AOS Semiconductor
Product Reliability Report

AOZ8904CIL, rev A

Plastic Encapsulated Device

ALPHA & OMEGA Semiconductor, Inc

www.aosmd.com

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This AOS product reliability report summarizes the qualification result for AOZ8904CIL.

Review of the electrical test results confirm that AOZ8904CIL   passes 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:

The AOZ8904 is a transient voltage suppressor array designed to protect high speed data lines from Electro Static Discharge (ESD) and lightning.

-ROHS compliant
-Halogen free

Detailed information refers to the datasheet on website.
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II. Package and Die Information:

Product ID	AOZ8904CIL
Package Type	SOT23_6L
Lead Frame	Cu,
Die attach material	Epoxy
Bond wire	Cu wire
MSL level	Up to Level 1

III. Qualification Tests Result:

Test Item	Test Condition	Test duration	Sample Size	Result	Standard
Pre-Conditioning	168hrs @85 ℃ /85%RH+3 cyc reflow@260℃	-	5 lots (Sum of TC,PCT and HAST)	Pass	JESD22-A113
HTRB	Vdd= 80% Vbr max. Temp = 150℃	168hrs 500hrs 1000hrs	15 lots (77 /lot)	Pass	JESD22-A108
Temperature Cycle	'-65 ℃ to +150 ℃, air to air	500cycles	5 lots (77 /lot)	Pass	JESD22-A110
Pressure Pot	121℃, 29.7psi, RH= 100%	96hrs	5 lots (77 /lot)	Pass	JESD22-A102
HAST	'130 +/- 2℃, 85%RH, 33.3 psi, at VCC min power dissipation.	100hrs	5lots (55 /lot)	Pass	JESD22-A104

IV. Reliability Evaluation

FIT rate (per billion): 6
MTTF = 18589 years

The presentation of FIT rate for the individual product reliability is restricted by the actual HTRB 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 = Chi^2 x 10^9 **/ [**2 (N) (H) (Af)**]** = 1.83 x 10^9 / **[**2x (15x77x500) x258**]** = 6
MTTF = 10^9 / FIT = 1.63 x10^8hrs= 18589 years

Chi² = Chi Squared Distribution, determined by the number of failures and confidence interval
N = Total Number of units from HTRB tests
H = Duration of HTRB testing
Af = Acceleration Factor from Test to Use Conditions (Ea = 0.7eV and Tuse = 55℃)
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
Af	**258**	**87**	**32**	**13**	**5.64**	**2.59**	**1**

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^{-5}eV / K