

AOS Semiconductor Product Reliability Report

AOZ8007CI, rev 1

Plastic Encapsulated Device

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Jun 25, 2007

This AOS product reliability report summarizes the qualification result for AOZ8007CI.

Review of the electrical test results confirm that AOZ8007CI 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.

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I. Product Description:

The AOZ8007CI is a transient voltage suppressor array designed to protect high speed data lines from ESD and lightning. The product comes in RoHS compliant, SOT-23 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
Storage Temperature (Ts)	-65°C to +150°C
ESD Rating per IEC61000-4-2, contact ⁽¹⁾	±8kV
ESD Rating per IEC61000-4-2, air ⁽²⁾	±15kV
ESD Rating per Human Body Model ⁽²⁾	±8kV
Junction Temperature (Tj)	-40°C to +125°C

Notes:

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

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

II. Package and Die Information:

Product ID	AOZ8007CI
Process	UMC 0.5um 5/18V 2P3M process
Package Type	SOT-23
Die	UI001A1_EPI (size: 716 x 616 um)
L/F material	ASM A194FH
Die attach material	Ablebond 84-1LMISR4 epoxy
Die bond wire	Au, 1mil
Mold Material	Nitto MP8000CH4
Plating Material	Matte Tin

III. Qualification Tests Requirments

- Same package as AOZ8005CI, only difference is the die has BM (back metal) and die attach material is conductive epoxy. Need 3 lots TC500 and PCT to test BM and conductive epoxy.

IV. Qualification Tests Result

Test Item	Test Condition	Sample Size	Result	Comment
Pre-Conditioning	Per JESD 22-A113 85 C ⁰ /85%RH, 3 cyc reflow@260 °C	3 lot (82 /lot)	pass	Lot 1 (wafer lot# FN646.52-5, marking: AE003), 82 units, passed pre-con. Lot 2 (wafer lot# FN646.52-5, marking: AE004), 82 units, passed pre-con. Lot 3 (wafer lot# FN646.52-5, marking: AE005), 82 units, passed pre-con.
HTOL (pkg qual burn-in, using AOZ8000CI data)	Per JESD 22-A108_B Vdd=6V Temp = 125 °C	2 lot (80 /lot)	pass	Pkg. Qual by extension using AOZ8000CI. 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 (die qual burn-in, using AOZ8005CI data)	Per JESD 22-A108_B Vdd=6V Temp = 125 °C	2 lot (80 /lot)	pass	IC Qual by extension using AOZ8005CI which uses the same die. Lots 1 (wafer lot# FN2MT.01-12, marking: AC001), 80 units, passed 500 hrs . Lots 2 (wafer lot# FN646.03-4 marking: AC003), 80 units, passed 168 hrs .
HAST (qual by extension, using AOZ8000CI data)	'130 +/- 2 °C, 85%RH, 33.3 psi, at VCC min power dissapation	2 lot (60 /lot)	pass	Pkg. Qual by extension using AOZ8000CI. 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)	3 lot (82 /lot)	pass	Lot 1 (wafer lot# FN646.52-5, marking: AE003), 82 units, passed TC 500 cycles. Lot 2 (wafer lot# FN646.52-5, marking: AE004), 82 units, passed TC 500 cycles. Lot 3 (wafer lot# FN646.52-5, marking: AE005), 82 units, passed TC 500 cycles.
Pressure Pot	121C, 15+/-1 PSIG, RH= 100%	3 lot (82 /lot)	pass	Lot 1 (wafer lot# FN646.52-5, marking: AE003), 82 units, passed PCT 96 hrs. Lot 2 (wafer lot# FN646.52-5, marking: AE004), 82 units, passed PCT 96 hrs. Lot 3 (wafer lot# FN646.52-5, marking: AE005), 82 units, passed PCT 96 hrs.
ESD Rating	Per IEC-61000-4-2, contact	3 units	pass	Lot 1 (wafer lot# FN646.52-5 , marking: AE003), 3 units passed ±8kV
ESD Rating	Per IEC-61000-4-2, air	3 units	pass	Lot 1 (wafer lot# FN646.52-5 , marking: AE003), 3 units passed ±15kV
Latch-up (using AOZ8005CI data)	Per JESD78A	3 units	pass	Lot 1 (wafer lot# FN646.03-4 , marking: AC003), 3 units passed Latch-up.

The qualification test results confirm that AOZ8007CI 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**