RELIABILITY REPORT

FOR

MAX6764UT+T

PLASTIC ENCAPSULATED DEVICES

July 7, 2016

MAXIM INTEGRATED

160 RIO ROBLES

SAN JOSE, CA 95134

Approved by
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Conclusion

The MAX6764UT+T 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 MAX6754-MAX6764 low-power window detectors monitor undervoltage/overvoltage conditions on system power supplies. These devices assert when the monitored voltage is under the undervoltage and/or over the overvoltage thresholds.

The MAX6754-MAX6759/MAX6763/MAX6764 monitor a single voltage. The MAX6760/MAX6761/MAX6762 monitor dual-voltage systems. The MAX6754/MAX6755/MAX6756 provide a single undervoltage/overvoltage output and the MAX6757-MAX6764 provide independent undervoltage and overvoltage outputs. The outputs are available in push-pull or open-drain configurations.

The MAX6754-MAX6762 offer factory-fixed voltage thresholds for monitoring system voltages from 0.9V to 5V with a selectable ±5%, ±10%, or ±15% window voltage. The MAX6763/MAX6764 allow for externally adjustable thresholds. The MAX6754-MAX6762 are available in two delay timing options (20µs, typ or 100ms, min). The MAX6760/MAX6761/MAX6762 also include a latched overvoltage output function and the MAX6754-MAX6762 include a manual reset input.

The family of products is available in small SOT23 and TDFN packages and is specified over the extended temperature range of -40°C to +125°C.

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II. Manufacturing Information

A. Description/Function:	Low-Power, Single/Dual-Voltage Window Detectors
B. Process:	B8
C. Fabrication Location:	USA
D. Assembly Location:	USA, Malaysia, Thailand
E. Date of Initial Production:	January 23, 2004

III. Packaging Information

A. Package Type:	6-pin SOT23
B. Lead Frame:	Copper
C. Lead Finish:	100% matte Tin
D. Die Attach:	Conductive
E. Bondwire:	Au (1 mil dia.)
F. Mold Material:	Epoxy with silica filler
G. Assembly Diagram:	#05-9000-0937
H. Flammability Rating:	Class UL94-V0
I. Classification of Moisture Sensitivity per JEDEC standard J-STD-020-C	Level 1
J. Single Layer Theta Jb:	N/A°C/W
K. Single Layer Theta Jc:	N/A°C/W
L. Multi Layer Theta Ja:	115°C/W
M. Multi Layer Theta Jc:	80°C/W

IV. Die Information

A. Dimensions:	51X35 mils
B. Passivation:	Si_3N_4/SiO_2 (Silicon nitride/ Silicon dioxide)
C. Interconnect:	Al/0.5%Cu with Ti/TiN Barrier
D. Backside Metallization:	None
E. Minimum Metal Width:	0.8 microns (as drawn)
F. Minimum Metal Spacing:	0.8 microns (as drawn)
G. Bondpad Dimensions:	
H. Isolation Dielectric:	SiO_2
I. Die Separation Method:	Wafer Saw

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V. Quality Assurance Information

A. Quality Assurance Contacts: Eric Wright (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 135C 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)

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

λ = 22.9 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 B8 Process results in a FIT Rate of 0.06 @ 25C and 0.99 @ 55C (0.8 eV, 60% UCL)

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

The MS83-4 die type has been found to have all pins able to withstand an HBM transient pulse of +/-1000V per JEDEC JESD22-A114. Latch-Up testing has shown that this device withstands a current of +/-250mA and overvoltage per JEDEC JESD78.

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Table 1
Reliability Evaluation Test Results

MAX6764UT+T

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

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

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