

International Rectifier – Temecula Reliability Laboratory

QS-9000 and ISO-9000 Certified Facility; SQ-1000 Certified Laboratory

HEXFET America Facility: 41915 Business Park Drive Temecula, CA 92590 Phone 909-676-7500 Fax 909-676-9154

QUALIFICATION REPORT

Title	SOT-223 Pb free Qualification
Product/Part # *	SOT-223 devices
Qualification Level	Q101 (or current qualification level)
Silicon Technology	FET
Mositure Sensitivity	MSL1 @ 260°C

REVISION HISTORY

#	Date	Author	Description of Changes
A	12/2/03	Rel Engr	Initial release

INTRODUCTION

In compliance with worldwide Industry initiative of “Lead Free” material for semiconductor fabrication, International Rectifier is proposing the conversion of the existing 85Sn/15Pb solder plating process to a Pb-free 100%Sn plating process for the assembly of SOT-223 devices.

SUMMARY/CONCLUSION

Based on the results of reliability stress testing, the SOT-223 100%Sn plating process is qualified. This qualification has been performed to the Q101 qualification level and allows qualification of currently Q101, Industrial and Consumer level qualified SOT-223 devices.

The reflow temperature during surface mount of these devices should not exceed 260°C.

Reliability Engineer

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QUALIFICATION TEST RESULTS

Part Type	IRFL014
Tests	Test: Temperature Cycling
	R#: 2561A4
	Conditions: -55°C/150°C
	Duration: 1000 cycles
	Quantity: 1 lot x 77 devices
	Failures: 0 failures
	Test: High Humidity, High Temperature Reverse Bias (H3TRB)
	R#: 2561B4
	Conditions: 85°C/85%RH/48V
Duration: 1000 hours	
Quantity: 1 lot x 77 devices	
Failures: 0 failures	
Test: Autoclave	
R#: 2561F4	
Conditions: 121°C/100%RH/15psig	
Duration: 96 hours	
Quantity: 1 lot x 77 devices	
Failures: 0 failures	

Part Type	IRFL9014
Tests	Test: Temperature Cycling
	R#: 2561A5
	Conditions: -55°C/150°C
	Duration: 1000 cycles
	Quantity: 1 lot x 77 devices
	Failures: 0 failures
	Test: High Humidity, High Temperature Reverse Bias (H3TRB)
	R#: 2561B2
	Conditions: 85°C/85%RH/-48V
Duration: 1000 hours	
Quantity: 1 lot x 77 devices	
Failures: 0 failures	
Test: Autoclave	
R#: 2561F2	
Conditions: 121°C/100%RH/15psig	
Duration: 96 hours	
Quantity: 1 lot x 77 devices	
Failures: 0 failures	

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Part Type	IRLL2705
Tests	Test: Temperature Cycling R#: 2561A6 Conditions: -55°C/150°C Duration: 1000 cycles Quantity: 1 lot x 77 devices Failures: 0 failures
	Test: High Humidity, High Temperature Reverse Bias (H3TRB) R#: 2705B6 Conditions: 85°C/85%RH/44V Duration: 1000 hours Quantity: 1 lot x 77 devices Failures: 0 failures
	Test: Autoclave R#: 2561F6 Conditions: 121°C/100%RH/15psig Duration: 96 hours Quantity: 1 lot x 77 devices Failures: 0 failures

Part Type	IRFL214
Tests	Test: Temperature Cycling R#: 2561A7 Conditions: -55°C/150°C Duration: 1000 cycles Quantity: 1 lot x 77 devices Failures: 0 failures
	Test: High Humidity, High Temperature Reverse Bias (H3TRB) R#: 2561B7 Conditions: 85°C/85%RH/100V Duration: 1000 hours Quantity: 1 lot x 77 devices Failures: 0 failures
	Test: High Temperature Reverse Bias R#: 2561C7 Conditions: 150°C/200V Duration: 1000 hours Quantity: 1 lot x 77 devices Failures: 0 failures
	Test: High Temperature Gate Bias R#: 2561D7 Conditions: 150°C/20V Duration: 1000 hours Quantity: 1 lot x 77 devices Failures: 0 failures
	Test: Autoclave R#: 2561F7 Conditions: 121°C/100%RH/15psig Duration: 96 hours Quantity: 1 lot x 77 devices Failures: 0 failures

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Part Type	IRLL3303
Tests	Test: Temperature Cycling R#: 2561A8-11 Conditions: -55°C/150°C Duration: 1000 cycles Quantity: 4 lots x 77 devices Failures: 0 failures
	Test: High Humidity, High Temperature Reverse Bias (H3TRB) R#: 2561B8-11 Conditions: 85°C/85%RH/24V Duration: 1000 hours Quantity: 4 lots x 77 devices Failures: 0 failures
	Test: High Temperature Reverse Bias R#: 2561C8-11 Conditions: 150°C/24V Duration: 1000 hours Quantity: 3 lots x 77 devices Failures: 0 failures
	Test: High Temperature Gate Bias R#: 2561D8-11 Conditions: 150°C/16V Duration: 1000 hours Quantity: 4 lots x 77 devices Failures: 0 failures
	Test: Intermittent Operating Life (Power Cycling) R#: 2561E9-11 Conditions: $\Delta T_j = 100^\circ\text{C}$ Duration: 15,000 cycles Quantity: 3 lots x 77 devices Failures: 0 failures
	Test: Autoclave R#: 2797F1-3 Conditions: 121°C/100%RH/15psig Duration: 96 hours Quantity: 3 lots x 77 devices Failures: 0 failures
	Test: Autoclave R#: 2797F1-3 Conditions: 121°C/100%RH/15psig Duration: 96 hours Quantity: 3 lots x 77 devices Failures: 0 failures