AOS Semiconductor
Product Reliability Report

AON6278, rev A

Plastic Encapsulated Device

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This AOS product reliability report summarizes the qualification result for AON6278. 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 AON6278 passes AOS quality and reliability requirements. The released product will be categorized by the process family and be monitored on a quarterly basis for continuously improving the product quality.

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I. Product Description:

The AON6278 uses trench MOSFET technology that is uniquely optimized to provide the most efficient high frequency switching performance. Both conduction and switching power losses are minimized due to an extremely low combination of Rds(on), Ciss and Coss. This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

-RoHS Compliant
-Halogen Free

Detailed information refers to datasheet.

II. Die / Package Information:

	AON6278
Process	Standard sub-micron 80V N-Channel MOSFET
Package Type	DFN5x6
Lead Frame	Cu
Die Attach	Solder Paste
Bonding	Clip
Mold Material	Epoxy resin with silica filler
MSL (moisture sensitive level)	Level 1 based on J-STD-020

Note * based on information provided by assembler and mold compound supplier

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III. Result of Reliability Stress for AON6278

Test Item	Test Condition	Time Point	Lot Attribution	Total Sample size	Number of Failures	Standard
MSL Precondition	**168hr 85°c /85%RH +3 cycle reflow@260°c**	**-**	**11 lots**	**2134pcs**	**0**	**JESD22-A113**
HTGB	**Temp = 150 °c, Vgs=100% of Vgsmax**	**168hrs 500 hrs 1000 hrs**	**3 lot 6 lot (Note A*)**	**693pcs 77pcs / lot**	**0**	**JESD22-A108**
HTRB	**Temp = 150 °c, Vds=80% of Vdsmax**	**168hrs 500 hrs 1000 hrs**	**3 lot 6 lot (Note A*)**	**693pcs 77pcs / lot**	**0**	**JESD22-A108**
HAST	**130°c, 85%RH, 33.3 psi, Vgs = 100% of Vgs max**	**96 hrs**	**8 lots (Note A*)**	**440pcs 55 pcs / lot**	**0**	**JESD22-A110**
Pressure Pot	**121°c, 29.7psi, RH=100%**	**96 hrs**	**11 lots (Note A*)**	**847pcs 77 pcs / lot**	**0**	**JESD22-A102**
Temperature Cycle	**-65°c to 150°c, air to air**	**250 / 500 cycles**	**11 lots (Note A*)**	**847pcs 77 pcs / lot**	**0**	**JESD22-A104**

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

IV. Reliability Evaluation

FIT rate (per billion): 4
MTTF = 32240 years

The presentation of FIT rate for the individual product reliability is restricted by the actual burn-in sample size of the selected product (AON6278). 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)**]**
= 1.83×10^9 **/ [**2 x (6x77x168 +12x77x1000) x 258**] =** 4
MTTF = 10^9 / FIT = 2.82×10^8hrs = 32240 years

Chi² = Chi Squared Distribution, determined by the number of failures and confidence interval
N = Total Number of units from HTRB and HTGB tests
H = Duration of HTRB/HTGB 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	**258**	**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, 8.617164×10^{-5}eV / K