



## Device Material Content

5555 NE Moore Ct. Hillsboro OR 97124 <a href="mailto:custreq@latticesemi.com">custreq@latticesemi.com</a>		<b>Package: 36 ucBGA</b> <b>Total Device Weight 0.011 Grams</b>			<b>Package Code:</b> <b>CM36</b>	Assembly: ASEM Size (mm): 2.5 x 2.5 Lead pitch (mm): 0.4 MSL: 3 Reflow max (°C): 260		
January, 2020					<b>Products:</b> ICE40LP			
	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	12.35%	0.0013	12.35%	0.0013	Silicon chip	7440-21-3	100.00%	Die size: 5.66 x 6.71mm
Mold Compound	49.96%	0.00525	43.72%	0.00459	Silica	60676-86-0	87.50%	Mold Compound: KE-G1250 LKDS
			3.25%	0.00034	Epoxy resin	-	6.50%	
			2.75%	0.00029	Phenol Resin	-	5.50%	
			0.25%	0.00003	Carbon Black	1333-86-4	0.50%	
D/A Tape	0.60%	0.00006	0.09%	0.000009	Epoxy Resin	-	15.00%	TAPE FH-900T-25_HR9004
			0.09%	0.000009	Phenol Resin	-	15.00%	
			0.03%	0.000003	SiO2 Filler	99439-28-8	5.00%	
			0.39%	0.000041	(Meta)Acrylic Copolymer	-	65.00%	
Wire	0.59%	0.00006	0.57%	0.000060	Copper	7440-50-8	97.30%	0.7 MIL Pd COATED Cu
			0.02%	0.000002	Palladium	7440-05-3	2.70%	
Solder Balls	2.95%	0.00031	2.91%	0.000305	Tin (Sn)	7440-31-5	98.50%	SAC105
			0.03%	0.000003	Silver (Ag)	7440-22-4	1.00%	
			0.01%	0.000002	Copper (Cu)	7440-50-8	0.50%	
Substrate	15.98%	0.0017	5.11%	0.00054	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			10.86%	0.00114	Glass fiber	65997-17-3	68.00%	
Foil	7.43%	0.0008	4.79%	0.00050	Copper	7440-50-8	64.54%	
			2.40%	0.00025	Nickel plating	7440-02-0	32.25%	
			0.24%	0.00003	Gold plating	7440-57-5	3.21%	
Solder Mask	10.15%	0.0011	5.52%	0.00058	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.74%	0.00008	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.34%	0.000035	Morpholine derivative**	71868-10-5	3.32%	
			0.30%	0.000032	Silicon dioxide	7631-86-9	3.00%	
			0.30%	0.000032	Silica, amorphous	112945-52-5	3.00%	
			0.02%	0.000003	Carbon black	1333-86-4	0.24%	
			2.92%	0.00031	Trade secret ingredients	-	28.74%	

**Notes:** SVHC: \* 0.16% max. concentration of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.  
 \*\* 0.34% max. concentration of Morpholine derivative (CAS# 71868-10-5), contained in solder mask material.

Lattice regards this materials information to be correct but makes no guarantee as to its accuracy or completeness, including, but not limited to, with respect to its compliance with applicable environmental laws and regulations. Lattice subcontract the production, test and assembly of hardware devices to independent third-party vendors and materials suppliers ("Contractors"). All data provided hereunder is based on information received from Contractors. Lattice has not independently verified the accuracy or completeness of this information which is provided solely for your reference in connection with the use of Lattice products.

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January, 2020					<b>Products:</b> ICE40LM/UL			
	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	12.35%	0.0013	12.35%	0.0013	Silicon chip	7440-21-3	100.00%	Die size: 1.68 x 1.68mm
Mold Compound	49.96%	0.00525	3.50%	0.00037	Solid Epoxy Resin	-	7.00%	Mold Compound: Hitachi GE-110LS-V (ULA)
			2.50%	0.00026	Phenol Resin	-	5.00%	
			42.47%	0.00446	Silica	60676-86-0	85.00%	
			1.25%	0.00013	Metal Hydroxide	-	2.50%	
			0.25%	0.00003	Carbon Black	1333-86-4	0.50%	
D/A Tape	0.60%	0.00006	0.27%	0.000028	Polyolefin	-	45.00%	Die attach tape: Adwill Lintec LE5000 (DAF)
			0.09%	0.000009	Soft PVC	9002-86-2	15.00%	
			0.03%	0.000003	Acrylic Resin	-	5.00%	
			0.06%	0.000006	Epoxy Resin	-	10.00%	
			0.15%	0.000016	Polyethylene terephthalate	25038-59-9	25.00%	
Wire	0.59%	0.00006	0.57%	0.000060	Copper	7440-50-8	97.30%	0.7 MIL Pd COATED Cu
			0.02%	0.000002	Palladium	7440-05-3	2.70%	
Solder Balls	2.95%	0.00031	2.91%	0.000305	Tin (Sn)	7440-31-5	98.50%	SAC105
			0.03%	0.000003	Silver (Ag)	7440-22-4	1.00%	
			0.01%	0.000002	Copper (Cu)	7440-50-8	0.50%	
Substrate	15.98%	0.0017	5.11%	0.00054	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			10.86%	0.00114	Glass fiber	65997-17-3	68.00%	
Foil	7.43%	0.0008	6.09%	0.00064	Copper	7440-50-8	82.00%	
			1.12%	0.00012	Nickel plating	7440-02-0	15.10%	
			0.22%	0.00002	Gold plating	7440-57-5	2.91%	
Solder Mask	10.15%	0.0011	5.52%	0.00058	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.74%	0.00008	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.34%	0.00004	Morpholine derivative**	71868-10-5	3.32%	
			0.30%	0.00003	Silicon dioxide	7631-86-9	3.00%	
			0.30%	0.00003	Silica, amorphous	112945-52-5	3.00%	
			0.02%	0.00000	Carbon black	1333-86-4	0.24%	
			2.92%	0.00031	Trade secret ingredients	-	28.74%	

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