International
IOR Rectifier

D2-Pak

RoHS Compliance Document

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http://www.irf.com/ehs

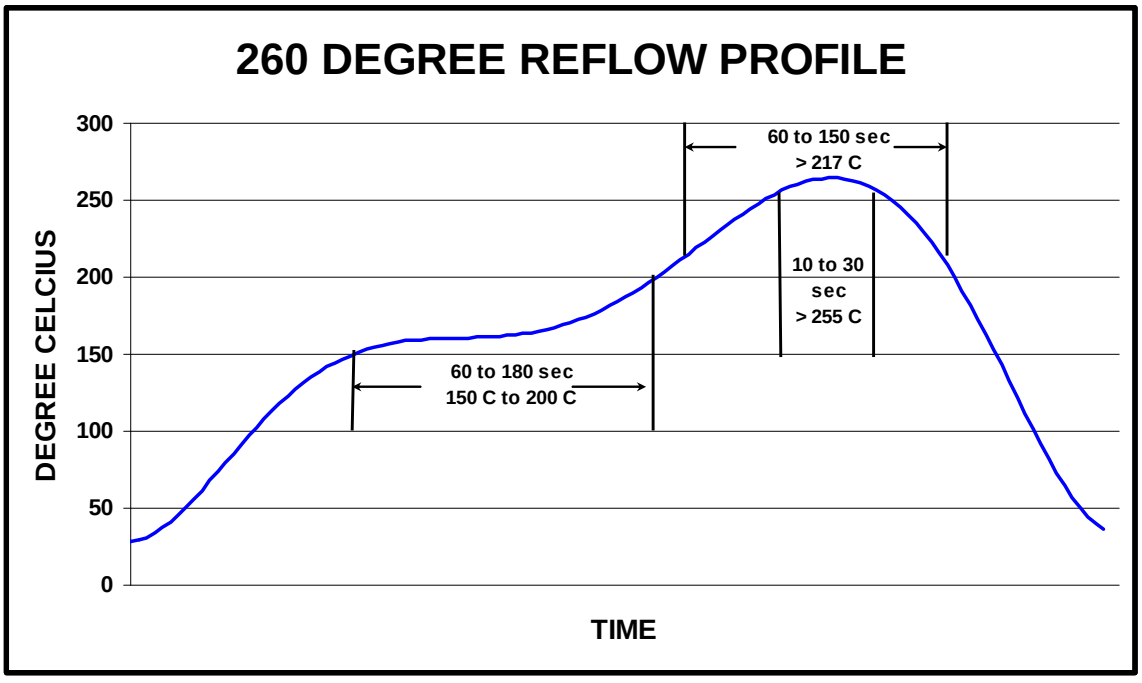
International Rectifier

41915 Business Park Drive, Temecula, California 92590 * Telephone (951) 676-7500

D2-pak BOM 1

Component	Material Name	Material Mass (g)	Substance Name	CAS Number	Substance Mass (g)	Material Analysis Weight (%)	% of Total Weight
Chip	Silicon	0.01900	Si	7440-21-3	0.01900	100%	1.3%
Encapsulant	Epoxy Resin	0.52800	SiO2	7631-86-9	0.46992	89%	31.0%
			Epoxy	90598-46-2	0.05808	11%	3.8%
Lead Frame	Copper	0.94840	Cu	7440-50-8	0.94745	100%	62.4%
			Sn	7440-31-5	0.00095	0%	0.1%
Die Attach	Soft Solder	0.01200	Pb	9439-92-1	0.01080	90%	0.7%
			In	7440-74-6	0.00060	5%	0.0%
			Ag	7440-22-4	0.00060	5%	0.0%
Wire bond	Aluminum	0.00660	Al	7429-90-5	0.00660	100%	0.4%
Lead Finish	Matte Tin over Nickel*	0.00320	Sn	7440-31-5	0.00275	86%	0.2%
			Ni	7440-02-0	0.00045	14%	0.0%
MSL1 at 260 C			Total Weight (g)		**1.51720**		

Tin whisker mitigation strategy is nickel under-plate.



This part is compliant with EU Directive 2002/95/EC (RoHS) and does not contain lead, mercury, cadmium (0.01%), hexavalent chromium, PBB or PBDE in concentrations greater than 0.1%, except as permitted by Annex (7).

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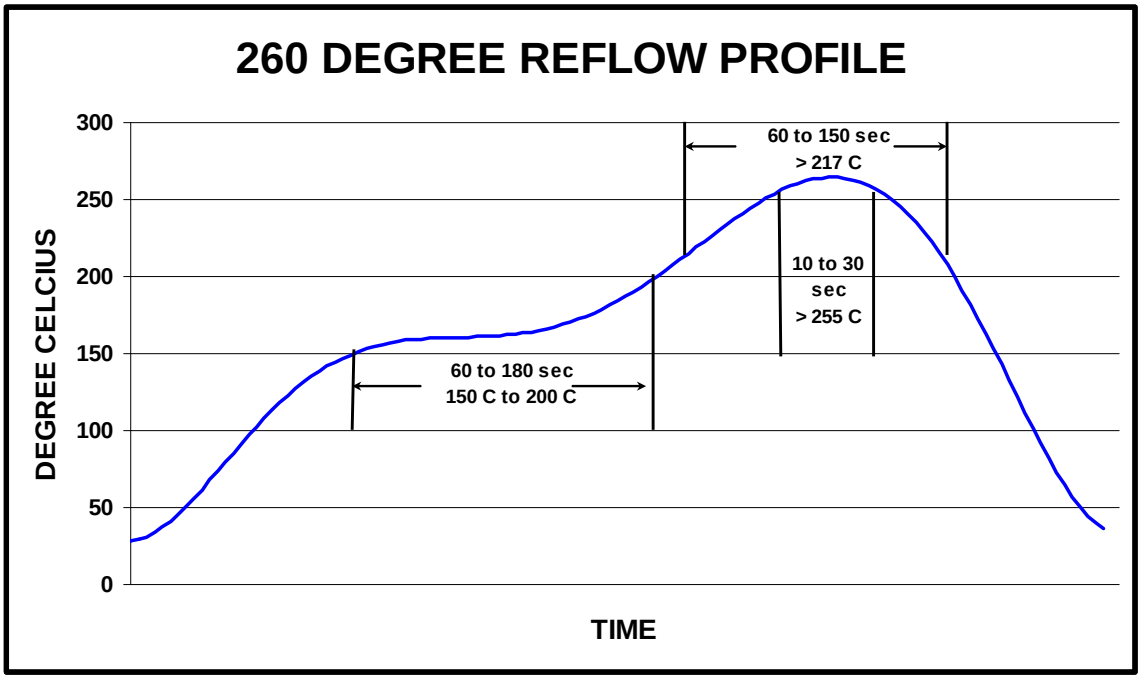
D2-pak BOM 2

Component	Material Name	Material Mass (g)	Substance Name	CAS Number	Substance Mass (g)	Material Analysis Weight (%)	% of Total Weight
Chip	Silicon	0.01900	Si	7440-21-3	0.01900	100%	1.3%
Encapsulant	Epoxy Resin	0.52800	SiO2	7631-86-9	0.46992	89%	31.0%
			Epoxy	90598-46-2	0.05808	11%	3.8%
Lead Frame	Copper	0.94840	Cu	7440-50-8	0.94745	100%	62.4%
			Sn	7440-31-5	0.00095	0%	0.1%
Die Attach	Soft Solder	0.01200	Pb	9439-92-1	0.01146	95.5%	0.8%
			Sn	7440-31-5	0.00024	2%	0.0%
			Ag	7440-22-4	0.00030	2.5%	0.0%
Wire bond	Aluminum	0.00660	Al	7429-90-5	0.00660	100%	0.4%
Lead Finish	Matte Tin	0.00320	Sn	7440-31-5	0.00320	100%	0.2%
MSL1 at 260 C			Total Weight (g)		**1.51720**		

Tin whisker mitigation strategy is nickel under-plate.



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Test Definition	Test Conditions	Inspection Interval Class 1 and 2 Products	Total Duration Class 1 and 2 Products	Maximum Whisker Length (um)
Room Temperature Humidity Storage	30± 2°C/60± 3%RH	1000 hours	4000 hours	20
Temperature Humidity Unbiased	55± 3°C/85±3% RH	1000 hours	4000 hours	20
Temperature Cycling	-40 to 55°C to 80 to 95°C, air to air, 10 min soak, approx 3 cycles /hours	500 cycles	1500 cycles	45

Tin Whisker testing per JESD201, Environmental Acceptance Requirements for Tin Whisker Susceptibility of Tin and Tin Alloy Surface Finish

Tin Whisker Results (number of failing whiskers)

Test	1000 Hours	2000 Hours	3000 Hours	4000 Hours
Room Temperature Humidity Storage	0/60	0/60	0/60	0/60
Temperature Humidity Unbiased	0/60	0/60	0/60	0/60
Test	**500 Cycles**	**1000 Cycles**	**1500 Cycles**	
Temperature Cycling	0/60	0/60	0/60	