RELIABILITY REPORT

FOR

MAX6340UK29+T

PLASTIC ENCAPSULATED DEVICES

April 21, 2011

MAXIM INTEGRATED PRODUCTS

120 SAN GABRIEL DR.

SUNNYVALE, CA 94086

Approved by
Sokhom Chum
Quality Assurance
Reliability Engineer

Conclusion

The MAX6340UK29+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 MAX6340/MAX6421–MAX6426 low-power microprocessor supervisor circuits monitor system voltages from 1.6V to 5V. These devices perform a single function: they assert a reset signal whenever the VCC supply voltage falls below its reset threshold. The reset output remains asserted for the reset timeout period after VCC rises above the reset threshold. The reset timeout is externally set by a capacitor to provide more flexibility. The MAX6421/MAX6424 have an active-low, push-pull reset output. The MAX6422 has an active-high, push-pull reset output and the MAX6340/MAX6423/MAX6425/MAX6426 have an active-low, open-drain reset output. The MAX6421/MAX6422/MAX6423 are offered in 4-pin SC70 or SOT143 packages. The MAX6340/MAX6424/MAX6425/MAX6426 are available in 5-pin SOT23-5 packages.

II. Manufacturing Information

A. Description/Function:	Low-Power, SC70/SOT µP Reset Circuits with Capacitor-Adjustable Reset Timeout Delay
B. Process:	B8
C. Number of Device Transistors:	
D. Fabrication Location:	Oregon
E. Assembly Location:	Malaysia, Philippines, Thailand
F. Date of Initial Production:	October 26, 2002

III. Packaging Information

A. Package Type:	5-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:	#05-9000-0074
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:	324.3°C/W
K. Single Layer Theta Jc:	82°C/W
L. Multi Layer Theta Ja:	255.9°C/W
M. Multi Layer Theta Jc:	81°C/W

IV. Die Information

A. Dimensions:	36 X 36 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 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:

$$\lambda = \frac{1}{MTTF} = \frac{1.83}{192 \times 4340 \times 90 \times 2}$$ (Chi square value for MTTF upper limit)

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

$\lambda = 12.2 \times 10^{-9}$

$\lambda = 12.2$ 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 J8K9D3001A D/C 0919)

The MS60-9 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 +/-100mA and overvoltage per JEDEC JESD78.

Table 1
Reliability Evaluation Test Results

MAX6340UK29+T

TEST ITEM	TEST CONDITION	FAILURE IDENTIFICATION	SAMPLE SIZE	NUMBER OF FAILURES	COMMENTS
Static Life Test (Note 1)					
	Ta = 135°C	DC Parameters	45	0	S8K0CQ001B, D/C 0341
	Biased	& functionality	45	0	I8K0AQ001D, D/C 0149
	Time = 192 hrs.				

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