LATTICE SEMICONDUCTOR™

Device Material Content

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

Package: **49 LBGA** **with SnAgCu Solder Balls** **iCE40**
Total Device Weight **0.015** **Grams**

Halogen-free
MSL: 3
Peak Reflow Temp: 260°C

July, 2012	**% of Total Pkg. Wt.**	**Weight (g)**	**% of Total Pkg. Wt.**	**Weight (g)**	**Substance**	**CAS #**	**Notes / Assumptions:**
Die	8.59%	0.00130			Silicon chip	7440-21-3	Die size: 59 X 59 MIL
Mold	55.74%	0.00842					KE-G1250LKDS
			50.17%	0.00758	Silica	60676-86-0	75 to 95% Fused silica filler (LSC uses 90% in our calculation)
			3.07%	0.00046	Epoxy Resin(1)	Trade secret	1 to 10% Epoxy resin (LSC uses 5.5% in our calculation)
			2.51%	0.00038	Phenol Resin-1	Trade secret	2 to 7% Phenol resin (LSC uses 4.5% in our calculation)
Tape	0.42%	0.00006					FH-900-HR-9004
			0.050%	0.00001	Epoxy Resin	25038-59-9	10 to 20% (LSC uses 12% in our calculation)
			0.050%	0.00001	Phenol Resin	Trade secret	10 to 20% (LSC uses 12% in our calculation)
			0.025%	0.00000	SiO2 Filler	Trade secret	1 to 10% (LSC uses 6% in our calculation)
			0.291%	0.00004	(Meta)Acrylic Copolymer	Trade secret	65 to 75% (LSC uses 70% in our calculation)
Wire	0.54%	0.00008					0.7 MIL Pd coated
			0.882%	0.00008	Copper (Cu)	7440-50-8	99% Au
			0.009%	0.00000	Palladium (Pd)	7440-05-3	1% Pd
Solder Balls	2.79%	0.00042					SAC105
			11.025%	0.00041	Tin (Sn)	7440-31-5	Solder ball composition Sn98.5/Ag1.0/Cu0.5%
			0.112%	0.00000	Silver (Ag)	7440-22-4	
			0.056%	0.00000	Copper (Cu)	7440-50-8	
Substrate	31.92%	0.00482					CCL-HL832NX, AUS 308
			15.200%	0.00230	BT Resin CCL-HL832NX	Trade secret	47.7%
			9.650%	0.00146	Copper	7440-50-8	30.3%
			4.560%	0.00069	Solder mask PSR4000 AUS 308	Trade secret	14.3%
			2.280%	0.00034	Nickel plating	7440-02-0	7.1%
			0.230%	0.00003	Gold plating	7440-57-5	0.6%

Notes:
The values listed above are nominal values based on studies of representatives of this particular package type, and are believed to be as accurate as possible.
Constituent substances and proportions in epoxy materials are before curing.
The information provided above is representative of the package as of the date listed, and is subject to change at any time.
www.latticesemi.com

Br/Cl/Sb

Pb lead-free

RoHS 2002/95/EC

Rev. A