International
IOR Rectifier

TSOP-6

RoHS Compliance Document

Contents:

1. Composition
2. Solder Reflow
3. Tin Whisker Report

http://www.irf.com/ehs

February 2015

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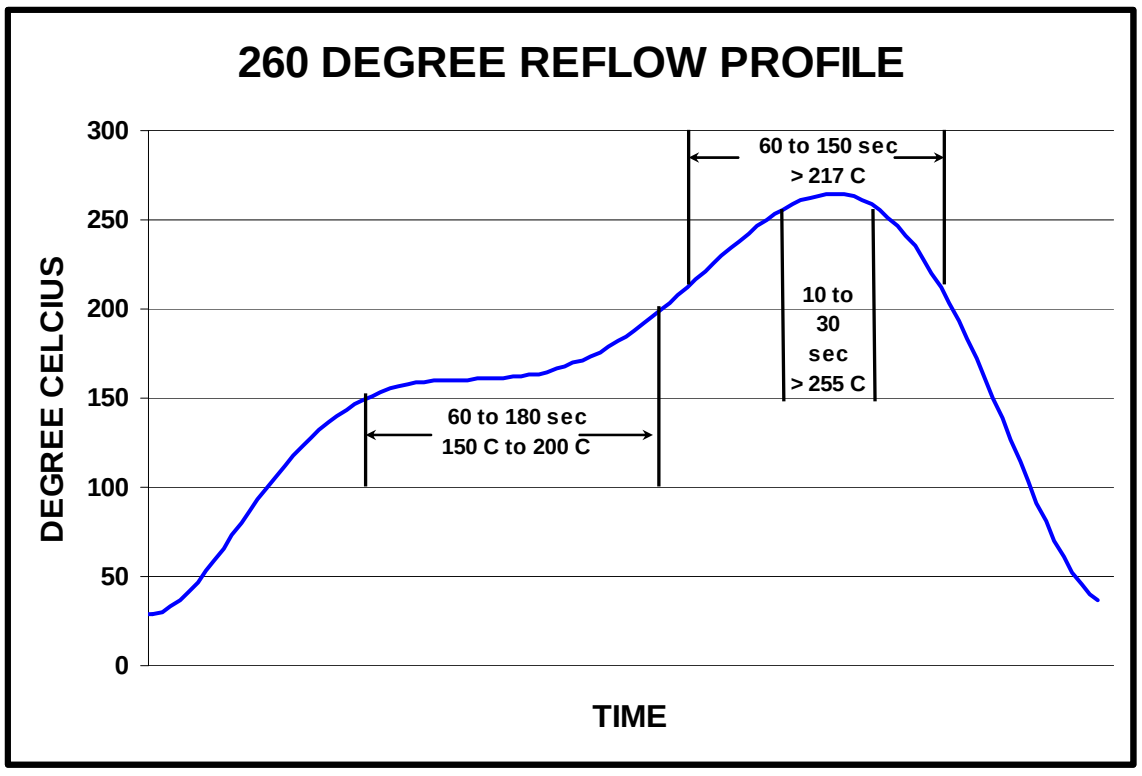
TSOP-6 BOM 1

Component	Material Name	Material Mass (g)	Element Name Composition	CAS #	Substance Mass (g)	Material Analysis Weight (%)	% of Total Weight
Chip	Silicon	0.00059	Si	7440-21-3	0.00059	100%	3.8%
Encapsulant	Epoxy Resin	0.00722	SiO2	7631-86-9	0.00516	72%	33.0%
			Epoxy	90598-46-2	0.00184	25%	11.8%
			Other	-	0.00022	3%	1.4%
Lead Frame	Copper	0.00675	Cu	7440-50-8	0.00659	98%	42.2%
			Fe	7439-89-6	0.00016	2%	1.0%
Die Attach	Silver Epoxy	0.00017	Ag	7440-22-4	0.00014	82%	0.9%
			Epoxy	90598-46-2	0.00003	18%	0.2%
Wire bond	Gold	0.00027	Au	7440-57-5	0.00027	100%	1.7%
Lead Finish	Matte Tin*	0.00063	Sn	7440-31-5	0.00063	100%	4.0%
MSL 2 at 260 C			Total Weight (g)		**0.01563**		

* Tin whisker mitigation strategy is 150 C, 1 hour anneal within 24 hours of tin plating.



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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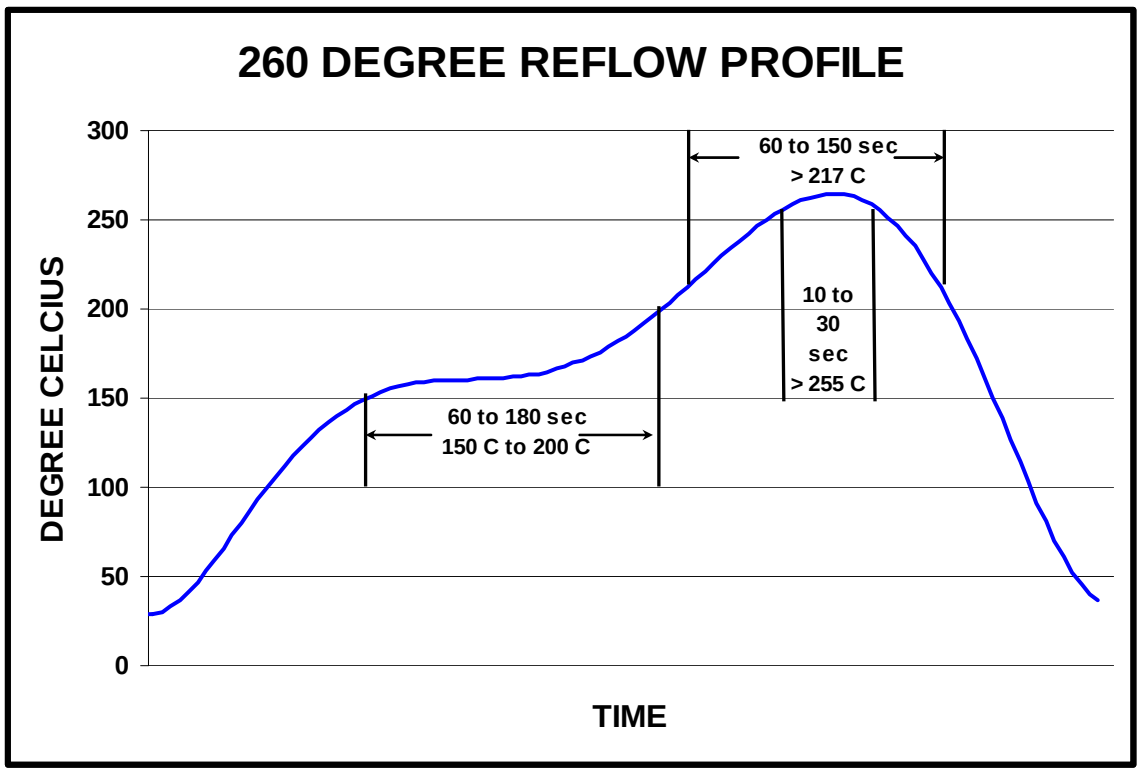
Component	Material Name	Material Mass (g)	Element Name Composition	CAS #	Substance Mass (g)	Material Analysis Weight (%)	% of Total Weight
Chip	Silicon	0.00059	Si	7440-21-3	0.00059	100%	3.8%
Encapsulant	Epoxy Resin	0.00722	SiO2	7631-86-9	0.00516	72%	33.0%
			Epoxy	90598-46-2	0.00184	25%	11.8%
			Other	-	0.00022	3%	1.4%
Lead Frame	Copper	0.00675	Cu	7440-50-8	0.00659	98%	42.2%
			Fe	7439-89-6	0.00016	2%	1.0%
Die Attach	Silver Epoxy	0.00017	Ag	7440-22-4	0.00014	82%	0.9%
			Epoxy	90598-46-2	0.00003	18%	0.2%
Wire bond	Copper	0.00027	Cu	7440-50-8	0.00027	100%	1.7%
Lead Finish	Matte Tin*	0.00063	Sn	7440-31-5	0.00063	100%	4.0%
MSL 2 at 260 C			Total Weight (g)		**0.01563**		

* Tin whisker mitigation strategy is 150 C, 1 hour anneal within 24 hours of tin plating.



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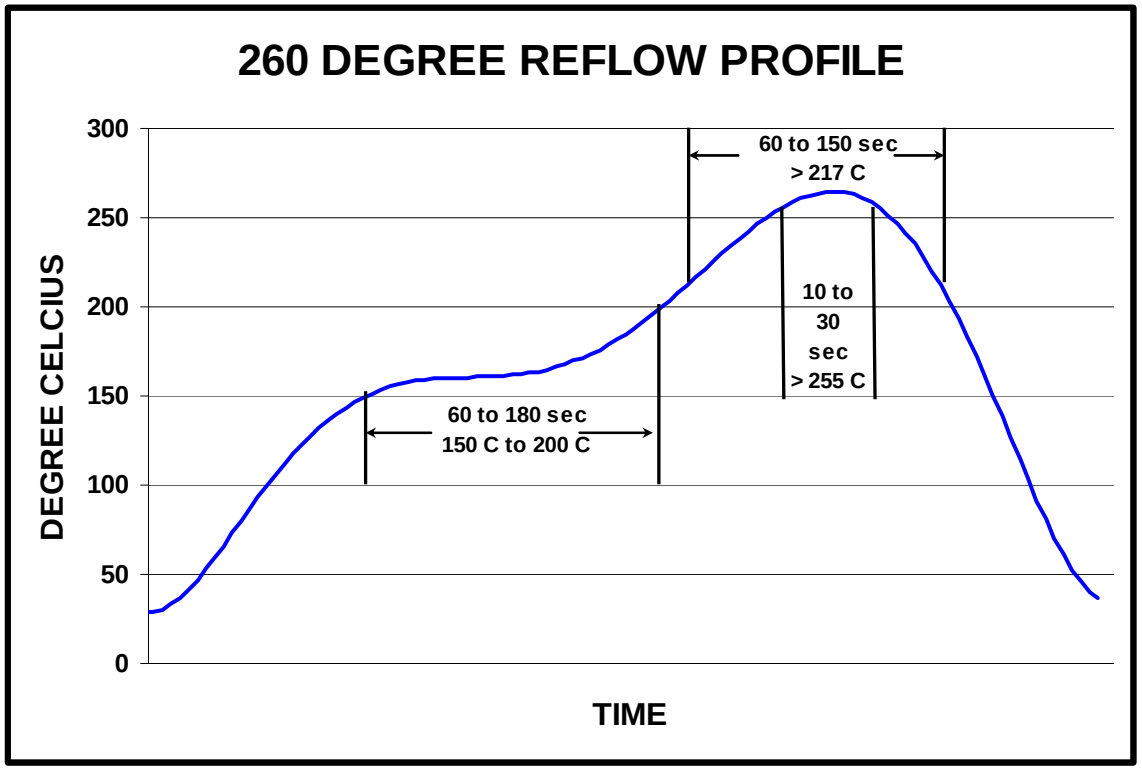
Component	Material Name	Material Mass (g)	Element Name Composition	CAS #	Substance Mass (g)	Material Analysis Weight (%)	% of Total Weight
Chip	Silicon	0.00059	Si	7440-21-3	0.00059	100%	3.8%
Encapsulant	Epoxy Resin	0.00722	SiO2	7631-86-9	0.00516	72%	33.0%
			Epoxy	90598-46-2	0.00184	25%	11.8%
			Other	-	0.00022	3%	1.4%
Lead Frame	Copper	0.00675	Cu	7440-50-8	0.00659	98%	42.2%
			Fe	7439-89-6	0.00016	2%	1.0%
Die Attach	Soft Solder	0.00017	Pb	7439-92-1	0.00016	92.5%	0.9%
			Sn	7440-31-5	0.00001	5%	0.1%
			Ag	7440-22-4	0.00000	2.5%	0.1%
Wire bond	Copper	0.00027	Cu	7440-50-8	0.00027	100%	1.7%
Lead Finish	Matte Tin*	0.00063	Sn	7440-31-5	0.00063	100%	4.0%
MSL 2 at 260 C			Total Weight (g)		**0.01563**		

* Tin whisker mitigation strategy is 150 C, 1 hour anneal within 24 hours of tin plating.



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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	0/24	0/24	0/24	0/24
Temperature Humidity Unbiased	0/24	0/24	0/24	0/24
Test	**500 Cycles**	**1000 Cycles**	**1500 Cycles**	
Temperature Cycling	0/24	0/24	0/24	