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AOS Semiconductor Product Reliability Report

AOZ8831DT-03, rev B

Plastic Encapsulated Device

ALPHA & OMEGA Semiconductor, Inc

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This AOS product reliability report summarizes the qualification result for AOZ8831DT-03. 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 AOZ8831DT-03 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.

Table of Contents:

I. Product Description
II. Package and Die information
III. Reliability Stress Test Summary and Results
IV. Reliability Evaluation

I. Product Description:

The AOZ8831-03 is an ultra low capacitance one-line bi-directional transient voltage suppressor diode designed to protect high speed data lines and voltage sensitive electronics from high transient conditions and ESD.
This device incorporates one TVS diode in an ultra-small DFN 1.0 x 0.6 package.
The AOZ8831-03 comes in an RoHS compliant DFN package.
The ultra-small 1.0 x 0.6 x 0.4mm DFN package makes it ideal for applications where PCB space is a premium. The small size and high ESD protection makes it ideal for protecting voltage sensitive electronics from high transient conditions and ESD.

Detailed information refers to the datasheet on website.

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II. Package and Die Information:

Product ID	AOZ8831DT-03
Package Type	DFN1.0X0.6 2L
Lead Frame	Cu
Die attach material	Ag Epoxy
Bonding	Au wire
MSL(moisture sensitive level)	Up to Level 1

III. Result of Reliability Stress test for AOZ8831DT-03:

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)	-	2772 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

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

IV. Reliability Evaluation

FIT rate (per billion): 5.38
MTTF = 21203 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 = 5.38
MTTF = 21203 years

Chi² = 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
Af	**259**	**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