

AOS Semiconductor Product Reliability Report

AOZ8006FI, rev 1

Plastic Encapsulated Device

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Jun 25, 2007

This AOS product reliability report summarizes the qualification result for AOZ8006FI.

Review of the electrical test results confirm that AOZ8006FI 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 AOZ8006FI is a transient voltage suppressor array designed to protect high speed data lines from ESD and lightning. The product comes in RoHS compliant, MSOP10 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	AOZ8006FI
Process	UMC 0.5um 5/18V 2P3M process
Package Type	MSOP10
Die	UI001A1_EPI (size: 716 x 616 um)
L/F material	ASM A194FH
Die attach material	Ablestik 8360 epoxy
Die bond wire	Au, 1mil
Mold Material	Sumitomo EME-6600D
Plating Material	Matte Tin

III. Qualification Tests Requirments

- Same package as AOZ8007FI, therefore, the part will be qual. by extension.
- Same package as AOZ8005FI, only difference is the die has BM (back metal) and die attach material is conductive epoxy. Therefore, AOZ8005FI test data can be used for qual. also.

IV. Qualification Tests Result

Test Item	Test Condition	Sample Size	Result	Comment
Pre-Conditioning (qual by extension, using AOZ8007FI data)	Per JESD 22-A113 85 C ⁰ /85%RH, 3 cyc reflow @260 °C	3 lots (82 /lot)	pass	Lots 1 (wafer lot# FN646.52-6, marking: B1002), 82 units, passed pre-con. Lots 2 (wafer lot# FN646.52-6, marking: B1003), 82 units, passed pre-con. Lots 3 (wafer lot# FN646.52-6, marking: B1004), 82 units, passed pre-conditioning.
HTOL (pkg qual burn-in, using AOZ8005FI data)	Per JESD 22-A108_B Vdd=6V Temp = 125 °C	3 lots (80 /lot)	pass	Lots 1 (wafer lot# F9AN1.51-01 , marking: Z96R11A), 80 units, passed 500 hrs . Lots 2 (wafer lot# F9AN1.51-01 , marking: Z96R11B), 80 units, passed 500 hrs . Lots 3 (wafer lot# F9AN1.51-01 , marking: B1001), 82 units, passed 500 hrs .
HTOL (die qual burn-in, using AOZ8005CI data)	Per JESD 22-A108_B Vdd=6V Temp = 125 °C	2 lots (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 AOZ8005FI data)	'130 +/- 2 °C, 85%RH, 33.3 psi, at VCC min power dissipation	3 lots (60 /lot)	pass	Lots 1 (wafer lot# F9AN1.51-01 , marking: Z96R11A), 60 units, passed HAST 100 hr . Lots 2 (wafer lot# F9AN1.51-01 , marking: Z96R11B), 60 units, passed HAST 100 h . Lots 3 (wafer lot# F162T , marking: B1001), 60 units, passed HAST 100 h rs.
Temperature Cycle (qual by extension, using AOZ8007FI data)	'-65 °C to +150 °C, air to air (2cyc/hr)	3 lots (82 /lot)	pass	Lots 1 (wafer lot# FN646.52-6 , marking: B1002), 82 units, passed TC 500 cycles. Lots 2 (wafer lot# FN646.52-6 , marking: B1003), 82 units, passed TC 500 cycles. Lots 3 (wafer lot# FN646.52-6 , marking: B1004), 82 units, passed TC 500 cycles.
Pressure Pot (qual by extension, using AOZ8007FI data)	121C, 15+/-1 PSIG, RH= 100%	3 lots (82 /lot)	pass	Lots 1 (wafer lot# FN646.52-6 , marking: B1002), 82 units, passed PCT 96 hrs. Lots 2 (wafer lot# FN646.52-6 , marking: B1003), 82 units, passed PCT 96 hrs. Lots 3 (wafer lot# FN646.52-6 , marking: B1004), 82 units, passed PCT 96 hrs.
ESD Rating	Per IEC-61000-4-2, contact	3 units	pass	Lot 1 (wafer lot# FN646.52-6 , marking: B1001), 3 units passed ±8kV
ESD Rating	Per IEC-61000-4-2, air	3 units	pass	Lot 1 (wafer lot# FN646.52-6 , marking: B1001), 3 units passed ±15kV
Latch-up (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 AOZ8006FI 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**