



Device Material Content

5555 NE Moore Ct. Hillsboro OR 97124 custreq@latticesemi.com		Package: 121 caBGA Total Device Weight 0.257 Grams			Package Code: BG121 Products: ICE40HX		Assembly: ASEK Size (mm): 9 x 9 Lead pitch (mm): 0.8 MSL: 3 Reflow max (°C): 260	
November, 2020								
	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	0.60%	0.0015	0.60%	0.0015	Silicon chip	7440-21-3	100.00%	Die size: 2.7 x 2.4 mm
Mold Compound	71.51%	0.1835	62.57% 4.65% 3.93% 0.36%	0.1606 0.0119 0.0101 0.0009	Silica Epoxy resin Phenol Resin Carbon Black	60676-86-0 - - 1333-86-4	87.50% 6.50% 5.50% 0.50%	Mold Compound: KE-G1250AAS (ULA)
Die Attach	0.44%	0.0011	0.28% 0.11% 0.01% 0.01% 0.01% 0.01% 0.01%	0.00073 0.00028 0.00002 0.00002 0.00002 0.00002 0.00002	Butadiene, acrylonitrile polymer Formaldehyde, polymer Dapsone Siloxanes and Silicones [3-(2,3-Epoxypropoxy)propyl]trimethoxysilane 1,3-Butadiene, acrylonitrile copolymer Bisphenol-A-(epichlorhydrin)	68610-41-3 37382-79-9 80-08-0 67762-90-7 2530-83-8 68891-46-3 25068-38-6	65.00% 25.00% 2.00% 2.00% 2.00% 2.00% 2.00%	Die attach: ATB-125
Wire	0.18%	0.0005	0.17% 0.01% 0.00%	0.000446 0.000014 0.000002	Copper Palladium Gold	7440-50-8 7440-05-3 7440-57-5	96.55% 3.10% 0.35%	CuPdAu+
Solder Balls	9.26%	0.0238	9.09% 0.10% 0.03% 0.03%	0.0233 0.0003 0.0001 0.0001	Tin (Sn) Silver (Ag) Copper (Cu) Nickel (Ni)	7440-31-5 7440-22-4 7440-50-8 7440-02-0	98.25% 1.10% 0.30% 0.35%	98.25Sn/1.2Ag/0.5Cu/0.05Ni
Substrate	6.66%	0.0171	2.13% 4.53%	0.0055 0.0116	BT Resins Glass fiber	- 65997-17-3	32.00% 68.00%	BT Resin CCL-HL832NX-A
Foil	8.83%	0.0227	6.53% 1.94% 0.35%	0.0168 0.0050 0.0009	Copper Nickel plating Gold plating	7440-50-8 7440-02-0 7440-57-5	74.00% 22.00% 4.00%	
Solder Mask	2.52%	0.0065	1.41% 0.40% 0.55% 0.08% 0.01% 0.06%	0.0036 0.0010 0.0014 0.00019 0.00003 0.00015	Quartz 3-methoxy-3-methylbutylacetate Barium Sulfate Talc Naphthalene Trade secret ingredients	14808-60-7 103429-90-9 7727-43-7 14807-96-6 91-20-3 -	56.20% 16.00% 22.00% 3.00% 0.50% 2.30%	Solder mask PSR4000 AUS 308

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.
www.latticesemi.com





Device Material Content

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

Assembly: ATP
Size (mm): 9 x 9
Lead pitch (mm): 0.8
MSL: 3
Reflow max (°C): 260

Package: 121 caBGA
Total Device Weight: 0.157 Grams

Package Code:

BG121

Products:

ICE40HX

November, 2020

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	1.05%	0.0016	1.05%	0.0016	Silicon chip	7440-21-3	100.00%	Die size: 2.7 x 2.4 x 0.102 mm
Mold Compound	44.60%	0.0701	3.12%	0.0049	Solid Epoxy Resin	-	7.00%	Mold Compound: Hitachi GE-110LS-V (ULA)
			2.23%	0.0035	Phenol Resin	-	5.00%	
			37.91%	0.0596	Silica	60676-86-0	85.00%	
			1.12%	0.0018	Metal Hydroxide	-	2.50%	
			0.22%	0.0004	Carbon Black	1333-86-4	0.50%	
D/A Tape	0.09%	0.0001	0.04%	0.00006	Polyolefin	-	45.00%	Die attach: Adwill Lintec LE-5000
			0.01%	0.00002	Soft PVC	9002-86-2	15.00%	
			0.00%	0.00001	Acrylic Resin	-	5.00%	
			0.01%	0.00001	Epoxy Resin	-	10.00%	
			0.02%	0.00004	Polyethylene terephthalate	25038-59-9	25.00%	
Wire	0.54%	0.0008	0.53%	0.00084	Copper	7440-50-8	98.70%	Pd coated Copper, 0.018 mm diameter
			0.01%	0.00001	Palladium	7440-05-3	1.30%	
Solder Balls	18.73%	0.0294	18.45%	0.0290	Tin (Sn)	7440-31-5	98.50%	SAC105
			0.19%	0.0003	Silver (Ag)	7440-22-4	1.00%	
			0.09%	0.0001	Copper (Cu)	7440-50-8	0.50%	
Substrate	21.72%	0.0341	6.95%	0.0109	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A
			14.77%	0.0232	Glass fiber	65997-17-3	68.00%	
Foil	8.09%	0.0127	5.97%	0.0094	Copper	7440-50-8	73.76%	
			1.81%	0.0028	Nickel plating	7440-02-0	22.40%	
			0.31%	0.0005	Gold plating	7440-57-5	3.85%	
Solder Mask	5.17%	0.0081	2.91%	0.0046	Quartz	14808-60-7	56.20%	Solder mask PSR4000 AUS 308
			0.83%	0.0013	3-methoxy-3-methylbutylacetate	103429-90-9	16.00%	
			1.14%	0.0018	Barium Sulfate	7727-43-7	22.00%	
			0.16%	0.00024	Talc	14807-96-6	3.00%	
			0.03%	0.00004	Naphthalene	91-20-3	0.50%	
			0.12%	0.00019	Trade secret ingredients	-	2.30%	

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 subcontracts 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.

www.latticesemi.com



Rev. F