X |
| MAX4231ART+T | X | |
| MAX4233ABC+T | X | X |
| MAX4252EBL+T | X | X |
| MAX4252EBL+TG45 | X | X |
| MAX4253EBC+ | X | X |
| MAX4253EBC+T | X | X |
| MAX4292EBL+T | X | X |
| MAX4372FEBT+T | X | X |
| MAX4372TEBT+T | X | X |
| MAX4372TEBT+TG45 | X | X |
| MAX4410EBE+T | X | X |
| MAX4684EBC+T | X | X |
| MAX4717EBC+T | X | X |
| MAX4721EBL+T | X | X |
| MAX4722EBL+T | X | X |
| MAX4737EBE+T | X | X |
| MAX4739EBE+T | X | X |
| MAX4762EBC+T | X | X |
| MAX4903EBL+T | X | X |
| MAX4903EBL+TG2B | X | X |
| MAX4948ERA+T | X | |
| MAX6023EBT12+ | X | X |
| MAX6023EBT12+T | X | X |
| MAX6023EBT25+T | X | X |
| MAX6023EBT30+T | X | X |
| MAX6023EBT45+T | X | X |
| MAX6401BS29+T | X | X |

Table 3: Devices with bump material change and/or ball diameter changes

| Device | Location Move from Dallas to ASE & Bump Material change from LF45 to LF35 | Location Move from Dallas to ASE & Bump Material change from LF45 to LF35 & Ball Diameter change from 350 to 300um |
|---|---|---|
| MAX6402BS22+T | X | X |
| MAX77271EWL+T | X | |
| MAX8531EBTGG+T | X | X |
| MAX8649EWE+T | X | |
| MAX8698CEWO+T | X | |
| MAX8834YEWP+T | X | |
| MAX8893CEWV+T | X | |
| MAX8896EREE+T | X | |
| MAX8899EWZ+T | X | |
| MAX8899GEWZ+T | X | |
| MAX8952EWE+T | X | |
| MAX8983EWE+T | X | |
| MAX8983EWE+TCAW | X | |
| MAX9025EBT+T | X | X |
| MAX9025EBT+TG45 | X | X |
| MAX9026EBT+T | X | X |
| MAX9027EBT+T | X | X |
| MAX9028EBT+T | X | X |
| MAX9028EBT+TCHE | X | X |
| MAX9039BEBT+T | X | X |
| MAX9060EBS+TG45 | X | X |
| MAX9061EBS+TG45 | X | X |
| MAX9062EBS+TG45 | X | X |
| MAX9063EBS+TG45 | X | X |
| MAX9064EBS+TG45 | X | X |
| MAX9065EUK+T | X | X |
| MAX9634FERS+T | X | |
| MAX9634HERS+T | X | |
| MAX9634TERS+T | X | |
| MAX9634WERS+T | X | |
| MAX9644EBS+TG45 | X | X |
| MAX9646EBS+TG45 | X | X |
| MAX9700BEBC+T | X | X |
| MAX9718AEBL+TG45 | X | X |
| MAX9718FEBL+TG45 | X | X |
| MAX9718GEBL+TG45 | X | X |
| MAX9718HEBL+TG45 | X | X |
| MAX9719AEBE+T | X | X |
| MAX9724BEBC+TG45 | X | X |
| MAX985EBT+TG45 | X | X |
| MAX9877AERP+T | X | |
| MAX9879ERV+T | X | |
| MAX9879ERV+TCEP | X | |
| MAX9890BEBL+T | X | X |
| MAX9892ERT+T | X | |
| MAX9928FABT+T | X | X |
| MAX9929FABT+T | X | X |
| MAX9929FAUA+ | X | X |
| MAX9929FAUA+T | X | X |
| MAX9934FART+TG0Y | X | |
| MAX9934TART+T | X | |
| MAX9938FEBS+TG45 | X | X |
| MAX9938TEBS+TG45 | X | X |
| MAX9938WEBS+TG45 | X | X |