LATTICE SEMICONDUCTOR

Device Material Content

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Package: 128 TQFP (1.4mm) with SnPb Plating

Total Device Weight 0.66 Grams

MSL: 3
Peak Reflow Temp: 240°C

August, 2008	**% of Total Pkg. Wt.**	**Weight (g)**	**% of Total Pkg. Wt.**	**Weight (g)**	**Substance**	**CAS #**	**Notes / Assumptions:**
Die	5.34%	0.035			Silicon chip	7440-21-3	Die size: 5.84 x 7.19 mm
Mold	72.48%	0.478					Mold Compound Density between 1.7 and 2.1 grams/cc
			61.61%	0.407	Silica Fused	60676-86-0	80 to 90% Silica Fused (LSC uses 85% in our calculation)
			3.62%	0.024	Epoxy Resin	-	3 to 10% Epoxy Resin (LSC uses 5% in our calculation).
			3.62%	0.024	Phenol Resin	-	2 to 10% Phenol Resin (LSC uses 5% in our calculation).
			0.43%	0.003	Antimony Trioxide	1309-64-4	0.1 to 1% Antimony Trioxide (LSC uses 0.6% in our calculation)
			0.43%	0.003	Carbon black	1333-86-4	0.1 to 1% Carbon black (LSC uses 0.6% in our calculation)
			2.75%	0.018	Other (trade secret)	-	0 to 5% Other (LSC uses 3.8% in our calculation)
D/A Epoxy	0.65%	0.004			Silver-filled epoxy		
			0.52%	0.003	Silver (Ag)	7440-22-4	Die attach epoxy Density: 4 grams/cc
			0.13%	0.0009	other	-	(silver content: 70-90%; LSC uses 80% in our calculation)
Wire	0.57%	0.004			Gold (Au)	7440-57-5	0.8 to 1.2 mil diameter; 1 wire per package lead; wire length 3 mm
Lead Plating	2.03%	0.013					
			1.73%	0.011	Tin (Sn)	7440-31-5	Plating is 85% Sn, 15% Pb; thickness is 0.015mm
			0.30%	0.002	Lead (Pb)	7439-92-1	
Leadframe	18.94%	0.125					Leadframe thickness is nominal (per Case Outline)
			18.47%	0.1219	Copper (Cu)	7440-50-8	Cu (LSC uses 97.5% in our calculation)
			0.08%	0.0005	Silicon (Si)	7440-21-3	0 to 0.65% Si (LSC uses 0.4% in our calculation)
			0.02%	0.0001	Zinc (Zn)	7440-66-6	0 to 0.2% Zn (LSC uses 0.1% in our calculation)
			0.04%	0.0003	Tin (Sn)	7440-31-5	0 to 0.25% Sn (LSC uses 0.2% in our calculation)
			0.04%	0.0003	Chromium (Cr)	7440-47-3	0 to 0.3% Cr (LSC uses 0.2% in our calculation)
			0.28%	0.0019	Nickel (Ni)	7440-02-0	0 to 3% Ni (LSC uses 1.5% in our calculation)
			0.02%	0.0001	Magnesium (Mg)	7439-95-4	0 to 0.15% Mg (LSC uses 0.1% in our calculation)

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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