RELIABILITY REPORT

FOR

MAX2674EWT+T

WAFER LEVEL PRODUCTS

September 30, 2011

MAXIM INTEGRATED PRODUCTS

120 SAN GABRIEL DR.

SUNNYVALE, CA 94086

Approved by
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Quality Assurance
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Conclusion

The MAX2674EWT+T successfully meets the quality and reliability standards required of all Maxim products. In addition, Maxim's continuous reliability monitoring program ensures that all outgoing product will continue to meet Maxim's quality and reliability standards.

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I. Device Description

A. General

The MAX2674/MAX2676 are ultra-small, high-IP3, low-noise amplifiers (LNAs) designed for GPS L1, Galileo, and GLONASS applications. Designed in Maxim's advanced SiGe process, the devices are also equipped with an autosensing feature for applications that enable the use of external antennas. These high-performance LNAs provide high gain and an ultra-low noise figure while optimizing the input-referred 2dB compression point and 3rd-order intercept point. The ultra-small size is ideal for front-end modules and receiver applications in cellular phones, smartphones, PDAs, PNDs, or other custom GNSS applications. The MAX2674/MAX2676 operate from a 1.6V to 3.6V single supply. The MAX2674 is optimized for high gain, while the MAX2676 is optimized for high linearity. A shutdown feature is present in both devices reducing the supply current to less than 10µA. The antenna port automatically senses when an external antenna is connected, eliminating the need for additional control circuitry while also providing improved short-circuit protection. The MAX2674/MAX2676 are available in an ultra-small, RoHS-compliant 0.86mm x 1.26mm x 0.64mm wafer-level package (WLP).

II. Manufacturing Information

A. Description/Function:	GPS/GNSS LNAs with Antenna Switch and Bias
B. Process:	MB3
C. Number of Device Transistors:	2028
D. Fabrication Location:	California
E. Assembly Location:	Japan
F. Date of Initial Production:	December 10, 2010

III. Packaging Information

A. Package Type:	6 bmp 3x2 WLP
B. Lead Frame:	N/A
C. Lead Finish:	N/A
D. Die Attach:	None
E. Bondwire:	N/A (N/A mil dia.)
F. Mold Material:	Epoxy with silica filler
G. Assembly Diagram:	#05-9000-4156 / A
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:	95°C/W
M. Multi Layer Theta Jc:	N/A

IV. Die Information

A. Dimensions:	33.9 X 49.6 mils
B. Passivation:	BCB
C. Interconnect:	Al with top layer 100% Cu
D. Backside Metallization:	None
E. Minimum Metal Width:	0.35µm
F. Minimum Metal Spacing:	0.35µm
G. Bondpad Dimensions:	
H. Isolation Dielectric:	SiO_2
I. Die Separation Method:	Wafer Saw

V. Quality Assurance Information

A. Quality Assurance Contacts:	Richard Aburano (Manager, Reliability Engineering) 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 biased (static) life test are shown in Table 1. Using these results, the Failure Rate (λ) is calculated as follows:

$$\lambda = \frac{1}{MTTF} = \frac{1.83}{192 \times 4340 \times 48 \times 2}$$ (Chi square value for MTTF upper limit)

(where 4340 = Temperature Acceleration factor assuming an activation energy of 0.8eV)

$\lambda = 22.9 \times 10^{-9}$

$\lambda = 22.9$ F.I.T. (60% confidence level @ 25°C)

The following failure rate represents data collected from Maxim's reliability monitor program. Maxim performs quarterly life test monitors on its processes. This data is published in the Reliability Report found at http://www.maxim-ic.com/qa/reliability/monitor. Cumulative monitor data for the MB3 Process results in a FIT Rate of 0.08 @ 25C and 1.33 @ 55C (0.8 eV, 60% UCL)

B. E.S.D. and Latch-Up Testing

The WV26-1 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 has shown that this device withstands a current of +/-250mA and overvoltage per JEDEC JESD78.

Table 1
Reliability Evaluation Test Results

MAX2674EWT+T

TEST ITEM	TEST CONDITION	FAILURE IDENTIFICATION	SAMPLE SIZE	NUMBER OF FAILURES	COMMENTS
Static Life Test (Note 1)	Ta = 135°C Biased Time = 192 hrs.	DC Parameters & functionality	48	0	SM7UCA004A, D/C 1103

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