

RELIABILITY REPORT FOR MAX7463USA+

PLASTIC ENCAPSULATED DEVICES

October 3, 2012

# **MAXIM INTEGRATED**

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Approved by
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#### Conclusion

The MAX7463USA+ successfully meets the quality and reliability standards required of all Maxim Integrated products. In addition, Maxim Integrated's continuous reliability monitoring program ensures that all outgoing product will continue to meet Maxim Integrated's quality and reliability standards.

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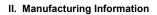
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## I. Device Description

A. General

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The MAX7462/MAX7463 single-channel, standard-definition, integrated video reconstruction filters and buffers are ideal for anti-aliasing and digital-to-analog smoothing video applications or wherever analog video is reconstructed from digital data (such as cable/satellite/terrestrial set-top boxes and DVRs). The MAX7462 includes a disable function, which places the output in a high-impedance state allowing multiplexing of multiple output signals. It also has an external gain control that sets the output buffer gain to either +6dB or +9.5dB. The higher gain setting allows a lower DAC output signal than the standard 1VP-P signal. The MAX7463 output buffer has a fixed gain of +6dB. The MAX7462/MAX7463 operate from a single +5V supply and have a flat passband out to 5MHz with a stopband attenuation of -43dB (typ) at 27MHz. These devices can drive two standard 150 AC-coupled or DC-coupled video loads. The output black level of the MAX7462/MAX7463 is less than 1V for DC-coupled outputs. The MAX7462 is available in an 8-pin µMAX® package and an 8-pin SO package. The MAX7463 is available in an 8-pin SO package. All devices are specified over the 0°C to +85°C temperature range.



 A. Description/Function:
 Single-Channel Video Reconstruction Filters and Buffers

 B. Process:
 C6

California

July 23, 2005

Malaysia, Thailand, Philippines

- C. Number of Device Transistors:
- D. Fabrication Location:
- E. Assembly Location:
- F. Date of Initial Production:

## III. Packaging Information

A. Package Type:	8-pin SOIC (N)
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:	#05-9000-1902
H. Flammability Rating:	Class UL94-V0
<ol> <li>Classification of Moisture Sensitivity per JEDEC standard J-STD-020-C</li> </ol>	Level 1
J. Single Layer Theta Ja:	170°C/W
K. Single Layer Theta Jc:	40°C/W
L. Multi Layer Theta Ja:	136°C/W
M. Multi Layer Theta Jc:	38°C/W

#### IV. Die Information

A. Dimensions:	55 X 56 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:	0.6 microns (as drawn)
F. Minimum Metal Spacing:	0.6 microns (as drawn)
G. Bondpad Dimensions:	
H. Isolation Dielectric:	SiO <sub>2</sub>
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 ( $\lambda$ ) is calculated as follows:

$$\lambda = \frac{1}{\text{MTTF}} = \frac{1.83}{192 \times 4340 \times 48 \times 2}$$
 (Chi square value for MTTF upper limit)  
$$\lambda = 22.9 \times 10^{-9}$$
 (Chi square value for MTTF upper limit)  
$$\lambda = 22.9 \times 10^{-9}$$

𝔅 = 22.9 F.I.T. (60% confidence level @ 25°C)

The following failure rate represents data collected from Maxim Integrated's reliability monitor program. Maxim Integrated performs quarterly life test monitors on its processes. This data is published in the Reliability Report found at http://www.maximintegrated.com/qa/reliability/monitor. Cumulative monitor data for the C6 Process results in a FIT Rate of 0.43 @ 25C and 7.50 @ 55C (0.8 eV, 60% UCL)

#### B. E.S.D. and Latch-Up Testing (lot SI1AAQ001E D/C 0527)

The VP20 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 +/-250mA.



# Table 1 Reliability Evaluation Test Results

## MAX7463USA+

TEST ITEM	TEST CONDITION	FAILURE IDENTIFICATION	SAMPLE SIZE	NUMBER OF FAILURES	COMMENTS
Static Life Test	(Note 1)				
	Ta = 135°C	DC Parameters	48	0	SI1AAQ001C, D/C 0527
	Biased	& functionality			
	Time = 192 hrs.				

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