RELIABILITY REPORT

FOR

MAX3787AWL+

WAFER LEVEL PRODUCTS

February 6, 2014

MAXIM INTEGRATED

160 RIO ROBLES

SAN JOSE, CA 95134

Approved by
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Quality Assurance
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Conclusion

The MAX3787AWL+ successfully meets the quality and reliability standards required of all Maxim Integrated products. In addition, Maxim Integrated's continuous reliability monitoring program ensures that all outgoing product will continue to meet Maxim Integrated's quality and reliability standards.

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I. Device Description

A. General

The MAX3787 is a 1Gbps to 12.5Gbps equalization network that compensates for transmission medium losses encountered with FR4 and cables. The equalization network is composed entirely of passive components and functions equally well for 8b/10b or scrambled signals. It is packaged in a small 1.5mm x 1.5mm chipscale package (UCSP(tm)) that can be placed anywhere along the transmission medium to increase jitter margin for high-speed interconnects. Roughly the size of two 0603 components, the MAX3787 easily provides placement and routing flexibility. At 8.5Gbps, the MAX3787 compensates for spans up to 18in of FR4 and 7m of cable. At 12.5Gbps, the MAX3787 compensates for spans up to 12in of FR4 and 3m of cable. Input and output impedance is 100 differential. The MAX3787 requires no power and operates over a -40°C to +125°C temperature range.

II. Manufacturing Information

A. Description/Function:	1Gbps to 12.5Gbps Passive Equalizer for Backplanes and Cables
B. Process:	G4
C. Number of Device Transistors:	
D. Fabrication Location:	Oregon
E. Assembly Location:	Japan
F. Date of Initial Production:	July 07, 2005

III. Packaging Information

A. Package Type:	9 bmp WLP
B. Lead Frame:	N/A
C. Lead Finish:	N/A
D. Die Attach:	None
E. Bondwire:	N/A
F. Mold Material:	
G. Assembly Diagram:	#05-9000-3200
H. Flammability Rating:	Class UL94-V0
I. Classification of Moisture Sensitivity per JEDEC standard J-STD-020-C	1
J. Single Layer Theta Ja:	N/A
K. Single Layer Theta Jc:	N/A
L. Multi Layer Theta Ja:	71°C/W
M. Multi Layer Theta Jc:	N/A

IV. Die Information

A. Dimensions:	60X60 mils
B. Passivation:	Si_3N_4
C. Interconnect:	Au
D. Backside Metallization:	None
E. Minimum Metal Width:	1.2 microns (as drawn)
F. Minimum Metal Spacing:	1.6 microns (as drawn)
G. Bondpad Dimensions:	
H. Isolation Dielectric:	SiO_2
I. Die Separation Method:	Wafer Saw

V. Quality Assurance Information

A. Quality Assurance Contacts:	Don Lipps (Manager, Reliability Engineering) Bryan Preeshl (Vice President of QA)
B. Outgoing Inspection Level:	0.1% for all electrical parameters guaranteed by the Datasheet. 0.1% for all Visual Defects.
C. Observed Outgoing Defect Rate:	< 50 ppm
D. Sampling Plan:	Mil-Std-105D

VI. Reliability Evaluation

A. Accelerated Life Test

The results of the 150C biased (static) life test are shown in Table 1. Using these results, the Failure Rate (λ) is calculated as follows:

$$\lambda = \frac{1}{MTTF} = \frac{1.83}{192 \times 9706 \times 48 \times 2}$$ (Chi square value for MTTF upper limit)

(where 9706 = Temperature Acceleration factor assuming an activation energy of 0.8eV)

$\lambda = 10.2 \times 10^{-9}$

$\lambda = 10.2$ F.I.T. (60% confidence level @ 25°C)

The following failure rate represents data collected from Maxim Integrated's reliability monitor program. Maxim Integrated performs quarterly life test monitors on its processes. This data is published in the Reliability Report found at http://www.maximintegrated.com/qa/reliability/monitor. Cumulative monitor data for the G4 Process results in a FIT Rate of 0.02 @ 25C and 0.37 @ 55C (0.8 eV, 60% UCL).

B. E.S.D. and Latch-Up Testing (lot NJGAA3002B, D/C 0513)

The HT58 die type has been found to have all pins able to withstand a HBM transient pulse of +/-2500V per JEDEC JESD22-A114. Latch-Up testing is not applicable for this device.

Table 1

Reliability Evaluation Test Results

MAX3787AWL+

TEST ITEM	TEST CONDITION	FAILURE IDENTIFICATION	SAMPLE SIZE	NUMBER OF FAILURES	COMMENTS
Static Life Test (Note 1)					
	Ta = 150°C Biased Time = 192 hrs.	DC Parameters & functionality	48	0	NJGAA3002B, D/C 0513

Note 1: Life Test Data may represent plastic DIP qualification lots.