



# ***Alpha & Omega Semiconductor Product Reliability Report***

**AOZ1374DI-01**, rev B

**Plastic Encapsulated Device**

**ALPHA & OMEGA Semiconductor, Inc**

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

This AOS product reliability report summarizes the qualification results for AOZ1374DI-01 in DFN3x3\_10L package. Accelerated environmental tests are performed on a specific sample size and samples are electrically tested before and after each time point. Review of final electrical test results confirm that AOZ1374DI-01 pass the AOS quality and reliability requirements. The released products will be categorized by its process family and routinely monitored for continuous improvement of product quality.

## I. Reliability Stress Test Summary and Results

Test Item	Test Condition	Time Point	Total Sample Size	Number of Failures	Reference Standard
HTOL	Temp = 125°C , VIN=Vccmax	168 / 500/1000 hours	80 pcs	0	JESD22-A108
		168 hours	160 pcs		
Preconditioning (Note A)	T <sub>A</sub> = 30°C, RH = 60% + 3 cycle reflow @ 260°C (MSL 3)	-	720 pcs	0	JESD22-A113
HAST	T <sub>A</sub> = 130°C, RH = 85%, P = 33.3psia, V <sub>IN</sub> = Vccmax	96 hours	240 pcs	0	JESD22-A110
Pre-con + PCT (autoclave)	T <sub>A</sub> = 121°C, RH = 100%, P = 29.7psia	96 hours	240 pcs	0	JESD22-A102
Pre-con + Temp Cycles	T <sub>A</sub> = -65°C to 150°C, air to air	250 / 500 / 1000 cycles	240 pcs	0	JESD22-A104
HTSL	Temp = 150°C	168 / 500 / 1000 hours	240 pcs	0	JESD22-A103
Pre-con + THB	85C, 85%RH, 7.12psia, VIN=Vcc max	500 hours	240 pcs	0	JESD22-A101

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

Note A: MSL (Moisture Sensitivity Level) 3 based on J-STD-020

## II. Reliability Evaluation

**FIT rate (per billion): 52.5**

**MTTF = 7174.8 years**

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

**Failure Rate** =  $\text{Chi}^2 \times 10^9 / [2 (N) (H) (Af)] = 52.5$

**MTTF** =  $10^9 / \text{FIT} = 7174.8 \text{ years}$

**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 (E<sub>a</sub> = 0.7eV and T<sub>use</sub> = 55°C)

Acceleration Factor [**Af**] =  $\text{Exp} [E_a / k (1/T_{J u} - 1/T_{J s})]$

**Acceleration Factor ratio list:**

	55 deg C	70 deg C	85 deg C	100 deg C	115 deg C	125 deg C
Af	77	26	9.8	3.9	1.7	1

T<sub>J s</sub> = Stressed junction temperature in degree (Kelvin), K = C + 273.16

T<sub>J u</sub> = The use junction temperature in degree (Kelvin), K = C + 273.16

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

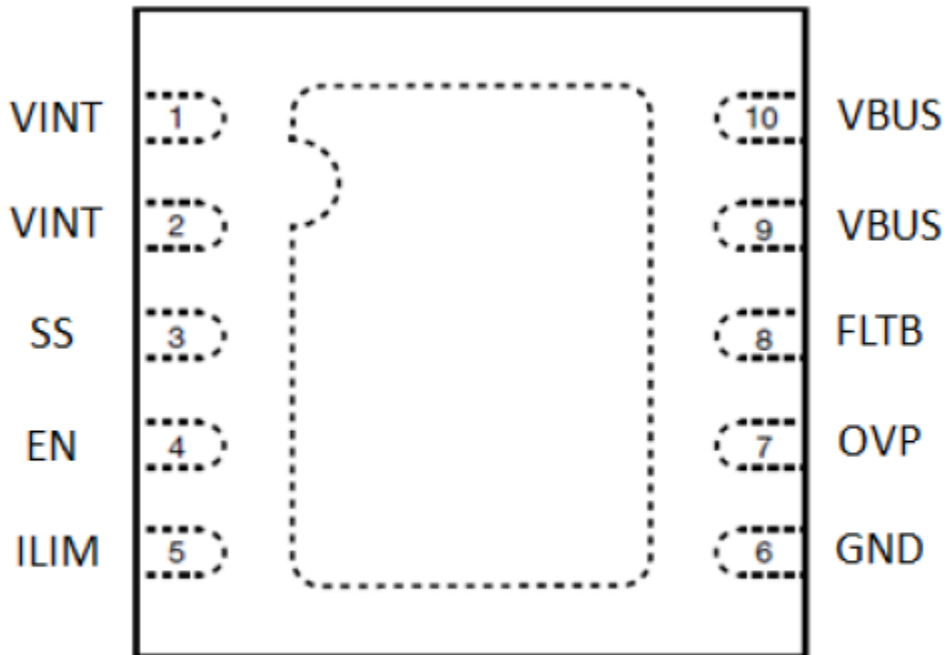
## ELECTROSTATIC DISCHARGE, LATCH UP TEST REPORT

Part Number: AOZ1374DI-01

Package: DFN3x3\_10L

<b>ESD, LATCH UP RESULTS</b>					
<b>Test</b>	<b>Specification</b>	<b>Conditions</b>	<b>Temperature</b>	<b>Sample Size</b>	<b>Results<sup>(1)</sup></b>
Electrostatic Discharge	JESD-A114	±4kV (HBM)	25C	3	PASS
Electrostatic Discharge	JESD-C101	±1kV (CDM)	25C	3	PASS
Latch Up	JESD78	±100mA, 1.5x OV	25C	6	PASS
Latch Up	JESD78	±100mA, 1.5x OV	85C	6	PASS

(1) ATE results are used to determine PASS/FAIL. Parametric shift <10%.



**3mm x 3mm DFN-10L**

(Top Transparent View)