



Device Material Content

5555 NE Moore Ct.
Hillsboro OR 97124
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May, 2024

Package: 49 ucBGA
Total Device Weight 0.015 Grams

Package Code:

CM49

Products:

ICE40LP

Assembly: ASEM

Size (mm): 3 x 3

Lead pitch (mm): 0.4

MSL: 3

Reflow max (°C): 260

May, 2024					ICE40LF		Kerlow Max (C) 200	
	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
IC Chip (Die)	8.84%	0.0013	8.84%	0.0013	Silicon chip	7440-21-3	100.000%	Die size: 1.50 x 1.50mm
Mold Compound	48.59%	0.0071						Mold Compound: Kyocera KE-G1250LKDS
			42.89%	0.0063	Fused Silica	60676-86-0 7631-86-9	88.266%	
			2.78%	0.0004	Epoxy resin	-	5.711%	
			2.78%	0.0004	Phenol Resin	-	5.711%	
			0.15%	0.00002	Carbon Black	1333-86-4	0.312%	
D/A Tape	0.43%	0.000063						FH-900T-25_HR9004T Resonac
			0.06%	0.00001	Epoxy Resin	Trade secret	14.218%	
			0.06%	0.00001	Phenol Resin	Trade secret	14.218%	
			0.02%	0.00000	SiO2 Filler	Trade secret	5.213%	
			0.28%	0.00004	(Meta)Acrylic Copolymer	Trade secret	66.351%	
Wire	0.63% DS	0.000092						0.7 MIL Pd coated
			0.62%	0.00009	Copper	7440-50-8	98.450%	
			0.01%	0.000001	Palladium	7440-05-3	1.550%	
Solder Balls	2.87%	0.000421						SAC105 SN98.5 AG1 CU0.5
			2.83%	0.000415	Tin (Sn)	7440-31-5	98.500%	
			0.03%	0.000004	Silver (Ag)	7440-22-4	1.000%	
			0.01%	0.000002	Copper (Cu)	7440-50-8	0.500%	
Substrate	38.64% 6.44%	0.005670 0.00095						BT Resin CCL-HL832NX(A)HS
			3.22%	0.00047	Copper thickness	7440-50-8	8.333%	
			0.43%	0.00006	Laser via plug in	NA	1.111%	
			1.07%	0.00016	Nickel Plating	7440-02-0	2.778%	
			0.11%	0.00002	Gold Plating	7440-57-5	0.278%	
			1.61%	0.00024	Copper thickness in hole	7440-50-8	4.167%	
Foil	23.70%	0.003780						
			6.70%	0.00098	Thermosetting resin (including filler)	NA	17.3333%	
			6.70%	0.00098	Glass cloth	65997-17-3	17.3333%	
			12.36%	0.00181	Copper foil	7440-50-8	32.0000%	
Solder Mask	6.44%	0.943000						Solder mask PSR4000 AUS 308
			0.26%	0.00004	Morpholine derivative	NA	0.667%	
			2.96%	0.00043	Barium Sulfate	7727-43-7	7.664%	
			0.06%	0.00001	Silica	7631-86-9	0.167%	
			0.26%	0.00004	Talc	14807-96-6	0.667%	
			1.55%	0.00023	Dipropylene Glycol Monomethyl Ether	34590-94-8	4.000%	
			1.35%	0.00020	Epoxy Resin	85954-11-6	3.500%	
			0.00%	0.00000	Melamine	108-78-1	0.003%	
100.00%		0.015	100.00%	0.015				

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Rev. G1



Device Material Content

5555 NE Moore Ct. Hillsboro OR 97124 custreq@latticesemi.com					Assembly: ASEK Size (mm): 3 x 3 Lead pitch (mm): 0.4 MSL: 3 Reflow max (°C): 260			
Package: 49 ucBGA		Package Code: CM49						
Total Device Weight 26.19 Milligrams		Products: ICE40LM						
June, 2022	% of Total Pkg. Wt.	Weight (mg)	% of Total Pkg. Wt.	Weight (mg)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	2.56%	0.670	2.56%	0.670	Silicon chip	7440-21-3	100.00%	Die size: 1.68 x 1.68mm
Mold Compound	66.64%	17.453	58.31%	15.271	Silica	60676-86-0	87.50%	Mold Compound: KE-G1250AAS (ULA)
			4.33%	1.134	Epoxy resin	-	6.50%	
			3.67%	0.960	Phenol Resin	-	5.50%	
			0.33%	0.087	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	0.95%	0.249	0.49%	0.130	SiO2 Filler	99439-28-8	52.00%	Hitachi FH-SC13T-HR-5104
			0.13%	0.035	Acrylic Copolymer	-	14.00%	
			0.06%	0.015	Epoxy resin A	-	6.00%	
			0.13%	0.035	Epoxy resin B	-	14.00%	
			0.13%	0.035	Phenol Resin	-	14.00%	
Wire	1.79%	0.469	1.73%	0.453	Copper	7440-50-8	96.60%	0.7 Mil CuPdAu+
			0.06%	0.015	Palladium	7440-05-3	3.10%	
			0.01%	0.001	Gold	7440-57-5	0.30%	
Solder Balls	8.97%	2.349	8.83%	2.314	Tin (Sn)	7440-31-5	98.50%	SAC105
			0.09%	0.023	Silver (Ag)	7440-22-4	1.00%	
			0.04%	0.012	Copper (Cu)	7440-50-8	0.50%	
Substrate	6.24%	1.634	2.00%	0.523	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A
			4.24%	1.111	Glass fiber	65997-17-3	68.00%	
Foil	11.46%	3.000	11.46%	3.000	Copper	7440-50-8	100.00%	
Solder Mask	1.40%	0.367	0.79%	0.206	Quartz	14808-60-7	56.20%	Solder mask PSR4000 AUS 308
			0.22%	0.059	3-methoxy-3-methylbutylacetate	103429-90-9	16.00%	
			0.31%	0.081	Barium Sulfate	7727-43-7	22.00%	
			0.04%	0.011	Talc (containing no asbestiform fibers)	14807-96-6	3.00%	
			0.04%	0.010	Trade secret ingredients	-	2.80%	
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