PCN #: 1409
DATE: 16-May-2014
PROPOSED SHIP DATE: 16-Aug-2014

Quality Assurance
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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) MAX32590

CHANGE FROM:	**CHANGE TO:**
Gold bond wire	Copper bond wire
JUSTIFICATION: We are expanding our capacity at ASE-CL by qualifying the MAX32590 on ASECL's high volume copper bond wire line. See the attached reliability report R25366FQ which qualifies this change to copper wire.	
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

☒ Qualification
☐ Evaluation

Report#: R25366FQ_EXT
Date: 11/02/2012

MAXIM RELIABILITY QUALIFICATION REPORT

SUBJECT

ASE ChungLi Taiwan, 376 Pin 0.8 mm Pitch (18x18x1.4mm) and 248 Pin 0.5 mm Pitch (10x10x1.2mm) 0.8 mil Pd coated Cu-Wire Pb-Free CSBGA Package and Assembly Site Qualification.

CONCLUSION

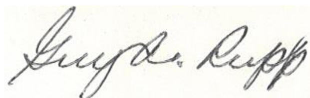
All qualification lots have passed Maxim reliability qualification requirements. In addition, packages have completed Moisture Sensitivity Level 3 testing per JEDEC J-STD-020D.1, and solder reflow test at 260°C peak temperature (Tp). Therefore, assembler ASE ChungLi Taiwan is qualified to build up to 376 Pin 0.8 mm Pitch (18x18x1.4mm) and 248 Pin 0.5mm Pitch (10x10x1.2mm) Pb-Free CSBGA packages with 0.8 mil Pd-coated Cu-Wire.

PACKAGE COVERAGE

Additional CSBGA and CTBGA package families that are also qualified by extension to this qualification at ASE ChungLi Taiwan using same BOM are: all 0.8mm pitch ≤ 18x18mm package size, and all 0.5mm pitch ≤ 10x10mm package size.

TEST RESULT

See Tables 3, 4, and 5 for details.

 Guy Rupp Senior Principal Member of Technical Staff	 Director, Reliability

TEST RESULTS/ LOT INFORMATION:

Table 3.

TEST	REL#: 25366 (48525)	REL#: 25366 (48526)	REL#: 25366 (48711)	REL#: 25366 (48473)
	DEVICE: MG3500A3	DEVICE: MG3500A3	DEVICE: MG3500A3	DEVICE: MG3500A3
	LOT#: EX105234AE-QUAL	LOT#: EX105234AG-QUAL	LOT#: EX105234AF-QUAL	LOT#: EX105234AD-QUAL (Au-Wire Control Lot)
	PKG CODE: X37688+1	PKG CODE: X37688+1	PKG CODE: X37688+1	PKG CODE: X37688+1
	DIE: MG02Z	DIE: MG02Z	DIE: MG02Z	DIE: MG02Z
	D/C: 1043	D/C: 1043	D/C: 1043	D/C: 1043
Operating Life	1000 hours – 0/77	0/76	0/77	0/77
Convection Solder Reflow *1	3X – 0/251	0/251	0/251	0/250
Temperature Cycle *2	1000 cycles – 0/77	0/77	0/77	0/77
High Temperature Storage *2	1000 hours – 0/75 *4	0/75 *4	0/76 *5	0/77
Unbiased HAST *2	264 hours – 0/77	0/77	0/77	0/77
Physical Dimensions	0/10	0/10	0/10	0/10
BGA Ball Shear	0/24 Balls	0/24 Balls	0/24 Balls	0/24 Balls
Wire Bond Pull Strength	0/40 Wires	0/40 Wires	0/40 Wires	0/40 Wires
Wire Bond Ball Shear *3	0/24 Wires	0/24 Wires	0/24 Wires	0/24 Wires
Bond Crater *2	0/18	0/20	0/20	0/19

Note: *1. Level 3 soak (30°C/60%R.H. for 192 hrs) is used as preconditioning.
*2. Convection solder reflow at 260°C Tp is used as preconditioning.
*3. Performed by Assembly Site.
*4. Mechanical Damage – 1 unit with solder ball damage not tested at 500 hours.
1 unit failing DLL experimental test parameter at 500 hours, subsequently eliminated from the test program.
*5. Mechanical Damage – 1 unit with solder ball damage not tested at 500 hours.

Table 4.

TEST	REL#: 25127 (48531)	REL#: 25127 (48532)	REL#: 25127 (48533, 49122)	REL#: 25127 (48759, 49123)
	DEVICE: MAX64180CXO	DEVICE: MAX64180CXO	DEVICE: MAX64180CXO	DEVICE: MAX64180CXO
	LOT#: EX114143AA-QUAL	LOT#: EX114143AB-QUAL	LOT#: EX114143AC-QUAL	LOT#: EX114143AD (Au-Wire Control Lot)
	PKG CODE: X24800+1	PKG CODE: X24800+1	PKG CODE: X24800+1	PKG CODE: X24800+1
	DIE: MG02Z	DIE: MG02Z	DIE: MG02Z	DIE: MG02Z
	D/C: 1049	D/C: 1049	D/C: 1049	D/C: 1049
Convection Solder Reflow *1	3X – 0/50	0/50	0/100	0/50
Biased HAST *2	264 hours – 0/44 *4	0/42 *5	1/45 *6	0/44 *7
Repeat Biased HAST *2	–	–	264 hours – 0/45	0/45
Wire Bond Pull Strength (gm-f) Avg, StdDev, Max, Min, Cpk	–	–	0/200, 0/200 Wires 6.49, 0.61, 9.55, 5.45, 1.89 7.0, 0.9, 9.6, 4.5, 1.5	–
Wire Bond Ball Shear *3	0/24 Wires	0/24 Wires	0/24 Wires	0/24 Wires
Bond Crater *2	–	–	0/10	–

Note: *1. Level 3 soak (30°C/60%R.H. for 192 hrs) is used as preconditioning.
*2. Convection solder reflow at 260°C Tp is used as preconditioning.
*3. Performed by Assembly Site.
*4. 1 unit failed due to EOS damage near ball bond pads 293-295. IFAR40033616, not a valid package failure.
*5. 1 HAST Board removed for socket repairs, leaving 7 HAST Boards with 6 sockets per board = 42 units.
*6. 1 unit failed due to lifted ball bond #292 at bond pad #479. IFAR40035100/SCAR30598 inconclusive.
Therefore, 3 post-SCAR resubmission lots were required for additional reliability stress testing.
*7. 1 unit failed due to EOS damage in the LVCMOS IO blocks. IFAR40035448, not a valid package failure.

TEST RESULTS/ LOT INFORMATION: continued

Table 5. Post-SCAR# 30598 Qual Lots Summary

TEST	REL#: 26332 (49318)	REL#: 26332 (49319)	REL#: 26332 (49320)
	DEVICE: MAX64180CXO	DEVICE: MAX64180CXO	DEVICE: MAX64180CXO
	LOT#: EX117902AF-QUAL	LOT#: EX117902AG-QUAL	LOT#: EX117902AH-QUAL
	PKG CODE: X24800+1	PKG CODE: X24800+1	PKG CODE: X24800+1
	DIE: MG02Z	DIE: MG02Z	DIE: MG02Z
	D/C: 1147	D/C: 1147	D/C: 1147
Convection Solder Reflow [*1]	3X – 0/281	0/281	0/281
Biased HAST [*2]	264 hours – 0/45	0/45	0/45
Temperature Cycle [*2]	1000 cycles – 0/77	0/77	0/77
High Temperature Storage [*2]	1000 hours – 0/77	0/77	0/77
Wire Bond Pull Strength (gm-f) Avg, StdDev, Max, Min, Cpk	0/200 Wires	0/200 Wires	0/200, 0/200 Wires
	8.09, 1.02, 11.90, 6.45, 1.66	7.92, 0.81, 10.20, 6.30, 2.02	7.00, 0.80, 10.20, 5.55, 1.68 7.2, 0.9, 9.8, 4.3, 1.6
Wire Bond Ball Shear [*3]	0/24 Wires	0/24 Wires	0/24 Wires
Bond Crater [*2]	0/10	0/10	0/5

Note: *1. Level 3 soak (30°C/60%R.H. for 192 hrs) is used as preconditioning.
*2. Convection solder reflow at 260°C Tp is used as preconditioning.
*3. Performed by Assembly Site.