Alpha & Omega Semiconductor Product Reliability Report

AOZ6689CI, rev A

Plastic Encapsulated Device

ALPHA & OMEGA Semiconductor, Inc

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This AOS product reliability report summarizes the qualification results for AOZ6689CI in TSOT23_6L 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 AOZ6689CI 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 , Vcc=Vccmax	168 / 500 / 1000 hours	231 pcs	0	JESD22-A108
Precondition (Note A)	168hr 85°C / 85%RH + 3 cycle reflow@260°C (MSL 1)	-	924 pcs	0	JESD22-A113
HAST	130°C, 85%RH, 33.3 psia, Vcc= Vccmax	96 hours	231 pcs	0	JESD22-A110
Autoclave	121°C , 29.7psia, RH=100%	168 hours	231 pcs	0	JESD22-A102
Temperature Cycle	-65°C to 150°C , air to air,	1000cycles	231 pcs	0	JESD22-A104
HTSL	Temp = 150°C	1000 hours	231 pcs	0	JESD22-A103

Note: The reliability data presents total of available generic data up to the published date.
Note A: MSL (Moisture Sensitivity Level) 1based on J-STD-020

II. Reliability Evaluation

FIT rate (per billion): 15.26
MTTF = 7480 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)**] =** 15.26
MTTF = 10^9 / FIT = 7480 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, 8.617164×10^{-5}eV / K

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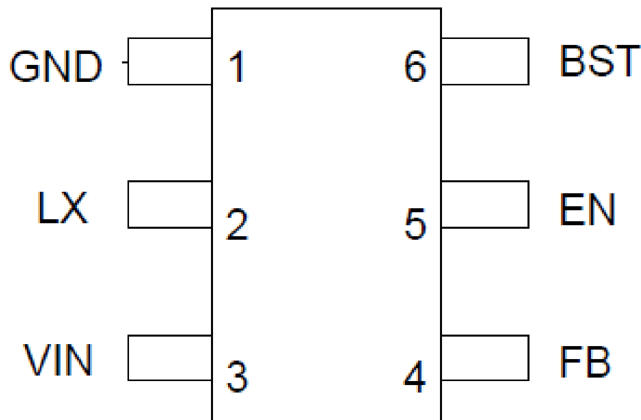
ELECTROSTATIC DISCHARGE, LATCH UP TEST REPORT

Part Number: AOZ6689CI
Package: TSOT23_6L

ESD, LATCH UP RESULTS					
Test	**Specification**	**Conditions**	**Temperature**	**Sample Size**	**Results(1)**
Electrostatic Discharge	JESD-A114	±2kV (HBM)	25C	15	PASS
Electrostatic Discharge	JESD-C101	±1kV (CDM)	25C	6	PASS
Latch Up	JESD78	±100mA, 1.5x OV	25C	9	PASS
Latch Up	JESD78	±100mA, 1.5x OV	85C	9	PASS

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



Top Transparent View

6-pin SOT23-6