

PROCESS CHANGE NOTICE
 PRODUCT CHANGE NOTICE

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

<input type="checkbox"/> DESIGN	<input type="checkbox"/> WAFER FAB	<input checked="" type="checkbox"/> ASSEMBLY	<input type="checkbox"/> TEST	<input type="checkbox"/> ELEC/MECH SPECS
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AFFECTED PRODUCT:

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

CHANGE FROM: Single sourced QFP Assembly Location,
 Amkor Korea (ATK)

CHANGE TO: Moving to QFP Assembly Location, Amkor
 Philippines (ATP)

JUSTIFICATION: Amkor Korea plant (ATK) is closing their assembly site by end of 2015. Impacted packages will shut down in stages. The QFP package shutdown is scheduled by mid-March 2015. Maxim has qualified ATP as the alternate site for QFP, where other QFP body sizes and lead counts are already in production volume.

See attached Reliability Report for the ATP qualification

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.



Deborah Meeker / PCN Coordinator

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

Contact your local Maxim Integrated Company Representative

or Deborah Meeker, PCN Coordinator
 408-601-5618 / pcn.coordinator@maximintegrated.com

**PACKAGE RELIABILITY REPORT
FOR**

ATP, 100 LQFP, 14x14x1.4mm, Pb-Free

Dallas Semiconductor

**4401 South Beltwood Parkway
Dallas, TX 75244-3292**

Prepared by:

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Conclusion:

The following qualification successfully meets the quality and reliability standards required of all Dallas Semiconductor packages:

ATP, 100 LQFP, 14x14x1.4mm, Pb-Free

In addition, Dallas Semiconductor's continuous reliability monitor program ensures that all outgoing assemblies will continue to meet Maxim's quality and reliability standards. The current status of the reliability monitor program can be viewed at <http://www.maxim-ic.com/TechSupport/dsreliability.html>.

Package Description:

A description of this assembly can be found in the product data sheet. You can find the product data sheet at http://dbserv.maxim-ic.com/l_datasheet3.cfm.

Reliability Derating:

The Arrhenius model will be used to determine the acceleration factor for failure mechanisms that are temperature accelerated.

$$AfT = \exp((Ea/k) * (1/Tu - 1/Ts)) = tu/ts$$

AfT = Acceleration factor due to Temperature
tu = Time at use temperature (e.g. 55°C)
ts = Time at stress temperature (e.g. 125°C)
k = Boltzmann's Constant (8.617 x 10⁻⁵ eV/°K)
Tu = Temperature at Use (°K)
Ts = Temperature at Stress (°K)
Ea = Activation Energy (e.g. 0.7 ev)

The activation energy of the failure mechanism is derived from either internal studies or industry accepted standards, or activation energy of 0.7ev will be used whenever actual failure mechanisms or their activation energies are unknown. All deratings will be done from the stress ambient temperature to the use ambient temperature.

An exponential model will be used to determine the acceleration factor for failure mechanisms, which are voltage accelerated.

$$AfV = \exp(B * (Vs - Vu))$$

AfV = Acceleration factor due to Voltage
Vs = Stress Voltage (e.g. 7.0 volts)
Vu = Maximum Operating Voltage (e.g. 5.5 volts)
B = Constant related to failure mechanism type (e.g. 1.0, 2.4, 2.7, etc.)

The Constant, B, related to the failure mechanism is derived from either internal studies or industry accepted standards, or a B of 1.0 will be used whenever actual failure mechanisms or their B are unknown. All deratings will be done from the stress voltage to the maximum operating voltage. Failure rate data from the operating life test is reported using a Chi-Squared statistical model at the 60% or 90% confidence level (Cf).

The failure rate, Fr, is related to the acceleration during life test by:

$$Fr = X / (ts * AfV * AfT * N * 2)$$

X = Chi-Sq statistical upper limit
N = Life test sample size

Failure Rates are reported in FITs (Failures in Time) or MTTF (Mean Time To Failure). The FIT rate is related to MTTF by:

$$MTTF = 1/Fr$$

NOTE: MTTF is frequently used interchangeably with MTBF.

The calculated failure rate for this device/process is:

FAILURE RATE:	MTTF (YRS):	15863	FITS:	7.2
	DEVICE HOURS:	127327560	FAILS:	0

Only data from Operating Life or similar stresses are used for this calculation.

The parameters used to calculate this failure rate are as follows:

Cf: 60%	Ea: 0.7	B: 0	Tu: 25 °C	Vu: 5.5 Volts
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The reliability data follows. Some of the data in this report may be generic. At the start of this data is a description of the assembly vehicle used to generate this reliability data. The next section is the detailed reliability data for each stress. If there are additional assemblies used as part of this report, a description of each will follow which includes the respective reliability data for that assembly. The reliability data section includes the latest data available.

Assembly Information:

Assembly Site:	ATP (Amkor, PI)
Pin Count:	100
Package Type:	LQFP (Pb-Free)
Body Size:	14x14x1.4
Mold Compound:	Sumitomo G700L
Lead Frame:	Stamped Copper CDA194
Lead Finish:	Sn Plate 100% Matte (With Anneal Bake)
Die Attach:	3230 Ablebond Silverfiled Epoxy
Bond Wire / Size:	Au / 1.2 mil
Flammability:	UL 94-V0
Theta JA:	
Theta JC:	
Moisture Sensitivity (JEDEC J-STD20A)	Level 4
Date Code Range:	0621 to 0626

DATE CODE: 0621 **LOT NUMBER:** QK533115ABA

CONSTRUCTION ANALYSIS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
PACKAGE, ASSEMBLY PROCESS	PERFORMED BY ASSEMBLY SITE		10	0	
Total:				0	

PACKAGE TESTS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
SOLDERABILITY (Sn/Pb)	JESD22-B102, COND C		3	0	
SOLDERABILITY (Pb-Free)	JESD22-B102, COND C		3	0	
Total:				0	

PACKAGE TESTS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
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X-RAY	MIL-STD-883-2012 : TOP & SIDE VIEW	6	0
PHYSICAL DIMENSIONS	JESD22-B100	6	0
MARK PERMANENCY	JESD22-B107	6	0
LEAD INTEGRITY	JESD22-B105, COND B	6	0
EXTERNAL VISUAL	JESD22-B101	6	0
EDX	25 C	1	0
Total:			0

MOISTURE SENSITIVITY LEVEL 3

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
ULTRASOUND	J-STD-020		22	0	
STORAGE LIFE	125C	24 HRS	22		
MOISTURE SOAK	30C/60% R.H.	192 HRS	22		
CONVECTION REFLOW	260C +/-5C	3 PASS	22	0	
EXTERNAL VISUAL	J-STD-020, 6.1a		22	0	
PRECONDITION U/S	J-STD-020		21	0	
Total:					0

PRECONDITIONING LEVEL 3

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	125C	24 HRS	276		
MOISTURE SOAK	30C/60% R.H.	192 HRS	276		
CONVECTION REFLOW	260C +/-5C	3 PASS	276	0	
Total:					0

FOLLOWED BY:

OPERATING LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH TEMP OP LIFE	125C, 3.5 VOLTS	1000 HRS	45	0	
Total:					0

STORAGE LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	150C	1000 HRS	77	0	
Total:					0

TEMPERATURE CYCLE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	-55C TO 125C	1000 CYS	77	0	
Total:					0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
HAST, NO BIAS	130C, 85% R.H.	200 HRS	77	0	
Total:					0

DATE CODE: 0621

LOT NUMBER: QK533115ACA

PACKAGE TESTS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
SOLDERABILITY (Sn/Pb)	JESD22-B102, COND C		3	0	
SOLDERABILITY (Pb-Free)	JESD22-B102, COND C		3	0	
Total:					0

PACKAGE TESTS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
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X-RAY	MIL-STD-883-2012 : TOP & SIDE VIEW	6	0
PHYSICAL DIMENSIONS	JESD22-B100	6	0
MARK PERMANENCY	JESD22-B107	6	0
LEAD INTEGRITY	JESD22-B105, COND B	6	0
EXTERNAL VISUAL	JESD22-B101	6	0
EDX	25 C	1	0
Total:		0	0

MOISTURE SENSITIVITY LEVEL 3

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
ULTRASOUND	J-STD-020		22	0	
STORAGE LIFE	125C	24 HRS	22		
MOISTURE SOAK	30C/60% R.H.	192 HRS	22		
CONVECTION REFLOW	260C +/-5C	3 PASS	22	0	
EXTERNAL VISUAL	J-STD-020, 6.1a		22	0	
PRECONDITION U/S	J-STD-020		22	0	
Total:			0	0	

PRECONDITIONING LEVEL 3

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	125C	24 HRS	276		
MOISTURE SOAK	30C/60% R.H.	192 HRS	276		
CONVECTION REFLOW	260C +/-5C	3 PASS	276	0	
Total:			0	0	

FOLLOWED BY:

OPERATING LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH TEMP OP LIFE	125C, 3.5 VOLTS	1000 HRS	45	0	
Total:			0	0	

STORAGE LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	150C	1000 HRS	77	0	
Total:			0	0	

TEMPERATURE CYCLE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	-55C TO 125C	1000 CYS	77	0	
Total:			0	0	

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
HAST, NO BIAS	130C, 85% R.H.	200 HRS	77	0	
Total:			0	0	

DATE CODE: 0622

LOT NUMBER: QK533115ADA

PACKAGE TESTS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
SOLDERABILITY (Sn/Pb)	JESD22-B102, COND C		3	0	
SOLDERABILITY (Pb-Free)	JESD22-B102, COND C		3	0	
Total:			0	0	

PACKAGE TESTS

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
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X-RAY	MIL-STD-883-2012 : TOP & SIDE VIEW	6	0
PHYSICAL DIMENSIONS	JESD22-B100	6	0
MARK PERMANENCY	JESD22-B107	6	0
LEAD INTEGRITY	JESD22-B105, COND B	6	0
EXTERNAL VISUAL	JESD22-B101	6	0
EDX	25 C	1	0
Total:			0

MOISTURE SENSITIVITY LEVEL 3

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
ULTRASOUND	J-STD-020		22	0	
STORAGE LIFE	125C	24 HRS	22		
MOISTURE SOAK	30C/60% R.H.	192 HRS	22		
CONVECTION REFLOW	260C +/-5C	3 PASS	22	0	
EXTERNAL VISUAL	J-STD-020, 6.1a		22	0	
PRECONDITION U/S	J-STD-020		22	0	
Total:					0

PRECONDITIONING LEVEL 3

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	125C	24 HRS	276		
MOISTURE SOAK	30C/60% R.H.	192 HRS	276		
CONVECTION REFLOW	260C +/-5C	3 PASS	276	0	
Total:					0

FOLLOWED BY:

OPERATING LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH TEMP OP LIFE	125C, 3.5 VOLTS	1000 HRS	45	0	
Total:					0

STORAGE LIFE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	150C	1000 HRS	77	0	
Total:					0

TEMPERATURE CYCLE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	-55C TO 125C	1000 CYS	77	0	
Total:					0

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
HAST, NO BIAS	130C, 85% R.H.	200 HRS	77	0	
Total:					0

DATE CODE: 0626

LOT NUMBER: QK063032AJ

PRECONDITIONING LEVEL 3

DESCRIPTION	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	125C	24 HRS	45		
MOISTURE SOAK	30C/60% R.H.	192 HRS	45		
CONVECTION REFLOW	260C +/-5C	3 PASS	45	0	
Total:					0

FOLLOWED BY:

TEMPERATURE HUMIDITY BIAS

