RELIABILITY REPORT
FOR
MAX6037BAUK30+T
PLASTIC ENCAPSULATED DEVICES

November 23, 2010

MAXIM INTEGRATED PRODUCTS
120 SAN GABRIEL DR.
SUNNYVALE, CA 94086

Approved by
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Quality Assurance
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Conclusion

The MAX6037BAUK30+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 MAX6037 family of low-dropout, micropower voltage references offer fixed and adjustable output voltage options ranging from 1.184V to 5V. Connect an external resistive-divider on the MAX6037_ADJ to adjust the output voltage from 1.184V to 5V. The other devices in the MAX6037 family feature fixed output voltages of 1.25V, 2.048V, 2.5V, 3.0V, 3.3V, and 4.096V. The MAX6037 offers shutdown functionality with an active-low shutdown (500nA, max). These series-mode voltage references operate from a 2.5V to 5.5V supply and consume 275µA (max) quiescent current. The output is stable driving loads from 0.02µF to 1µF and can source and sink 5mA of load current. The MAX6037 offers a low temperature coefficient of 25ppm/°C and initial accuracy of ±0.2% (max). The low dropout voltage (100mV, max at 1mA) and supply-independent, low supply current make the MAX6037 ideal for battery-powered applications. The MAX6037 is available in the miniature 5-pin SOT23 package and is specified over the -40°C to +125°C automotive temperature range.

II. Manufacturing Information

A. Description/Function:	Low-Power, Fixed and Adjustable Reference with Shutdown in SOT23
B. Process:	B8
C. Number of Device Transistors:	23390
D. Fabrication Location:	Oregon
E. Assembly Location:	Malaysia, Philippines, Thailand
F. Date of Initial Production:	January 23, 2004

III. Packaging Information

A. Package Type:	5-pin SOT23
B. Lead Frame:	Copper
C. Lead Finish:	100% matte Tin
D. Die Attach:	84-1lmisr4
E. Bondwire:	Au (1 mil dia.)
F. Mold Material:	Epoxy with silica filler
G. Assembly Diagram:	#05-9000-0780
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:	N/A
M. Multi Layer Theta Jc:	N/A

IV. Die Information

A. Dimensions:	42 X 55 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:	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:

$$\lambda = \frac{1}{\text{MTTF}} = \frac{1.83}{192 \times 4340 \times 144 \times 2} \quad \text{(Chi square value for MTTF upper limit)}$$

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

$\lambda = 7.6 \times 10^{-9}$

λ = 7.6 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 SJB0BQ002D, D/C 0437)

The RF37-4 die type has been found to have all pins able to withstand a HBM transient pulse of +/-2500V 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

MAX6037BAUK30+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 48 48	0 0 0	SJB3BQ002C, DC 0437 SJB2BQ002C, DC 0437 SJB0AQ001G, DC 0349

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