

GOVERNMENT - INDUSTRY DATA EXCHANGE PROGRAM
PROBLEM ADVISORY


1. TITLE (Class, Function, Type, etc.) Notification of Nonconformance to MIL-STD-883 TM 1014 Leak Rate Screening Requirements		2. DOCUMENT NUMBER FV5-P-17-0001										
		3. DATE (DD-MMM-YY) 03-FEB-17										
4. MANUFACTURER AND ADDRESS International Rectifier, HiRel Products 205 Crawford Street Leominster, MA 01453	5. PART NUMBER Reference Table 1	6. NATIONAL STOCK NUMBER Not Applicable										
	7. SPECIFICATION MIL-PRF-38534	8. GOVERNMENT PART NUMBER Not Applicable										
	9. LOT DATE CODE START 1525	10. LOT DATE CODE END 1626										
11. MANUFACTURER'S POINT OF CONTACT Cora Gustason	12. CAGE 69210	13. MANUFACTURER'S FAX (978) 537-4246										
14. MFR. POC PHONE (978) 466-5532	15. MANUFACTURER'S E-MAIL cgustas1@irf.com											
16. SUPPLIER Not Applicable	17. SUPPLIER ADDRESS Not Applicable	18. SUPPLIER CAGE Not Applicable										
19. PROBLEM DESCRIPTION / DISCUSSION / EFFECT The revised Test Method 1014 for Seal test that was developed as part of MIL-STD-883 rev J, released June of 2013, with the extended implementation date of June 15, 2015 [LDC 1525] was not effectively implemented at IR HiRel's Leominster facility for both screened and compliant Class K hybrid devices. Fine leak testing was performed in accordance with MIL-STD-883, TM 1014 condition A2. However the equivalent air leak rate [L] factor used to calculate the fine leak test limits were not updated to the revised specification. <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Package internal volume</td> <td style="width: 33%;">Old leak rate [L]</td> <td style="width: 33%;">New leak rate [L]</td> </tr> <tr> <td>0.05 cc < x ≤ 0.4 cc</td> <td>1x10⁻⁷ atm cc/s</td> <td>5x10⁻⁹ atm cc/s</td> </tr> <tr> <td>x > 0.4 cc</td> <td>1x10⁻⁶ atm cc/s</td> <td>1x10⁻⁸ atm cc/s</td> </tr> </table> <p>Given that the devices were sealed with a minimum of 10% He backfill and with the bomb time in helium as part of the TM 1014, Condition A2 fine leak test, the Howell-Mann Leak Rate Equation shows that the parts were actually screened to a tighter leak rate than the old leak rate, although less than the newly revised standard. For example, for packages with a volume > 0.4 cc where the traditional leak rate [L] limit had been 1x10⁻⁶ atm cc/s, the IR test provided for a calculated equivalent air leak rate [L] of 2.2 x 10⁻⁷ atm cc/s.</p> <p>To mitigate risk, IR retested hybrids in finish goods inventory (see parts listed in Table 2 herein) which represent approximately 20% of devices built during the identified timeframe. The hybrids were retested in accordance with MIL-STD-883, TM 1014 Conditions B1 & B2 using the Scintillation "Flat-Top Crystal" method and all devices passed the new leak rate limits. As such, IR believes the reliability risk to be very low.</p>				Package internal volume	Old leak rate [L]	New leak rate [L]	0.05 cc < x ≤ 0.4 cc	1x10 ⁻⁷ atm cc/s	5x10 ⁻⁹ atm cc/s	x > 0.4 cc	1x10 ⁻⁶ atm cc/s	1x10 ⁻⁸ atm cc/s
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20. ACTION TAKEN/PLANNED <ol style="list-style-type: none"> All devices that have shipped with a LDC of 1525 or later have been identified and individual customer notification letters have been distributed. IR HiRel Leominster Lab suitability per MIL-STD-883 TM 1014 for conditions B1, B2, and B2/B1 using the flat top Scintillation crystal and condition B3 red dye testing has been approved by DLA Land and Maritime -VQH. IR HiRel has retested all inventory that is still in their possession that is Class K screened hybrids and marked CK with date codes after 1525 per MIL-STD-883 TM 1014 Conditions B1 & B2 using the Scintillation "Flat-Top Crystal" and have not detected any failures. Specific package and product families have been identified in Table 2 of the attached pages for reference. Customers in receipt of Class K compliant "CK" and Class K screened hybrids of the affected date codes may contact IR for data queries or for additional test of their product if required. This Problem Advisory has been coordinated with DLA Land and Maritime -VQH prior to its release. 												
21. DATE MFR. NOTIFIED/ SUPPLIER NOTIFIED Not Applicable	22. MFR./SUPPLIER RESPONSE REPLY ATTACHED Not Applicable NO REPLY	23. ORIGINATOR ADDRESS/POINT OF CONTACT Cora L. Gustason, International Rectifier 205 Crawford Street Leominster, MA 01453 cgustas1@irf.com (978) 466-5532										
24. GIDEP REPRESENTATIVE Paul Hebert	25. SIGNATURE 	26. DATE March 7, 2017										

Table 1: List of Products Shipped with LDC's from 1525 through 1626













Package	Part Number	LDC	Package	Part Number	LDC
8- Lead Flat Pack 	IRMHR13984SFX Custom CK Devices IRMHR13985SFX	1532 1602 1605 1605 1551	64 Pin Dip 	RDHA701FP10A8QK Standard Product Class K Screened Device	1531 1609
5 Pin Sip 	IRUH3301A1BK Standard Product CK Device	1539	8 Pin SIP 	RDHA710SE10A2FK Standard Product Class K Screened Device	1544 1619
Customer Specific Device Package is proprietary.	OM13770SFX Custom Class K Screened Device	1543 1546 1550 1551 1552 1601 1603 1604	8 Pin SIP 	RDHA710SE10A2QK Standard Product Class K Screened Device	1518
Customer Specific Device Package is proprietary.	OMR13895SFK Custom Class K Screened Device	1549 1611	8 Pin SIP 	RDHA710SE10A2SK Standard Product Class K Screened Device	1521
8 Pin Ceramic 	RDHA701CD10A2NX Standard Product Class K Screened Device	1536			

Table 2: Class K Screened/CK Devices Tested From Finished Goods

Package	Part Number / Product Family	LDC's
<p>8- Lead Flat Pack</p> 	<p>IRMHR13985SFX IRMHR13984SFX Custom CK Devices</p>	<p>1551 1605</p>
<p>8 Pin Ceramic</p> 	<p>RDHA701CD10A2NX Dual Single Pole Single Throw normally open Solid-State Relay</p>	<p>1536</p>
<p>5 Pin Sip</p> 	<p>IRUH3301A1BK</p>	<p>1539</p>
<p>8 Pin SIP</p> 	<p>RDHA710SE10A2FK Solid-State Relay</p>	<p>1544 1619</p>
<p>64 Pin Dip</p> 	<p>RDHA701FP10A8QK / RDHA701FP10A8CK Octal Buffered and Non-Buffered Solid- State Relays</p>	<p>1609 1531 1420 1413 1327</p>