



# ***AOS Semiconductor Product Reliability Report***

**AOZ8000,** rev C

**Plastic Encapsulated Device**

**ALPHA & OMEGA Semiconductor, Inc**

**[www.aosmd.com](http://www.aosmd.com)**



This AOS product reliability report summarizes the qualification result for AOZ8000. Accelerated environmental tests are performed on a specific sample size, and then followed by electrical test at end point. Review of final electrical test result confirms that AOZ8000 passes AOS quality and reliability requirements. The released product will be categorized by the process family and be routine monitored for continuously improving the product quality.

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### **I. Product Description:**

The AOZ8000 is a transient voltage suppressor array designed to protect high speed data lines from ESD and lightning.

This device incorporates eight surge rated, low capacitance steering diodes and a TVS in a single package. During transient conditions, the steering diodes direct the transient to either the positive side of the power supply line or to ground.

Detailed information refers to the datasheet on website.

### **II. Package and Die Information:**

<b>Product ID</b>	AOZ8000CIL
<b>Package Type</b>	SOT23 6L
<b>Lead Frame</b>	Cu
<b>Die attach material</b>	Ag Epoxy
<b>Bonding</b>	Au wire
<b>MSL(moisture sensitive level)</b>	Up to Level 1

### III. Reliability Stress Test Summary and Results:

Test Item	Test Condition	Test Point	Total Sample size	Number of Failures	Standard
HTRB	Vdd= 80% Vbrmax. Temp = 150°C	168 / 500 1000 hours	924 pcs	0	JESD22-A108
MSL Precondition	168hr 85°C / 85%RH + 3 cycle reflow@260°C (MSL 1)	-	3465 pcs	0	JESD22-A113
Temperature Cycle	-65 °C to +150 °C, air to air	250 / 500 cycles	924 pcs	0	JESD22-A104
Autoclave	121°C, 29.7psi, RH= 100%	96 hours	924 pcs	0	JESD22-A102
HAST	130°C, 85%RH, 33.3 psi, Vdd= 80% Vbrmax.	96 hours	924 pcs	0	JESD22-A110
HTSL	Temp = 150°C	1000 hrs	693 pcs	0	JESD22-A103

**Note:** The reliability data presents total of available generic data up to the published date.

### IV. Reliability Evaluation

**FIT rate (per billion): 7.63**

**MTTF = 14960 years**

The presentation of FIT rate for the individual product reliability is restricted by the actual burn-in sample size of the selected product. Failure Rate Determination is based on JEDEC Standard JESD 85. FIT means one failure per billion device hours.

**Failure Rate = 7.63**

**MTTF = 14960 years**

**Chi<sup>2</sup>** = Chi Squared Distribution, determined by the number of failures and confidence interval

**N** = Total Number of units from burn-in tests

**H** = Duration of burn-in testing

**Af** = Acceleration Factor from Test to Use Conditions (Ea = 0.7eV and Tuse = 55°C)

Acceleration Factor [**Af**] = **Exp** [Ea / k (1/Tj u – 1/Tj s)]

**Acceleration Factor ratio list:**

	55 deg C	70 deg C	85 deg C	100 deg C	115 deg C	130 deg C	150 deg C
<b>Af</b>	<b>259</b>	<b>87</b>	<b>32</b>	<b>13</b>	<b>5.64</b>	<b>2.59</b>	<b>1</b>

**Tj s** = Stressed junction temperature in degree (Kelvin), K = C+273.16

**Tj u** = The use junction temperature in degree (Kelvin), K = C+273.16

**k** = Boltzmann's constant, 8.617164 X 10<sup>-5</sup>eV / K