




PROBLEM ADVISORY

1. TITLE (Class, Function, Type, etc.) Wire Bond Anomaly, Hybrid Microcircuit		2. DOCUMENT NUMBER FV5-P-08-01
		3. DATE (DD-MMM-YY) 05 June 2008
4. MANUFACTURER AND ADDRESS International Rectifier, Aerospace & Defense 2270 Martin Ave. Santa Clara, CA 95050	5. PART NUMBER See Document	6. NATIONAL STOCK NUMBER Not Available
	7. SPECIFICATION MIL-PRF-38534	8. TYPE DESIGNATOR Not Available
	9. LOT DATE CODE START See Document	10. LOT DATE CODE END See Document
11. MANUFACTURER'S POINT OF CONTACT Granville Rains	12. CAGE 52467	13. MANUFACTURER'S FAX Not Available
14. MFR. POC PHONE (408) 727-0500	15. MANUFACTURER'S E-MAIL grains@irf.com	
16. CROSS REFERENCE VENDOR Not Available	17. CROSS REFERENCE CAGE Not Available	18. CROSS REFERENCE PART Not Available
19. PROBLEM DESCRIPTION / DISCUSSION / EFFECT <p>International Rectifier has been made aware of several Destruct Physical Analysis (DPA) issues that resulted from testing performed by customers. It was reported that 1.0 mil gold wire ball bonds lifted from a single die, specifically from the die aluminum metallization interface. The DPA bond pull tests failed to meet the <u>minimum bond strength</u> requirement in accordance with MIL-STD-883, TM2011 post seal limits.</p> <p>Subsequent analysis conducted by International Rectifier revealed the following:</p> <ol style="list-style-type: none">1) To date no product field failures have been reported to IR.2) The anomalies were isolated to specific die type (LS358) wafer sublots used in each of the hybrid microcircuits.3) International Rectifier conducted destruct bond pull testing in accordance with MIL-STD-883, TM2011 for each of the wafer die sub lots in order to identify suspect hybrid lots. Refer to Table I herein for hybrid lots impacted by this notice.4) Failure analysis of the subject die reveals contamination on the die metal surface, this included excess aluminum oxide, carbon as well as trace amounts of calcium, sodium and fluoride, which may have impeded the proper bi-metallic bond.		
20. ACTION TAKEN/PLANNED <ol style="list-style-type: none">1. Pursuant to an investigation, International Rectifier has determined that some products built using the subject die may present a potential reliability risk. Reference Table I herein for hybrid part number and lot date code information.2. As part of containment activity, affected customers may return the product for rework or replacement, base upon their own internal risk assessments. <p><i>Section Continued on Page 2</i></p>		
21. DATE MFR. NOTIFIED Not Applicable	22. MANUFACTURER'S RESPONSE <input type="checkbox"/> REPLY ATTACHED Not Applicable <input type="checkbox"/> NO REPLY	23. ORIGINATOR ADDRESS/POINT OF CONTACT Paul Hebert, International Rectifier – A&D (978) 514-6180 phebert@irf.com
24. REPRESENTATIVE Paul Hebert	25. SIGNATURE 	26. DATE 04 June 2008

20. ACTION TAKEN/PLANNED (continued)

3. International Rectifier has taken corrective actions as follows:

- A – The supplier (Linear Systems) is now performing die singulation of the ENTIRE wafer - in a single step - as compared to sectional (wafer die sublots) as needed basis. The past practice of sectional processing, that included multiple sawing operations was identified as the primary causes of contamination.
- B – Internal operating procedures have been changed to include; that any wire **bond lift** detected during the performance of QCI Group B (option 1 / bond strength) - and die element evaluation – are to be considered as lot jeopardy and be subject to additional evaluation before acceptance, regardless of bond strength.
- C – The hybrid plasma cleaning process dwell time has been optimized to ensure cleaner die bond surfaces.

4. This Problem Advisory has been coordinated with DSCC-VQH prior to its release.

Table 1 – List of Affected Product / Pending

Model	Qty	D/C	Mfg Code / Serial #
10122SC	3	0805	0821 001-003
10177SC	11	0809	0819 001, 005-012, 014, 015
10177SC	1	0809	0819 013
10178SC	11	0819	0819 001-011
10178SC	1	0819	0819 012
10179SC	22	0819	0819 001, 004-023, 025
10179SC	1	0819	0819 024
10180SC	11	0819	0819 001, 003-012
10180SC	1	0819	0819 013
10181SC	1	0748	0811 001, 002, 003
10182SC	1	0747	0811 001
10182SC	5	0747	0811 002-006
M3G2812S	16	0747	0811 001-016
M3G280515T/CK	1	0747	0811 001
M3G280515T	50	0804	0819 001-023, 025-027, 029, 030, 032-053
M3G2803R312T	1	0747	0815 001
LS2805S	24	0746	0814 001, 002, 004-006, 008-014, 016-026, 028
LS2805S	5	0746	0814 003, 007, 015, 027, 029
LS2812D	5	0746	0815 018-022
LS2812D	14	0746	0814 001-014
LS2815D/CK	4	0805	0823 001, 003-005
LS2803R3S	5	0746	0814 018-022
LS2803R3S	14	0746	0814 001-014
LS2805S/CK	4	0805	0823 001-004
S2805S	5	0749	0819 001-004, 006
10131SC	4	0732	0722 001-004
8602	4	9/26/07	0803 001-004
8853	5	0733	0747 001, 003, 004, 005, 006
ART2815T	5	0724	0747 001, 002, 004-006
M3G2815D	9	0735	0802 001-009
M3G7015D	14	0737	0801 001-014
M3H280512T	12	0733	0750 017-028
M3H280512T	16	0733	0750 001-016
M3H280512T	8	0733	0750 029, 030, 032-035, 048, 050
LS2805S/CK	5	0738	0803 001-005
ATS2805S	12	0641	0708 001-003, 006-013
10014SC	2	0617	0626 021, 022
10014SC	6	0623	0626 001-006
10014SC	1	0626	0626 007
10014SC	2	0623	0626 019-020
10014SC	4	0623	0626 015-018
ATS2812S	6	0644	0708 001-006
ATS2805S	12	0641	0708 001-003, 006-013