

RELIABILITY REPORT FOR MAX6762TARAD3+ PLASTIC ENCAPSULATED DEVICES

May 25, 2011

MAXIM INTEGRATED PRODUCTS

120 SAN GABRIEL DR.

SUNNYVALE, CA 94086

Approved by
Sokhom Chum
Quality Assurance
Reliability Engineer

Conclusion

The MAX6762TARAD3+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.

Table of Contents

- I.Device Description IV.Die Information
- II.Manufacturing Information
- III.Packaging Information
-Attachments

V.Quality Assurance Information VI.Reliability Evaluation

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.



II. Manufacturing Information

- A. Description/Function:
- B. Process:
- C. Number of Device Transistors:
- D. Fabrication Location:
- E. Assembly Location:
- F. Date of Initial Production:

III. Packaging Information

A. Package Type:	8-pin TDFN 3x3
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:	#05-9000-0790
H. Flammability Rating:	Class UL94-V0
 Classification of Moisture Sensitivity per JEDEC standard J-STD-020-C 	Level 1
J. Single Layer Theta Ja:	54°C/W
K. Single Layer Theta Jc:	8°C/W
L. Multi Layer Theta Ja:	41°C/W
M. Multi Layer Theta Jc:	8°C/W

Low-Power, Single/Dual-Voltage Window Detectors

China, Malaysia, Philippines, Thailand

B8

Oregon

October 25, 2003

IV. Die Information

A.	Dimensions:	51 X 35 mils
В.	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:	5 mil. Sq.
н.	Isolation Dielectric:	SiO ₂
I.	Die Separation Method:	Wafer Saw



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 135°C biased (static) life test are shown in Table 1. Using these results, the Failure Rate (λ) is calculated as follows:

 $\lambda = \underbrace{1}_{\text{MTTF}} = \underbrace{1.83}_{\text{192 x 4340 x 96 x 2}} \text{ (Chi square value for MTTF upper limit)}$ $\lambda = 11.5 \text{ x } 10^{-9}$ $\lambda = 11.5 \text{ F.I.T. (60\% confidence level @ 25°C)}$

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 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 (ESD lot IQ0000012D D/C 0340, Latch-Up lot S0000Q085A D/C 0452)

The MS83-2 die type has been found to have all pins able to withstand a HBM transient pulse of +/-1000V per Mil-Std 883 Method 3015.7. Latch-Up testing has shown that this device withstands a current of +/-250mA.



Table 1 Reliability Evaluation Test Results

MAX6762TARAD3+T

TEST ITEM	TEST CONDITION	FAILURE IDENTIFICATION	SAMPLE SIZE	NUMBER OF FAILURES	COMMENTS			
Static Life Test (Note 1)								
	Ta = 135°C	DC Parameters	48	0	S0000Q081A, D/C 0447			
	Biased	& functionality	48	0	IQ000008C, D/C 0340			
	Time = 192 hrs.							

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