Alpha & Omega Semiconductor Product Reliability Report

AOZ1374DI-01, rev B

Plastic Encapsulated Device

ALPHA & OMEGA Semiconductor, Inc

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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_A = 30°C, RH = 60% + 3 cycle reflow @ 260°C (MSL 3)	-	720 pcs	0	JESD22-A113
HAST	T_A = 130°C, RH = 85%, P = 33.3psia, V_{IN} = Vccmax	96 hours	240 pcs	0	JESD22-A110
Pre-con + PCT (autoclave	T_A = 121°C, RH = 100%, P = 29.7psia	96 hours	240 pcs	0	JESD22-A102
Pre-con + Temp Cycles	T_A = -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 = $Chi^2 \times 10^9$ **/ [**2 (N) (H) (Af)**] =** 52.5
MTTF = 10^9 / FIT = 7174.8 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 T_{use} = 55°C)
Acceleration Factor [**Af**] = **Exp** $[Ea / k (1/T_J u - 1/T_J s)]$
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_J s = Stressed junction temperature in degree (Kelvin), K = C + 273.16
T_J u =The use junction temperature in degree (Kelvin), K = C + 273.16
k = Boltzmann's constant, 8.617164 X 10^{-5}eV / K

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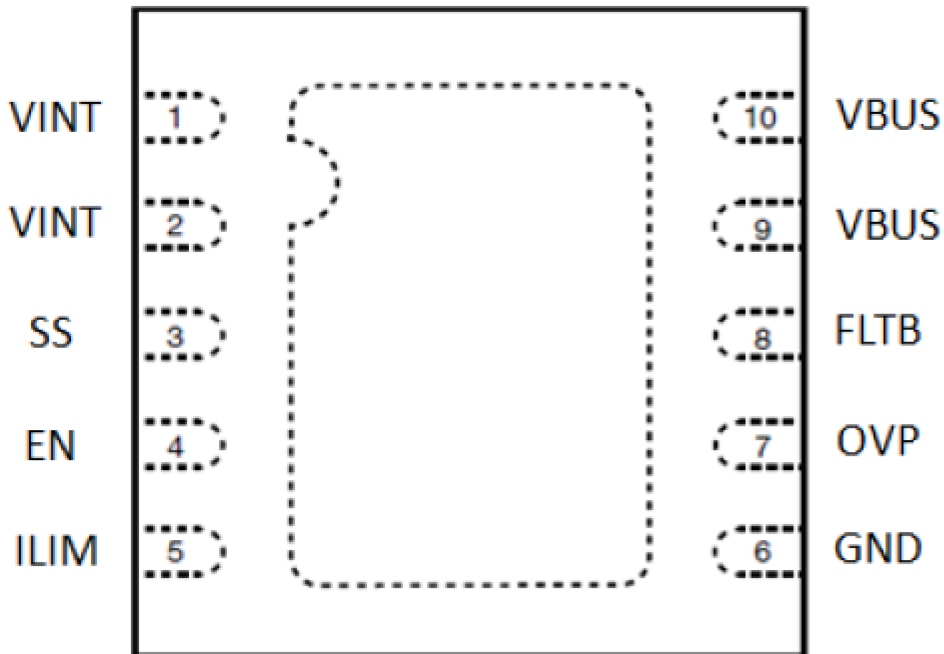
ELECTROSTATIC DISCHARGE, LATCH UP TEST REPORT

Part Number: AOZ1374DI-01
Package: DFN3x3_10L

ESD, LATCH UP RESULTS					
Test	**Specification**	**Conditions**	**Temperature**	**Sample Size**	**Results(1)**
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)