RELIABILITY REPORT

FOR

MAX6711TEXS+T

PLASTIC ENCAPSULATED DEVICES

January 12, 2011

MAXIM INTEGRATED PRODUCTS

120 SAN GABRIEL DR.

SUNNYVALE, CA 94086

Approved by
Richard Aburano
Quality Assurance
Manager, Reliability Operations

Conclusion

The MAX6711TEXS+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

A. General

The MAX6711/MAX6712/MAX6713 are microprocessor (µP) supervisory circuits used to monitor the power supplies in µP and digital systems. They provide excellent circuit reliability and low cost by eliminating external components and adjustments when used with +5.0V, +3.3V, +3.0V, or +2.5V-powered circuits. They also provide a debounced manual reset input. These circuits assert a reset signal whenever the VCC supply voltage declines below a preset threshold or whenever manual reset is asserted. Reset remains asserted for at least 140ms after VCC has risen above the reset threshold or when manual reset is deasserted. Reset thresholds suitable for operation with a variety of supply voltages are available. The MAX6713 has an open-drain output stage, while the MAX6711/MAX6712 have push-pull outputs. The MAX6713's open-drain active-low RESET output requires a pull-up resistor that can be connected to a voltage higher than VCC. The MAX6711/MAX6713 have an active-low reset output, while the MAX6712 has an active-high reset output. The reset comparator is designed to ignore fast transients on VCC, and the outputs are guaranteed to be in the correct logic state for VCC down to 1V. Low supply current makes the MAX6711/MAX6712/MAX6713 ideal for use in portable equipment. These devices are available in a 4-pin SC70 package.

II. Manufacturing Information

A. Description/Function:	4-Pin SC70 Microprocessor Reset Circuits with Manual Reset Input
B. Process:	B8
C. Number of Device Transistors:	
D. Fabrication Location:	California or Texas
E. Assembly Location:	Malaysia
F. Date of Initial Production:	March 06, 2000

III. Packaging Information

A. Package Type:	4-pin SC70
B. Lead Frame:	Alloy42
C. Lead Finish:	100% matte Tin
D. Die Attach:	Non-conductive
E. Bondwire:	Au (1 mil dia.)
F. Mold Material:	Epoxy with silica filler
G. Assembly Diagram:	#05-1601-0099
H. Flammability Rating:	Class UL94-V0
I. Classification of Moisture Sensitivity per JEDEC standard J-STD-020-C	Level 1
J. Single Layer Theta Ja:	327°C/W
K. Single Layer Theta Jc:	115°C/W
L. Multi Layer Theta Ja:	322.6°C/W
M. Multi Layer Theta Jc:	115°C/W

IV. Die Information

A. Dimensions:	30 X 29 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:	5 mil. Sq.
H. Isolation Dielectric:	SiO_2
I. Die Separation Method:	Wafer Saw

V. Quality Assurance Information

A. Quality Assurance Contacts:	Richard Aburano (Manager, Reliability Operations) 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:

$$\lambda = \frac{1}{MTTF} = \frac{1.83}{192 \times 4340 \times 80 \times 2}$$ (Chi square value for MTTF upper limit)

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

$\lambda = 13.7 \times 10^{-9}$

$\lambda = 13.7$ 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 (lot I5QFAQ001B, D/C 0004)

The MS39-2 die type has been found to have all pins able to withstand a HBM transient pulse of +/- 1500V per Mil-Std 883 Method 3015.7. Latch-Up testing has shown that this device withstands a current of 200mA.

Table 1
Reliability Evaluation Test Results

MAX6711TEXS+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	80	0	

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