




PRODUCT CHANGE NOTICE

1. TITLE Case Isolation Testing for TO-254 / TO-257 / TO-258 / TO-259 Style Packages		2. DOCUMENT NUMBER FV5-C-10-0001
		3. DATE 14 December 2009
4. MANUFACTURER AND ADDRESS International Rectifier 205 Crawford St. Leominster, MA 01453		5. MANUFACTURER PART NUMBER See Document
		6. BASE PART See Document
		7. NATIONAL STOCK NUMBER (NSN) FSC 5961
8. CAGE 69210	9. EFFECTIVE DATE 01 April 2008	10. GOVERNMENT NUMBER Not Available
11. POINT OF CONTACT Customer Service 978-534-5776		12. DRAWING NUMBER MIL-PRF-19500
		13. SPECIFICATION NUMBER QPL-19500
14. PRODUCT CHANGE <p>International Rectifier (IR) has implemented case isolation testing on all its TO-257, TO-254, TO-258 and TO-259 style (isolated) packages. Case isolation testing was adopted on a 100% basis after hermetic seal testing using the Dielectric Withstanding Voltage test method in MIL-STD-202 (TM 301), as reference. Note that this test is not standard or called-out in MIL-PRF-19500 defined screening flows.</p> <p>Case Isolation testing was started in April 2008 for all MIL-PRF-19500 screening levels (JANS, JANTX, and JANTXV), including QPL-19500 and IR Standard products (see attachment 1 for parts list reference). Testing for custom products (source control drawing) was implemented in December 2009.</p> <p>BACKGROUND: Case Isolation testing was incorporated into International Rectifier's MIL-PRF-19500 screening flows due to low PPM case isolation failures detected and reported by customers. Failure analysis performed by IR revealed that the case isolation failures were related to package construction defects (escapes). Analysis of failed parts exhibited electrical shorts that were caused by extraneous metal that bridged across the package ceramic seal, hence creating a low resistance contact from the pin to the case (see attachment 2 for photo exhibit). The defect condition escaped IR MIL-PRF-19500 product screening since the case is normally floating during tests and screening (no electrical contact to the package case) and case isolation testing was not invoked by the MIL-PRF-19500 screening flows.</p> <p>IR believes the risk to customers is very low based on the few cases reported over the last 10 years and the high probability of fault detection at the application circuit level. If the package case is not isolated and the package case is grounded, the device will malfunction in the application.</p> <p>This Product Change Notice has been coordinated with DSCC-VQE prior to its release.</p>		
15. APPROVAL DATE Not Applicable	16. APPROVING GOVERNMENT ACTIVITY Not Applicable	
17. GIDEP REPRESENTATIVE Paul Hebert	18. SIGNATURE 	19. DATE December 1, 2009

14. PRODUCT CHANGE continued...

Attachement 1 – TO-XXX Parts list

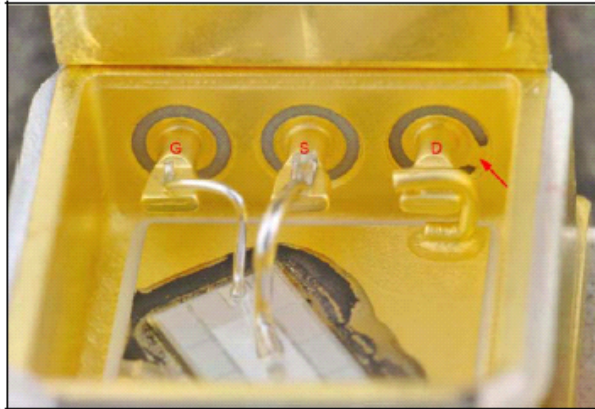
IR QIRL Parts - Generic PN with SCS, SCX or SCV screening suffix	QPL Base Part Number	Q P L Part Descriptions							
		Die Information				QPL Slash	Device Package		
		Gen.	Size	Voltage	Type				
IRHM7150SCS, SCV	2N7268	G4	5	100V	N-ch	/ 603	TO-254		
IRHY7130CMSCS, SCV	2N7380	G4	3	100V	N-ch	/ 614	TO-257		
IRHY9130CMSCS, SCV	2N7382	G4	3	100V	P-ch	/ 615	TO-257		
IRHM9150SCS, SCV	2N7422	G4	5	100V	P-ch	/ 662	TO-254		
IRHM9160SCS, SCV	2N7425	G4	6	100V	P-ch	/ 660	TO-254		
IRHM7160SCS, SCV	2N7432	G4	6	100V	N-ch	/ 663	TO-254		
IRHM7250SCS, SCV	2N7269	G4	5	200V	N-ch	/ 603	TO-254		
IRHY7230CMSCS, SCV	2N7381	G4	3	200V	N-ch	/ 614	TO-257		
IRHY9230CMSCS, SCV	2N7383	G4	3	200V	P-ch	/ 615	TO-257		
IRHM9250SCS, SCV	2N7423	G4	5	200V	P-ch	/ 662	TO-254		
IRHM9260SCS, SCV	2N7426	G4	6	200V	P-ch	/ 660	TO-254		
IRHM7260SCS, SCV	2N7433	G4	6	200V	N-ch	/ 663	TO-254		
IRHM7260SESCS, SCV	2N7444	G4	6	200V	N-ch	/ 661	TO-254		
IRHM7264SESCS, SCV	2N7434	G4	6	250V	N-ch	/ 661	TO-254		
IRHM7360SESCS, SCV	2N7391	G4	6	400V	N-ch	/ 661	TO-254		
IRHY7330CMSESCS, SCV	2N7465T3	G4	3	400V	N-ch	/ 676	TO-257		
IRHM7450SCS, SCV	2N7270	G4	5	500V	N-ch	/ 603	TO-254		
IRHM7460SESCS, SCV	2N7392	G4	6	500V	N-ch	/ 661	TO-254		
IRHY7430CMSESCS, SCV	2N7466T3	G4	3	500V	N-ch	/ 676	TO-257		
IRHM7054SCS, SCV	2N7394	G4	5	60V	N-ch	/ 603	TO-254		
IRHM9064SCS, SCV	2N7424	G4	6	60V	P-ch	/ 660	TO-254		
IRHM7064SCS, SCV	2N7431	G4	6	60V	N-ch	/ 663	TO-254		
IRHMS57160SCS, SCV	2N7471T1	R5	6	100V	N-ch	/ 698	TO-254AA		
IRHY57130CMSCS, SCV	2N7484T3	R5	3	100V	N-ch	/ 702	TO-257AA		
IRHY597130CMSCS, SCV	2N7547T3	R5	3	100V	P-ch	/ 712	TO-257AA		
IRHMS597160SCS, SCV	2N7550T1	R5	6	100V	P-ch	/ 713	TO-254AA		
IRHMS57163SESCS, SCV	2N7475T1	R5	6	130V	N-ch	/ 685	TO-254AA		
IRHY57133CMSESCS, SCV	2N7488T3	R5	3	130V	N-ch	/ 705	TO-257AA		
IRHMS57260SESCS, SCV	2N7476T1	R5	6	200V	N-ch	/ 685	TO-254AA		
IRHY57230CMSESCS, SCV	2N7489T3	R5	3	200V	N-ch	/ 705	TO-257AA		
IRHY597230CMSCS, SCV	2N7548T3	R5	3	200V	P-ch	/ 712	TO-257AA		
IRHMS597260SCS, SCV	2N7549T1	R5	6	200V	P-ch	/ 713	TO-254AA		
IRHMS57264SESCS, SCV	2N7477T1	R5	6	250V	N-ch	/ 685	TO-254AA		
IRHY57234CMSESCS, SCV	2N7490T3	R5	3	250V	N-ch	/ 705	TO-257AA		
IRHMS57Z60SCS, SCV	2N7478T1	R5	6	30V	N-ch	/ 697	TO-254AA		
IRHY57Z30CMSCS, SCV	2N7482T3	R5	3	30V	N-ch	/ 702	TO-257AA		
IRHYS597Z30CMSCS, SCV	2N7519T3	R5	3	30V	P-ch	/ 732	TO-257AA		
IRHMS597Z60SCS, SCV	2N7523T1	R5	6	30V	P-ch	/ 733	TO-254AA		
IRHMS57064SCS, SCV	2N7470T1	R5	6	60V	N-ch	/ 698	TO-254AA		
IRHY57034CMSCS, SCV	2N7483T3	R5	3	60V	N-ch	/ 702	TO-257AA		
IRHYS597034CMSCS, SCV	2N7520T3	R5	3	60V	P-ch	/ 732	TO-257AA		
IRHMS597064SCS, SCV	2N7524T1	R5	6	60V	P-ch	/ 733	TO-254AA		
IRHMS67160SCS, SCV	2N7580T1	R6	6	100V	N-ch	TBD	TO-254		
IRHYS67130CMSCS, SCV	2N7588T3	R6	3	100V	N-ch	TBD	TO-257		
IRHMS67164SCS, SCV	2N7582T1	R6	6	150V	N-ch	TBD	TO-254		
IRHYS67134CMSCS, SCV	2N7590T3	R6	3	150V	N-ch	TBD	TO-257		
IRHMS67260SCS, SCV	2N7584T1	R6	6	200V	N-ch	TBD	TO-254		
IRHYS67230CMSCS, SCV	2N7592T3	R6	3	200V	N-ch	TBD	TO-257		
IRHMS67264SCS, SCV	2N7586T1	R6	6	250V	N-ch	TBD	TO-254		
IRHYS67234CMSCS, SCV	2N7594T3	R6	3	250V	N-ch	TBD	TO-257		
IRHY67C30CMSCS, SCV	2N7599T3	R6	3	600V	N-ch	TBD	TO-257		
IRHLMS77064SCS, SCV	2N7605T1	R7	6	60V	N-ch	TBD	TO-254AA		
IRHLYS77034SCS, SCV	2N7607T3	R7	3	60V	N-ch	TBD	TO-257AA		
IRHLMS797064SCS, SCV	2N7623T1	R7	6	60V	P-ch	TBD	TO-254		
IRHLYS797034SCS, SCV	2N7625T3	R7	3	60V	P-ch	TBD	TO-257AA		
	2N7218	G3	4	100V	N-ch	/ 596	TO-254		
	2N7219			200V	N-ch		TO-254		
	2N7221			400V	N-ch		TO-254		
	2N7222			500V	N-ch		TO-254		
	2N7224	G3	5	100V	N-ch	/ 592	TO-254		
	2N7225			200V	N-ch		TO-254		
	2N7227			400V	N-ch		TO-254		
	2N7228			500V	N-ch		TO-254		
	2N7236	G3	4	-100V	P-ch	/ 595	TO-254		
	2N7236								
	2N7237			-200V	P-ch		TO-254		
	2N7237								
	2N7541T3	G5	3.0	55V	N-ch	/ 711	TO-257		
	2N7543T3	G5	3.0	100V	N-ch	TBD	TO-257		
	2N7505U8	G5	3.0	100V	P-ch	/ 74g	TO-257		

Attachment 2 – Two cases of Package Defects - Case Isolation Failure

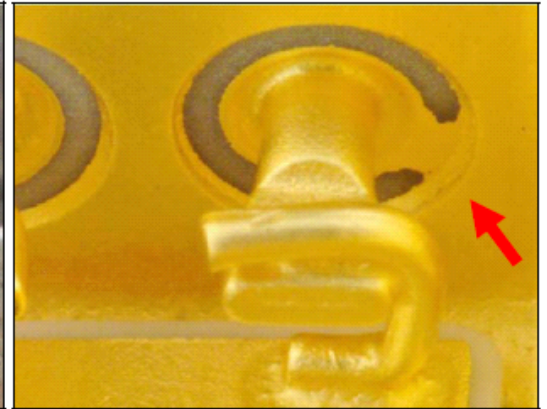
TO-257 Package



Photo#1 – Overview

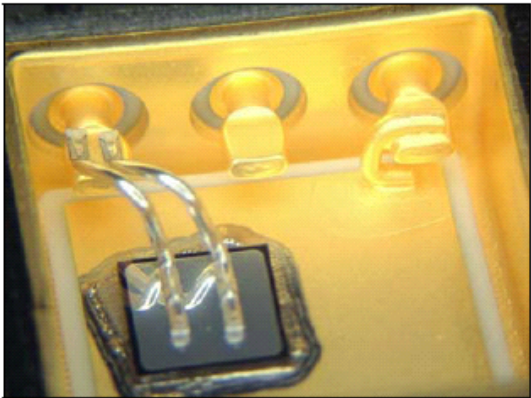


Photo#2 – Internal Overview

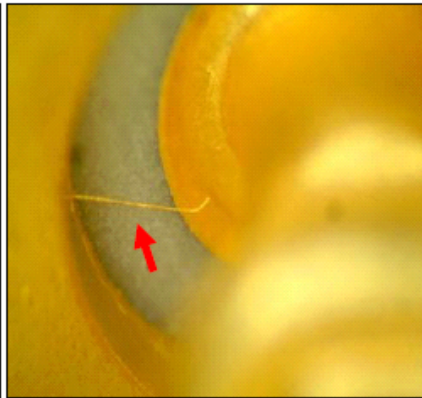


Photo#3 – Isolation Bridge – Gold Plate

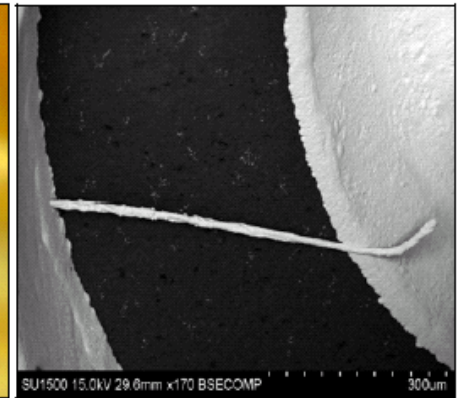
TO-254 Package



Photo#4 – Device Overview



Photo#5 - Bridging Metal Filament



Photo#6 - SEM Image of Filament