



AOS Semiconductor

Product Reliability Report

AON6718/AON6718L, rev B

Plastic Encapsulated Device

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This AOS product reliability report summarizes the qualification result for AON6718. 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 AON6718 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:

SRFET™ AON6718/L uses advanced trench technology with a monolithically integrated Schottky diode to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a low side switch in CPU core power conversion. AON6718 and AON6718L are electrically identical.

- RoHS compliant
- AON6718L is Halogen free

Absolute Maximum Ratings $T_A=25^\circ\text{C}$ unless otherwise noted			
Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ^G	I_D	$T_C=25^\circ\text{C}$	A
		$T_C=100^\circ\text{C}$	
Pulsed Drain Current ^C	I_{DM}	210	
Continuous Drain Current	I_{DSM}	$T_A=25^\circ\text{C}$	A
		$T_A=70^\circ\text{C}$	
Avalanche Current ^C	I_{AR}	40	A
Repetitive avalanche energy $L=0.1\text{mH}$ ^C	E_{AR}	80	mJ
Power Dissipation ^B	P_D	$T_C=25^\circ\text{C}$	W
		$T_C=100^\circ\text{C}$	
Power Dissipation ^A	P_{DSM}	$T_A=25^\circ\text{C}$	W
		$T_A=70^\circ\text{C}$	
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics					
Parameter		Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$t \leq 10\text{s}$	$R_{\theta JA}$	14.2	17	$^\circ\text{C/W}$
Maximum Junction-to-Ambient ^{A,D}	Steady-State		42	60	$^\circ\text{C/W}$
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	1.2	1.5	$^\circ\text{C/W}$



II. Die / Package Information:

	AON6718	AON6718L (Green Compound)
Process	Standard sub-micron Low voltage N channel process	Standard sub-micron Low voltage N channel process
Package Type	DFN 5x6_8L	DFN 5x6_8L
Lead Frame	A194 (FH), Ag spot	A194 (FH), Ag spot
Die Attach	84-1MISR4	84-1MISR4
Bond wire	G: Au 1.3mils; S: Cu 2mils	G: Au 1.3mils; S: Cu 2mils
Mold Material	Epoxy resin with silica filler	Epoxy resin with silica filler
Flammability Rating	UL-94 V-0	UL-94 V-0
Backside Metallization	Ti / Ni / Ag	Ti / Ni / Ag
Moisture Level	Up to Level 1 *	Up to Level 1 *

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

III. Result of Reliability Stress for AON6718 (Standard) & AON6718L (Green)

Test Item	Test Condition	Time Point	Lot Attribution	Total Sample size	Number of Failures
Solder Reflow Precondition	Standard: 1hr PCT+3 cycle reflow@260°C Green: 168hr 85°C /85%RH +3 cycle reflow @260°C	0hr	Standard: 17 lots Green: 4 lots (Note B**)	2365 pcs	0
HTGB	Temp = 150°C , Vgs=100% of Vgsmax	168 / 500 hrs 1000 hrs	1 lot (Note A*)	82 pcs 77+5 pcs / lot	0
HTRB	Temp = 150°C , Vds=80% of Vdsmax	168 / 500 hrs 1000 hrs	1 lot (Note A*)	82 pcs 77+5 pcs / lot	0
HAST	130 +/- 2°C , 85%RH, 33.3 psi, Vgs = 80% of Vgs max	100 hrs	Standard: 11 lots Green: 2 lots (Note B**)	715 pcs 50+5 pcs / lot	0
Pressure Pot	121°C , 29.7psi, RH=100%	96 hrs	Standard: 7 lots Green: 4 lots (Note B**)	605 pcs 50+5 pcs / lot	0
Temperature Cycle	-65°C to 150°C , air to air	250 / 500 cycles	Standard: 17 lots Green: 2 lots (Note B**)	1045 pcs 50+5 pcs / lot	0

III. Result of Reliability Stress for AON6718 (Standard) & AON6718L (Green)

Continues

DPA	Internal Vision Cross-section X-ray	NA	5 5 5	5 5 5	0
CSAM		NA	5	5	0
Bond Integrity	Room Temp 150°C bake 150°C bake	0hr 250hr 500hr	40 40 40	40 wires 40 wires 40 wires	0
Solderability	245°C	5 sec	15	15 leads	0

Note A: The HTGB and HTRB reliability data presents total of available AON6718 and AON6718L burn-in data up to the published date.

Note B: The pressure pot, temperature cycle and HAST reliability data for AON6718 and AON6718L comes from the AOS generic package qualification data.

IV. Reliability Evaluation
FIT rate (per billion): 21.6
MTTF = 5279years