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Alpha & Omega Semiconductor Product Reliability qualification Report

AK6 series, rev A

Plastic Encapsulated Device

ALPHA & OMEGA Semiconductor, Inc

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This AOS product reliability report summarizes the qualification result for AK6 series. 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 AK6 series 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.

I. Reliability Stress Test Summary and Results

Test Item	Test Condition	Time Point	Total Sample Size	Number of Failures	Reference Standard
HTRB	Temp = 150°C , VR=80% of VRmax	1000 hours	22 pcs	0	JESD22-A108
HTSL	Temp = 150°C	1000 hours	22 pcs	0	JESD22-A103
Solderability Test	Temp = 245°C	5 seconds	5 pcs	0	JESD22-B102
RSH	Temp = 260°C	10 seconds	5 pcs	0	JESD22-B106

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

II. Reliability Evaluation

FIT rate (per billion): 160.25
MTTF = 712 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 x 10^9 **/ [**2 (N) (H) (Af)**] =** 160.25
MTTF = 10^9 / FIT = 712 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** $[Ea / k (1/T_{j u} – 1/T_{j s})]$
Acceleration Factor ratio list:

	55 deg C	70 deg C	85 deg C	100 deg C	115 deg C	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

AK6 series Part No. can refer to below table

AK6-058C	AK6-076C	AK6-100C	AK6-170C	AK6-190C
AK6-240C	AK6-270C	AK6-380C	AK6-430C	