RELIABILITY REPORT
FOR
MAX4734EGC+
PLASTIC ENCAPSULATED DEVICES

January 26, 2009

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

Approved by
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Quality Assurance
Director, Reliability Engineering
Conclusion

The MAX4734EGC+ 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 V. Quality Assurance Information
II. Manufacturing Information VI. Reliability Evaluation
III. Packaging Information IV. Die Information
.....Attachments

I. Device Description

A. General

The MAX4734 is a low on-resistance, low-voltage, 4-channel CMOS analog multiplexer that operates from a single 1.6V to 3.6V supply. This device has fast switching speeds (tON = 25ns, tOFF = 20ns max), handles Rail-to-Rail analog signals, and consumes less than 4µW of quiescent power. The MAX4734 has break-before-make switching. When powered from a 3V supply, the MAX4734 features low 0.8 (max) on-resistance (RON), with 0.2 (max) RON matching and 0.1 RON flatness. The digital logic input is 1.8V CMOS compatible when using a single 3V supply. The MAX4734 is available in space-saving 12-pin QFN (3mm x 3mm) and 10-pin µMAX® packages.
II. Manufacturing Information

A. Description/Function: 0.8 V, Low-Voltage, 4-Channel Analog Multiplexer
B. Process: 0.35u, 1Poly 3Metal, CMOS
C. Number of Device Transistors:
D. Fabrication Location: Taiwan
E. Assembly Location: Anam Korea
F. Date of Initial Production: April 26, 2002

III. Packaging Information

A. Package Type: 12-pin QFN 3x3
B. Lead Frame: Copper
C. Lead Finish: 100% matte Tin
D. Die Attach: Conductive Epoxy
E. Bondwire: Gold (1 mil dia.)
F. Mold Material: Epoxy with silica filler
G. Assembly Diagram: #05-1201-0291
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: 68°C/W
K. Single Layer Theta Jc: 15.1°C/W
L. Multi Layer Theta Ja: 62°C/W
M. Multi Layer Theta Jc: 15.1°C/W

IV. Die Information

A. Dimensions: 43 X 43 mils
B. Passivation: Silicon Dioxide/Silicon Nitride
C. Interconnect: Al/Cu
D. Backside Metallization: None
E. Minimum Metal Width: 0.35 um
F. Minimum Metal Spacing: 0.35 um
G. Bondpad Dimensions: 5 mil. Sq.
H. Isolation Dielectric: Silicon Dioxide
I. Die Separation Method: Saw
V. Quality Assurance Information

A. Quality Assurance Contacts:
   Ken Wendel (Director, Reliability Engineering)
   Bryan Preeshl (Managing Director 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 ($\lambda$) is calculated as follows:

$$\frac{1}{\text{MTTF}} = 1.83 \text{ (Chi square value for MTTF upper limit)}$$

(where $4340 = \text{Temperature Acceleration factor assuming an activation energy of 0.8 eV}$)

$$\lambda = 13.4 \times 10^{-9}$$

$$\lambda = 13.4 \text{ F.I.T. (60% confidence level @ 25°C)}$$

The following failure rate represents data collected from Maxim's reliability monitor program. Maxim performs quarterly 1000 hour life test monitors on its processes. This data is published in the Product Reliability Report found at http://www.maxim-ic.com/. Current monitor data for the TS351P3M Process results in a FIT Rate of 0.43 @ 25°C and 7.50 @ 55°C (0.8 eV, 60% UCL)

B. Moisture Resistance Tests

The industry standard 85°C/85%RH or HAST testing is monitored per device process once a quarter.

C. E.S.D. and Latch-Up Testing

The AH85 die type has been found to have all pins able to withstand a HBM transient pulse of +/-1000 V per Mil-Std 883 Method 3015.7. Latch-Up testing has shown that this device withstands a current of +/-250 mA.
<table>
<thead>
<tr>
<th>TEST ITEM</th>
<th>TEST CONDITION</th>
<th>FAILURE IDENTIFICATION</th>
<th>SAMPLE SIZE</th>
<th>NUMBER OF FAILURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static Life Test</td>
<td>Ta = 135°C, Biased, Time = 192 hrs.</td>
<td>DC Parameters &amp; functionality</td>
<td>80</td>
<td>0</td>
</tr>
<tr>
<td>Moisture Testing</td>
<td>Ta = 85°C, RH = 85%, Biased, Time = 1000hrs.</td>
<td>DC Parameters &amp; functionality</td>
<td>77</td>
<td>0</td>
</tr>
<tr>
<td>Mechanical Stress</td>
<td>-65°C/150°C, 1000 Cycles, Method 1010</td>
<td>DC Parameters &amp; functionality</td>
<td>77</td>
<td>0</td>
</tr>
</tbody>
</table>

Note 1: Life Test Data may represent plastic DIP qualification lots.
Note 2: Generic Package/Process data