RELIABILITY REPORT
FOR
MAX1722EZK+
PLASTIC ENCAPSULATED DEVICES

July 7, 2011

MAXIM INTEGRATED PRODUCTS
120 SAN GABRIEL DR.
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Approved by
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Quality Assurance
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Conclusion

The MAX1722EZK+ 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 MAX1722/MAX1723/MAX1724 compact, high-efficiency, step-up DC-DC converters are available in tiny, 5-pin thin SOT23 packages. They feature an extremely low 1.5µA quiescent supply current to ensure the highest possible light-load efficiency. Optimized for operation from one to two alkaline or nickel-metal-hydride (NiMH) cells, or a single Li+ cell, these devices are ideal for applications where extremely low quiescent current and ultra-small size are critical. Built-in synchronous rectification significantly improves efficiency and reduces size and cost by eliminating the need for an external Schottky diode. All three devices feature a 0.5 N-channel power switch. The MAX1722/MAX1724 also feature proprietary noise-reduction circuitry, which suppresses electromagnetic interference (EMI) caused by the inductor in many step-up applications. The family offers different combinations of fixed or adjustable outputs, shutdown, and EMI reduction (see *Selector Guide*).

II. Manufacturing Information

A. Description/Function:	1.5µA IQ, Step-Up DC-DC Converters in Thin SOT23-5
B. Process:	B8
C. Number of Device Transistors:	863
D. Fabrication Location:	Oregon
E. Assembly Location:	Malaysia, Philippines
F. Date of Initial Production:	July 28, 2001

III. Packaging Information

A. Package Type:	5-pin TSOT
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:	#05-1101-0130
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:	365.1°C/W
K. Single Layer Theta Jc:	75°C/W
L. Multi Layer Theta Ja:	207°C/W
M. Multi Layer Theta Jc:	50°C/W

IV. Die Information

A. Dimensions:	58 X 38 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

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:

$$\lambda = \frac{1}{\text{MTTF}} = \frac{1.83}{192 \times 4340 \times 78 \times 2} \quad \text{(Chi square value for MTTF upper limit)}$$

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

$\lambda = 14.1 \times 10^{-9}$

λ = 14.1 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 I6KBDQ001B D/C 0114)

The PX90-1 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

MAX1722EZK+

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	78	0	I6KCEQ003C, D/C 0204

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