



RELIABILITY REPORT
FOR
MAX4626EUK+
(AX4626/MAX4627/MAX4628)
PLASTIC ENCAPSULATED DEVICES

February 26, 2009

MAXIM INTEGRATED PRODUCTS

120 SAN GABRIEL DR.
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Quality Assurance
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Conclusion

The MAX4626EUK+ 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 MAX4626/MAX4627/MAX4628 are low-on-resistance, low-voltage, single-pole/single-throw (SPST) analog switches that operate from a +1.8V to +5.5V single supply. The MAX4626 is normally open (NO), and the MAX4627 is normally closed (NC). The MAX4628 is normally open (NO) and has two control inputs. These devices also have fast switching speeds ($t_{ON} = 50\text{ns}$ max, $t_{OFF} = 30\text{ns}$ max). When powered from a +5V supply, the MAX4626/ MAX4627/MAX4628 offer 0.5 max on-resistance (R_{ON}) with 0.1 max R_{ON} flatness, and their digital logic inputs are TTL compatible. These switches also feature overcurrent protection to prevent device damage from short circuits and excessive loads. The MAX4626 is pin compatible with the MAX4514, and the MAX4627 is pin compatible with the MAX4515. The MAX4626/MAX4627 are available in SOT23-5 packages; the MAX4628 is available in a SOT23-6 package.

II. Manufacturing Information

A. Description/Function:	0.5 , Low-Voltage, Single-Supply SPST Analog Switches
B. Process:	TS60
C. Number of Device Transistors:	
D. Fabrication Location:	Taiwan
E. Assembly Location:	Carsem Malaysia, UTL Thailand
F. Date of Initial Production:	January 22, 2000

III. Packaging Information

A. Package Type:	5-pin SOT23
B. Lead Frame:	Copper
C. Lead Finish:	100% matte Tin
D. Die Attach:	Non-conductive Epoxy
E. Bondwire:	Gold (1 mil dia.)
F. Mold Material:	Epoxy with silica filler
G. Assembly Diagram:	#05-1201-0129
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

IV. Die Information

A. Dimensions:	57 X 35 mils
B. Passivation:	Si ₃ N ₄ /SiO ₂ (Silicon nitride/ Silicon dioxide)
C. Interconnect:	Aluminum/Si (Si = 1%)
D. Backside Metallization:	None
E. Minimum Metal Width:	Metal 1 - 0.9 microns / Metal 2 - 0.9 microns (as drawn)
F. Minimum Metal Spacing:	Metal 1 - 0.9 microns / Metal 2 - 0.9 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:	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 (λ) is calculated as follows:

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

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

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

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

This following failure rate represents data collected from Maxim's reliability monitor program. Maxim performs quarterly 1000 hour life test monitors on its processes. The Data is published in the Product Reliability report found at <http://www.maxim-ic.com/>. Current monitor data for the TSMC 0.6" Process results in a FIT Rate of 0.5 @25C and 8.57@55C (0.8eV, 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 AH25-2 die type has been found to have all pins able to withstand a HBM transient pulse of +/-600 V per Mil-Std 883 Method 3015.7. Latch-Up testing has shown that this device withstands a current of +/-250 mA.

Table 1
Reliability Evaluation Test Results

MAX4626EUK+

TEST ITEM	TEST CONDITION	FAILURE IDENTIFICATION	SAMPLE SIZE	NUMBER OF FAILURES
Static Life Test (Note 1)				
	Ta = 135°C Biased Time = 192 hrs.	DC Parameters & functionality	80	0
Moisture Testing (Note 2)				
85/85	Ta = 85°C RH = 85% Biased Time = 1000hrs.	DC Parameters & functionality		
Mechanical Stress (Note 2)				
Temperature	-65°C/150°C	DC Parameters		
Cycle	1000 Cycles Method 1010	& functionality		

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

Note 2: Generic Package/Process data