

**QR-0004:**  
**Reliability Qualification Report for**  
**IRS2101SPBF**  
**IRS2106SPBF**

Date: May 27<sup>th</sup>, 2006

**Qualification Vehicle: IRS2101SPBF and IRS2106SPBF in 8L-SOICN package:**

Based on the reliability test results, the matrix qualification vehicles of IRS2101SPBF and IRS2106SPBF in 8L-SOIC package have passed standard International Rectifier industrial-level qualification, with MSL2 at 260 °C peak reflow temperature (PRT).

The handling, packing, shipping and use of the moisture/reflow sensitive surface mount devices need to be per IPC/JEDEC J-STD-033A spec.

**Device and Lot Information**

Rel Number	For IRS2101S/IRS2106S/8L-SOIC: 10260-1-2-3-4
Product/Part #	IRS2101SPbF and IRS2106SPbF
Qualification Level	Lead-Free Industrial per COP800-08-Rev00
Silicon Technology	600 V HVIC
Silicon Generation	Gen 5
Wafer Fab	Fab11
Lead Finish Plating	100% Sn
Moisture Sensitivity Level	<u>8L-SOICN Package: MSL2 @ 260 °C</u> Per JEDEC spec JA113 / JEDEC J-STD-020C (Test Samples were subjected to preconditioning prior to AC, TC & THB reliability tests, HTB samples do not require precon).
Reliability Test Location	IR Temecula, USA

**Reliability Test Results:**

Samples from three wafer lots and three assembly lots were tested in the following reliability tests to determine typical lifetime performance under industrial level qualification. The tests samples passed AC, TC, THB and HTB reliability test requirements.

**THE STRESS TESTS CONDITIONS AND RESULTS ARE AS FOLLOWS:**

**Reliability Test #1 - Autoclave Test (AC):**  
 Test Duration: 96 Hours  
 Test Condition: +121 °C, 100%RH and 15 PSIG  
 Bias Condition: None  
 Electrical Testing: @ Room

Device	Lot ID	Hour	SS	Reject	Remark
IRS2101SPbF	1/4	96	80	0	
IRS2101SPbF	2	96	80	0	
IRS2101SPbF	3	96	80	0	

**Reliability Test #2 - Temperature Cycling (TC):**  
 Test Duration: 1000 Cycles  
 Test Condition: -55 °C to 150 °C ( $\Delta T=205$  °C, Dry-Air to Dry-Air)  
 Bias Condition: None  
 Electrical Testing: @ Room

Device	Lot ID	Cycle	SS	Reject	Remark
IRS2101SPbF	1/4	1000	80	0	
IRS2101SPbF	2	1000	80	0	
IRS2101SPbF	3	1000	80	0	

**Reliability Test #3 - Temperature Humidity Bias (THB) Test:**  
 Test Duration: 1000 Hours  
 Test Condition: 85 °C, 85%RH  
 Bias Condition:  $V_{CC}=20$  V,  $V_B=20$  V,  $V_S=0$  V (Com)  
 Electrical Testing: @ Room

Device	Lot ID	Hour	SS	Reject	Remark
IRS2101SPbF	1/4	1000	80	0	
IRS2101SPbF	2	1000	80	0	
IRS2101SPbF	3	1000	80	0	

**Reliability Test #4 - High Temperature Bias (HTB) Test:**  
 Test Duration: 1008 Hours  
 Test Condition:  $T_j=150$  °C  
 Bias Condition:  $V_{CC}=20$  V,  $V_{BS}=20$  V,  $V_S=480$  V  
 Electrical Testing: @ Room

Device	Lot ID	Hour	SS	Reject	Remark
IRS2101SPbF	1/4	1000	79	0	
IRS2101SPbF	2	1000	79	0	
IRS2101SPbF	3	1000	80	0	

**Other Required Tests Results:**

1. **Resistance to Solder Heat/Wave-Solder:** Test 30 devices from one lot per package/device-vehicle in accordance with JEDEC, JESD22A111 – Passed (reference report: 10260-1-RSH).
2. **Solderability:** Test 10 devices from one lot per package/device-vehicle in accordance with JESD-106-B – Passed (reference report: 10260-1-SLDR).
3. **ESD:** The following is the results of ESD tests that were performed by the R/D (Design Center) group.

**IRS2101PbF:**

<b>Human Body Model ESD (100 pF/1500 Ω)</b>	
Device: IRS2101PBF Lot # C0588 Date code: 548Q Number of samples: 3 per test model Test date: 12/19/05	
Test Pin Combination	Rating
All Pin Combinations	2 kV to 4 kV

<b>Machine Model ESD (200 pF/ 0 Ω)</b>	
Device: IRS2101PBF Lot # C0588 Date code: 548Q Number of samples: 3 per test model Test date: 12/19/05	
Test Pin Combination	Rating
All Pin Combinations	200 V to 400 V

**IRS2106PbF:**

<b>Human Body Model ESD (100 pF/1500 Ω)</b>	
Device: IRS2106PBF Lot # C05BR Date code: 549Q Number of samples: 3 per test model Test date: 12/23/05	
Test Pin Combination	Rating
All Pin Combinations	2 kV to 4 kV

<b>Machine Model ESD (200 pF/ 0 Ω)</b>	
Device: IRS2106PBF Lot # C05BR Date code: 549Q Number of samples: 3 per test model Test date: 12/23/05	
Test Pin Combination	Rating
All Pin Combinations	200 V to 400 V

4. **LATCH-UP:** The following is the results of the LU test that was performed by the R/D (Design Center) group.

Device: IRS2106SPBF  
 Lot # gen5 **11829.1**  
 Date code: 0612  
 Number of samples: 6  
 Test Date: 3/30/06

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
HO > VB	1 A	1 A	1 A	1.2 A	1.2 A	1.2 A
HO < VS	2.0 A	2.0 A	2.0 A	2.0 A	2.0 A	2.0 A
LO > VCC	2.0 A	1.6 A	1.6 A	1.8 A	1.6 A	1.6 A
LO < COM	400 mA	450 mA	450 mA	450 mA	450 mA	450 mA

End of report