Device Material Content

5555 NE Moore Ct.
Hillsboro OR 97124
custreq@lscc.com

April, 2018

Package: 32 QFNS (v1)
Total Device Weight 0.113 **Grams**

Package Code: SN32
Products: PAC-POWR

Assembly: Unisem
Size (mm): 5 x 5 x 0.9mm
Lead pitch (mm): 0.5
MSL: 1
Reflow max (ºC): 260

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	1.70%	0.0019						Die size: 1.80 x 1.75 x 0.254 mm
			1.70%	0.0019	Silicon chip	7440-21-3	100.00%	
Mold Compound	68.90%	0.0776						Mold Compound: Sumitomo EME-G770
			60.63%	0.0683	Silica Fused	60676-86-0	88.00%	
			3.44%	0.0039	Epoxy Resin	-	5.00%	
			3.44%	0.0039	Phenol Resin	60676-86-0	5.00%	
			1.21%	0.0014	Metal Hydroxide	-	1.75%	
			0.17%	0.0002	Carbon Black	1333-86-4	0.25%	
D/A Epoxy	0.43%	0.0005						Die attach epoxy: Sumitomo CRM1066 series
			0.32%	0.00036	Silver (Ag)	7440-22-4	75.00%	
			0.04%	0.00005	Epoxy Resin	9003-36-5	10.00%	
			0.06%	0.00007	Organic esters and resins	-	15.00%	
Wire	0.38%	0.0004						1.0mil diameter. Assume 1 wire per lead
			0.38%	0.0004	Gold (Au)	7440-57-5	100.00%	
Plating	1.24%	0.0014						Plating is 100% Matte Sn; thickness is >10.2µm
			1.24%	0.0014	Tin (Sn)	7440-31-5	100.00%	
Leadframe	27.35%	0.0308						A194
			26.66%	0.03003	Copper	7440-50-8	97.50%	
			0.60%	0.00067	Iron	7439-89-6	2.19%	
			0.02%	0.00002	Phosphorus	7723-14-0	0.08%	
			0.03%	0.00004	Zinc	7440-66-6	0.12%	
			0.03%	0.00004	Silver	7440-22-4	0.12%	

Notes:
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Rev. F

Device Material Content

5555 NE Moore Ct.
Hillsboro OR 97124
custreq@lscc.com

April, 2018

Package: 32 QFNS (v1)
Total Device Weight 0.072 **Grams**

Package Code: SG32
Products: ICE40LP

Assembly: ASEM
Size (mm): 5 x 5 x 0.9mm
Lead pitch (mm): 0.5
MSL: 3
Reflow max (°C): 260

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	0.36%	0.0003	0.36%	0.0003	Silicon chip	7440-21-3	100.00%	Die size: 1.04 x 1.07 mm
Mold Compound	46.61%	0.0335	41.02%	0.02950	Silica Fused	60676-86-0	88.00%	Mold Compound: Sumitomo EME-G770
			2.33%	0.00168	Epoxy Resin	-	5.00%	
			2.33%	0.00168	Phenol Resin	60676-86-0	5.00%	
			0.82%	0.00059	Metal Hydroxide	-	1.75%	
			0.12%	0.00008	Carbon Black	1333-86-4	0.25%	
D/A Tape	0.06%	0.00004	0.01%	0.000006	Epoxy Resin	-	15.00%	Die attach (tape): Hitachi FH-900 HR-9004 series
			0.01%	0.000006	Phenol Resin	-	15.00%	
			0.00%	0.000002	SiO2 Filler	99439-28-8	5.00%	
			0.04%	0.00003	(Meta)Acrylic Copolymer	-	65.00%	
Wire	0.36%	0.00026	0.35%	0.00025	Copper (Cu)	7440-50-8	98.25%	Pd coated Cu - Assume 1 wire per lead
			0.01%	0.000005	Palladium (Pd)	7440-05-3	1.75%	
Plating	3.91%	0.0028	3.91%	0.0028	Tin (Sn)	7440-31-5	100.00%	Plating is 100% Matte Sn; thickness is >10.2µm
Leadframe	48.71%	0.03503	47.50%	0.03416	Copper	7440-50-8	97.50%	C194
			1.07%	0.00077	Iron	7439-89-6	2.19%	
			0.04%	0.00003	Phosphorus	7723-14-0	0.08%	
			0.06%	0.00004	Zinc	7440-66-6	0.12%	
			0.06%	0.00004	Silver	7440-22-4	0.12%	

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Rev. G

Device Material Content

5555 NE Moore Ct.
Hillsboro OR 97124
custreq@lscc.com

July-18

Package: 32 QFNS (v2)
Total Device Weight 0.072 **Grams**

Package Code: SG32
Products: LCMXO2-256

Assembly: ASET
Size (mm): 5 x 5 x 0.55 mm
Lead pitch (mm): 0.5
MSL: 3
Reflow max (ºC): 260

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	2.55%	0.0018	2.55%	0.0018	Silicon chip	7440-21-3	100.00%	Die size: 1.83 x 1.73 mm
Mold Compound	43.47%	0.0311	2.72%	0.00195	Epoxy Resin	-	6.25%	Mold Compound: CEL9240HF10AK-G1
			1.96%	0.00140	Phenol Resin	-	4.50%	
			0.04%	0.00003	Carbon Black	1333-86-4	0.10%	
			38.71%	0.02771	Silica	60676-86-0	89.05%	
			0.04%	0.00003	Others	-	0.10%	
D/A Epoxy	0.39%	0.00028	0.30%	0.00022	Silver (Ag)	7440-22-4	77.00%	Die attach: Sumitomo CRM-1076DS
			0.05%	0.00004	Epoxy Resin	9003-36-5	12.50%	
			0.03%	0.000018	t-Butyl phenyl glycidyl ether	3101-60-8	6.50%	
			0.01%	0.000008	Phenolic resin	9003-35-4	2.75%	
			0.00%	0.000004	Epoxy silane	2530-83-8	1.25%	
Wire	0.74%	0.00053	0.73%	0.00052	Gold (Au)	7440-57-5	98.25%	Pd coated Au, 0.9mil - Assume 1 wire per lead
			0.01%	0.00001	Palladium (Pd)	7440-05-3	1.75%	
Plating	3.93%	0.0028	3.93%	0.0028	Tin (Sn)	7440-31-5	100.00%	Plating is 100% Matte Sn; thickness is >10.2µm
Leadframe	48.93%	0.03503	47.60%	0.03408	Copper	7440-50-8	97.29%	C194
			1.15%	0.00082	Iron	7439-89-6	2.35%	
			0.04%	0.00003	Phosphorus	7723-14-0	0.08%	
			0.06%	0.00005	Zinc	7440-66-6	0.13%	
			0.07%	0.00005	Silver	7440-22-4	0.15%	

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Rev. G

Device Material Content

5555 NE Moore Ct.
Hillsboro OR 97124
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April, 2018

Package: 32 QFNS (v3)
Total Device Weight 55.59 mg

Package Code: SG32
Products: XO2-1200HC/ZE

Assembly: ASEM
Size (mm): 5 x 5 x 0.55
Lead pitch (mm): 0.5
MSL: 3
Reflow max (ºC): 260

	% of Total Pkg. Wt.	Weight (mg)	% of Total Pkg. Wt.	Weight (mg)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	2.68%	1.49						Die size: 3.91 x 3.91 mm
			2.68%	1.491	Silicon chip	7440-21-3	100.00%	
Mold Compound	23.65%	13.15						Mold Compound: Sumitomo G770SFL
			1.42%	0.789	Epoxy Resin	-	6.00%	
			0.71%	0.394	Phenol Resin	-	3.00%	
			16.53%	9.192	Silica (Amorphous) A	60676-86-0	69.90%	
			4.73%	2.630	Silica (Amorphous) B	7631-86-9	20.00%	
			0.13%	0.072	Metal Hydroxide	-	0.55%	
			0.13%	0.072	Carbon Black	1333-86-4	0.55%	
D/A Epoxy	0.41%	0.23						Die attach(film): Furukawa NEX-130CTX
			0.035%	0.020	Bisphenol A Liquid Epoxy esin	25068-38-6	8.50%	
			0.072%	0.040	Epoxy Resin	-	17.50%	
			0.010%	0.006	Hardener	-	2.50%	
			0.271%	0.150	Silica	7631-86-9	65.50%	
			0.025%	0.014	Additives	-	6.00%	
Wire	0.29%	0.16						Pd coated Cu - Assume 1 wire per lead
			0.28%	0.158	Copper (Cu)	7440-50-8	98.25%	
			0.01%	0.003	Palladium (Pd)	7440-05-3	1.75%	
Plating	5.15%	2.86						Plating is 100% Matte Sn; thickness is >10.2µm
			5.15%	2.861	Tin (Sn)	7440-31-5	100.00%	
Leadframe	67.82%	37.70						C194
			66.05%	36.715	Copper (Cu)	7440-50-8	97.39%	
			1.40%	0.780	Iron (Fe)	7439-89-6	2.07%	
			0.01%	0.004	Phosphorus (P)	7723-14-0	0.01%	
			0.05%	0.030	Zinc (Zn)	7440-66-6	0.08%	
			0.31%	0.170	Silver (Ag)	7440-22-4	0.45%	

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Rev. E