LATTICE SEMICONDUCTOR

Device Material Content

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Package: 48 TQFP (1.0mm) with matte Sn Plating
Total Device Weight 0.14 Grams

MSL: 3
Peak Reflow Temp: 260°C

August, 2008	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	Notes / Assumptions:
Die	2.12%	0.003			Silicon chip	7440-21-3	Die size: 2.00 x 2.20 mm
Mold	70.17%	0.098					Mold Compound Density between 1.7 and 2.1 grams/cc
			59.64%	0.0835	Silica Fused	60676-86-0	80 to 90% Silica Fused (LSC uses 85% in our calculation)
			3.51%	0.0049	Epoxy Resin	-	5 to 10% Epoxy Resin (LSC uses 5% in our calculation).
			3.51%	0.0049	Phenol Resin	-	5 to 10% Phenol Resin (LSC uses 5% in our calculation).
			0.70%	0.0010	Antimony Trioxide	1309-64-4	0.1% to 1% Antimony Trioxide (LSC uses 1% in our calculation)
			0.42%	0.0006	Carbon black	1333-86-4	0.1 to 1% Carbon black (LSC uses 0.6% in our calculation)
			2.39%	0.0033	Other (trade secret)	-	1 to 4% Other (LSC uses 3.4% in our calculation)
D/A Epoxy	0.32%	0.0004					
			0.26%	0.0004	Silver (Ag)	7440-22-4	Die attach epoxy Density: 4 grams/cc
			0.06%	0.0001	Other	-	(silver content: 70-90%; LSC uses 80% in our calculation)
Wire	1.01%	0.0014			Gold (Au)	7440-57-5	1.00 mil diameter; 1 wire per package lead; wire length 3 mm
Lead Plating	4.06%	0.0057			Tin (Sn)	7440-31-5	Plating is 100% Sn; thickness is 0.015mm
Leadframe	22.32%	0.0313					Leadframe thickness is nominal (per Case Outline)
			21.76%	0.0305	Copper (Cu)	7440-50-8	Cu (LSC uses 97.5% in our calculation)
			0.09%	0.00013	Silicon (Si)	7440-21-3	0 to 0.65% Si (LSC uses 0.4% in our calculation)
			0.02%	0.00003	Zinc (Zn)	7440-66-6	0 to 0.2% Zn (LSC uses 0.1% in our calculation)
			0.04%	0.00006	Tin (Sn)	7440-31-5	0 to 0.25% Sn (LSC uses 0.2% in our calculation)
			0.04%	0.00006	Chromium (Cr)	7440-47-3	0 to 0.3% Cr (LSC uses 0.2% in our calculation)
			0.33%	0.0005	Nickel (Ni)	7440-02-0	0 to 3% Ni (LSC uses 1.5% in our calculation)
			0.02%	0.00003	Magnesium (Mg)	7439-95-4	0 to 0.15% Mg (LSC uses 0.1% in our calculation)
							Copper area is fixed at 55% package area

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.

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Pb lead-free

RoHS 2002/95/EC

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