



PQFN 3.3X3.3

RoHS Compliance Document

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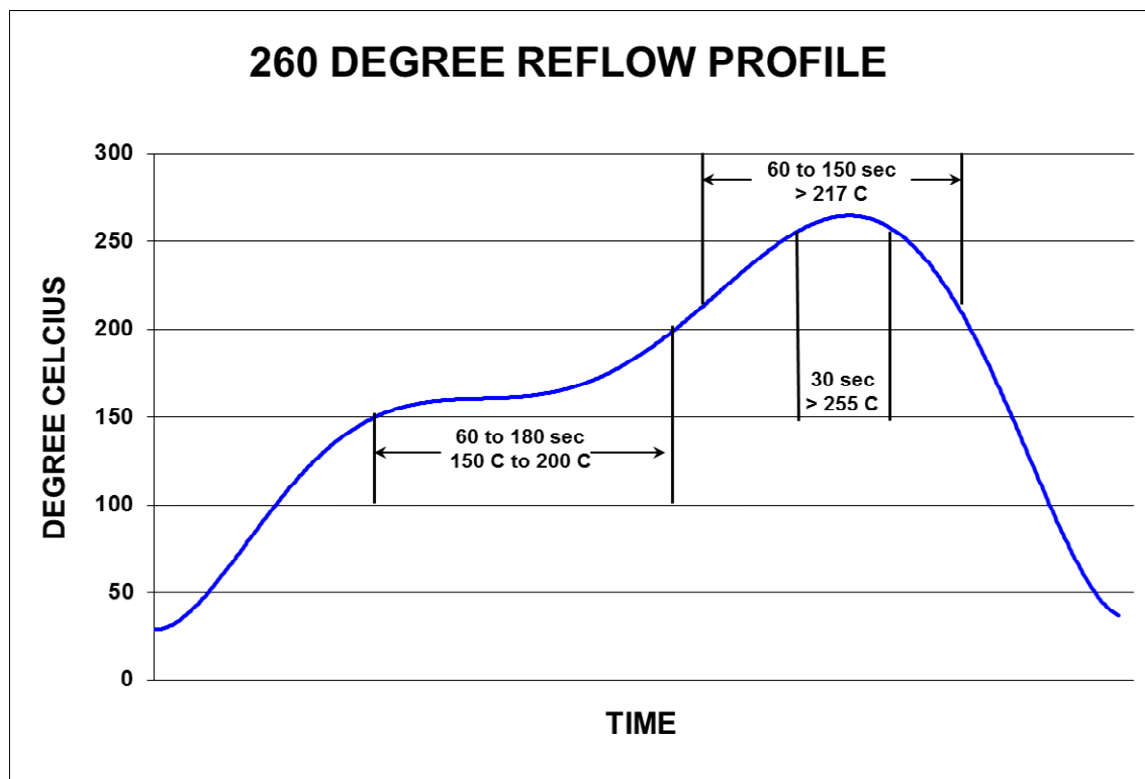
1. Composition
2. Solder Reflow
2. Tin Whisker Report



PQFN 3.3X3.3 BOM 1

Component	Material Name	Material Mass (g)	Element Name Composition	CAS #	Substance Mass (g)	Material Analysis Weight (%)	% of Total Weight
Chip	Silicon	0.00145	Si	7440-21-3	0.00145	100%	5.8%
Encapsulant	Epoxy Resin	0.01427	SiO ₂	7631-86-9	0.00928	65%	30.6%
			Epoxy Resin	90598-46-2	0.00499	35%	16.5%
Lead Frame	Copper	0.01318	Cu	7440-50-8	0.01278	97%	42.1%
			Fe	7439-89-6	0.00039	3%	1.3%
			Ag	7440-22-4	0.00001	0%	0.0%
Die Attach	Silver Epoxy	0.00050	Ag	7440-22-4	0.00043	85%	1.7%
			Epoxy Resin	90598-46-2	0.00007	15%	0.3%
Wire bond	Copper	0.00030	Cu	7440-50-8	0.00030	100%	1.2%
Lead Finish	Matte Tin	0.00012	Sn	7440-31-5	0.00012	100%	0.5%
		Total Weight (g)		0.02982			

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

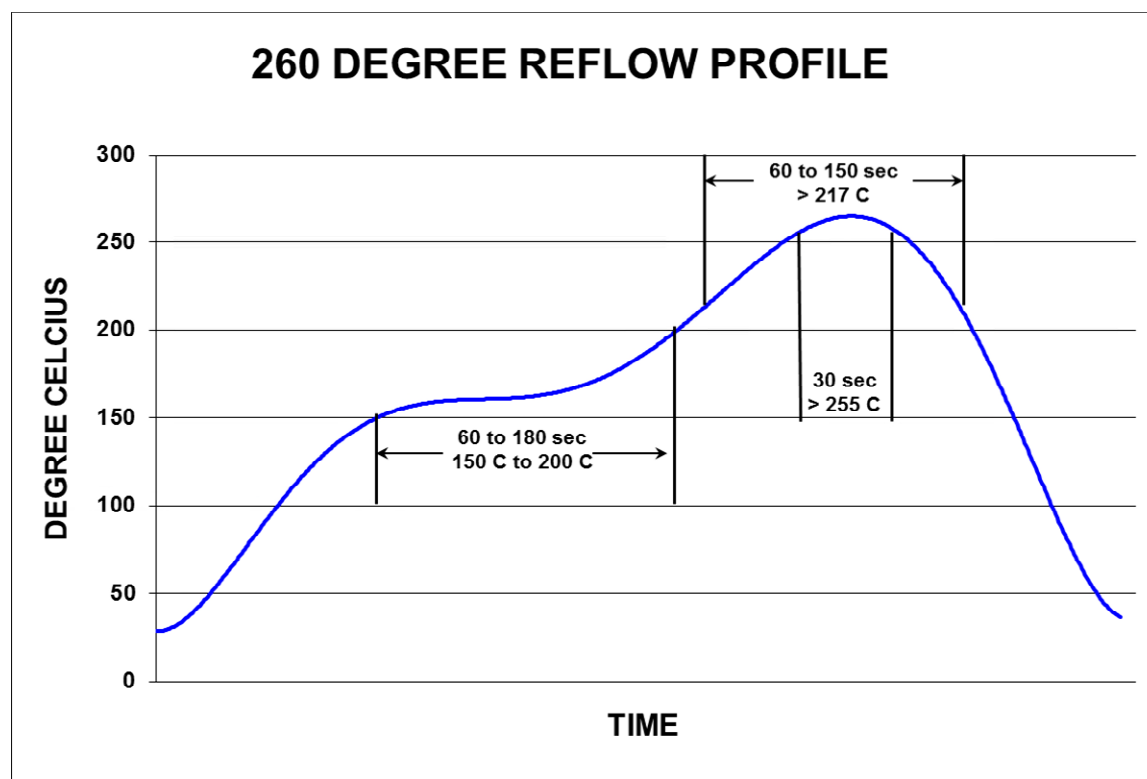


This part is compliant with EU Directive 2011/65/EU (RoHS Directive) and does not contain lead, mercury, cadmium (0.01%), hexavalent chromium, PBB or PBDE in concentrations greater than 0.1%, except as permitted by Annex III. Further part complies with 3 reflow cycles per JEDEC J-STD-020



PQFN 3.3X3.3 BOM 2

Component	Material Name	Material Mass (g)	Element Name Composition	CAS #	Substance Mass (g)	Material Analysis Weight (%)	% of Total Weight
Chip	Silicon	0.00145	Si	7440-21-3	0.00145	100%	4.86%
Encapsulant	Epoxy Resin	0.01427	SiO2	7631-86-9	0.00928	65%	31.12%
			Epoxy Resin	90598-46-2	0.00499	35%	16.73%
Lead Frame	Copper	0.01318	Cu	7440-50-8	0.01278	97%	42.86%
			Fe	7439-89-6	0.00039	3%	1.31%
			Ag	7440-22-4	0.00001	0%	0.03%
Die Attach	Silver Epoxy	0.0005	Ag	7440-22-4	0.00043	85%	1.44%
			Epoxy Resin	90598-46-2	0.00007	15%	0.23%
Wire bond	Copper	0.0003	Cu	7440-50-8	0.0003	100%	1.01%
Lead Finish	NiPdAu	0.00012	Ni	7440-02-0	0.00011	92.40%	0.37%
			Pd	7440-05-3	0.00001	6.30%	0.03%
			Au	7440-57-5	0	1.30%	0.00%
		Total Weight (g) 0.02982					



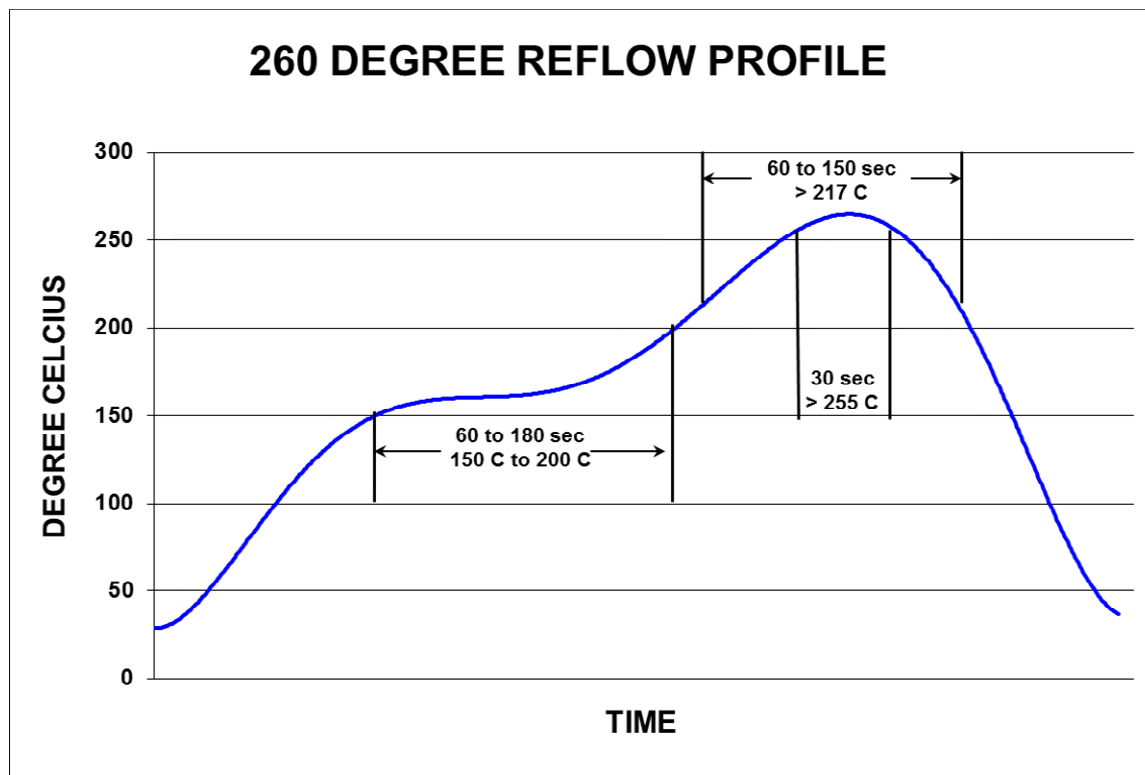
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PQFN 3.3X3.3 Copper Clip BOM 3

Component	Material Name	Material Mass (g)	Element Name Composition	CAS #	Substance Mass (g)	Material Analysis Weight (%)	% of Total Weight
Chip	Silicon	0.00145	Si	7440-21-3	0.00145	100%	4.3%
Encapsulant	Epoxy Resin	0.01427	SiO2	7631-86-9	0.00928	65%	27.3%
			Epoxy Resin	90598-46-2	0.00499	35%	14.7%
Lead Frame	Copper	0.01318	Cu	7440-50-8	0.01278	97%	37.5%
			Fe	7439-89-6	0.0004	3%	1.2%
			Ag	7440-22-4	0.00001	0%	0.0%
Die Attach	Soft Solder	0.00050	Pb	7439-92-1	0.00046	92.5%	1.4%
			Sn	7440-31-5	0.00003	5%	0.1%
			Ag	7440-22-4	0.00001	2.5%	0.0%
Wire bond	Gold	0.00030	Au	7440-57-5	0.0003	100%	0.9%
Copper Clip	Copper	0.00423	Cu	7440-50-8	0.00423	100%	12.4%
Lead Finish	Matte Tin	0.00012	Sn	7440-31-5	0.00012	100%	0.4%
		Total Weight (g)		0.03405			

* 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	