

AOS Semiconductor Product Reliability Report

AOZ8000HI, rev 1

Plastic Encapsulated Device

ALPHA & OMEGA Semiconductor, Inc

**495 Mercury Drive
Sunnyvale, CA 94085
U.S.**

Tel: (408) 830-9742

www.aosmd.com

Mar 26, 2007

This AOS product reliability report summarizes the qualification result for AOZ8000HI.

Review of the electrical test results confirm that AOZ8000HI pass AOS quality and reliability requirements for product release. The continuous qualification testing and reliability monitoring program ensure that all outgoing products will continue to meet AOS quality and reliability standards.

Table of Contents:

- I. Product Description
- II. Package and Die information
- III. Qualification Test Requirements
- IV. Qualification Tests Result
- V. Quality Assurance Information

I. Product Description:

The AOZ8000HI is a transient voltage suppressor array designed to protect high speed data lines from ESD and lightning. The product comes in RoHS compliant, SC70 package and is rated over a -40°C to +85°C ambient temperature range.

Absolute Maximum Ratings	
Parameter	
VP-VN	6V
Peak Pulse Current (Ipp), tp=8/20uS	5A
Peak Power Dissipation (8x20mS@ 25°C) SOT-23	50W
Storage Temperature (Ts)	-65°C to +150°C
ESD Rating per IEC61000-4-2, contact ⁽¹⁾	±12kV
ESD Rating per IEC61000-4-2, air ⁽²⁾	±15kV
ESD Rating per Human Body Model ⁽²⁾	±15kV
Junction Temperature (Tj)	-40°C to +125°C

Notes:

(1) IEC-61000-4-2 discharge with $C_{Discharge}=150pF$, $R_{Discharge}=330\Omega$

(2) Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}=100pF$, $R_{Discharge}=1.5k\Omega$

II. Package and Die Information:

Product ID	AOZ8000HI
Process	UMC 0.5um 5/18V 2P3M process
Package Type	SC70
Die	UE003A3 (size: 716 x 616 um)
L/F material	AgCu
Die attach material	Ablebond 8006NS
Die bond wire	Au, 1mil
Mold Material	CEL9220HF13
Plating Material	Pure Tin

III. Qualification Tests Requirements

- 2 lots of AOZ8000HI up to 168 hrs of B/I for New Product release.
- 2 additional lots of AOZ8000HI up to 168 hrs of B/I for New UH_EPI process release.
- 2 lots of package qual testing (PCT, 250 cycles TC) for SC70 for package release to manufacturing.

IV. Qualification Tests Result

Test Item	Test Condition	Sample Size	Result	Comment
Pre-Conditioning	Per JESD 22-A113 85 C°/85%RH, 3 cyc reflow@260 °C	2 lot (82 /lot)	pass	Lot 1 (wafer lot# F162T.51-20, marking: A02), 82 units, passed pre-conditioning. Lot 2 (wafer lot# F162T.51-20, marking: A03), 82 units, passed pre-conditioning.
HTOL (pkg qual burn-in)	Per JESD 22-A108_B Vdd=6V Temp = 125 °C	2 lot (80 /lot)	pass	Lot 1 (wafer lot# F162T.51-20, marking: A02), 80 units, passed 500 hrs . Lot 2 (wafer lot# F162T.51-20, marking: A03), 80 units, passed 500 hrs .
HTOL (old UE003A process)	Per JESD 22-A108_B Vdd=6V Temp = 125 °C	2 lot (80 /lot)	pass	Lot 1 (wafer lot# F9AN1.51-8, marking: ABR11), 80 units, passed 1000 hrs . Lot 2 (wafer lot# F9AN1.51-10, marking: CBU11), 80 units, passed 500 hrs .
HTOL (new UH_EPI process)	Per JESD 22-A108_B Vdd=6V Temp = 125 °C	2 lot (80 /lot)	pass	Qual by extension using AOZ8000C (same die in SOT23 pkg.) Lot 1 (wafer lot# FNG88, marking: AC001), 80 units, passed 500 hrs . Lot 2 (wafer lot# FAYY3.02-3 marking: AB008), 80 units, passed 500 hrs .
HAST	'130 +/- 2 °C, 85%RH, 33.3 psi, at VCC min power dissipation	2 lot (60 /lot)	pass	Lot 1 (wafer lot# F162T.51-20, marking: A02), 60 units, passed HAST 100 hrs . Lot 2 (wafer lot# F162T.51-20, marking: A03), 60 units, passed HAST 100 hrs .
Temperature Cycle	'-65 °C to +150 °C, air to air (2cyc/hr)	2 lot (82 /lot)	pass	Lot 1 (wafer lot# F162T.51-20, marking: A02), 82 units, passed TC 500 cycles. Lot 2 (wafer lot# F162T.51-20, marking: A03), 82 units, passed TC 500 cycles.
Pressure Pot	121C, 15+/-1 PSIG, RH= 100%	2 lot (82 /lot)	pass	Lot 1 (wafer lot# F162T.51-20, marking: A02), 82 units, passed PCT 96 hrs. Lot 2 (wafer lot# F162T.51-20, marking: A03), 82 units, passed PCT 96 hrs.
ESD Rating	Per IEC-61000-4-2, contact	3 units	pass	Lot 1 (wafer lot# FAYY3.02-3, marking: AB008), 3 units passed ±12kV
ESD Rating	Per IEC-61000-4-2, air	3 units	pass	Lot 1 (wafer lot# FAYY3.02-3, marking: AB008), 3 units passed ±15kV
Latch-up	Per JESD78A	3 units	pass	Lot 1 (wafer lot# FAYY3.02-3, marking: AB008), 3 units passed Latch-up.

The qualification test results confirm that AOZ8000HI pass AOS quality and reliability requirements for product release.



V. Quality Assurance Information

Acceptable Quality Level for outgoing inspection: **0.1%** for electrical and visual. Guaranteed

Outgoing Defect Rate: **< 50 ppm**

Quality Sample Plan: conform to **Mil-Std-105D**