Device Material Content

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

December, 2020

Package: **256 caBGA**
Total Device Weight **327.63** **Milligrams**

Package Code: **BG256**
Products: LCMXO3D

Assembly: ASEK
Size (mm): 14 x 14
Lead pitch (mm): 0.8
MSL: 3
Reflow max (ºC): 260

	% of Total Pkg. Wt.	**Weight (mg)**	**% of Total Pkg. Wt.**	**Weight (mg)**	**Substance**	**CAS #**	**% of Subst.**	**Notes / Assumptions:**
Die	4.73%	15.50						Die size: 3.95 x 5.55 mm
					Silicon chip	7440-21-3	100.00%	
Mold Compound	32.01%	104.87						Mold Compound: Kyocera KE-G1250AHT
			24.01%	78.656	Aluminum oxide	1344-28-1	75.00%	
			4.00%	13.109	Silica(Fused)	60676-86-0	12.50%	
			1.92%	6.292	Epoxy resin	-	6.00%	
			1.92%	6.292	Phenol resin	-	6.00%	
			0.16%	0.524	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	1.70%	5.57						Die attach epoxy: Henkel (Ablebond) 2100A
			1.36%	4.456	Silver	7440-22-4	80.00%	
			0.34%	1.114	Esters & resins	-	20.00%	
Wire	0.57%	1.87						Au coated PCC, 0.02mm dia
			0.55%	1.803	Copper (Cu)	7440-50-8	96.55%	
			0.02%	0.058	Palladium (Pd)	7440-05-3	3.10%	
			0.00%	0.007	Gold (Au)	7440-57-5	0.35%	
Solder Balls	21.84%	71.55						SAC305
			21.08%	69.050	Tin (Sn)	7440-31-5	96.50%	
			0.66%	2.147	Silver (Ag)	7440-22-4	3.00%	
			0.11%	0.358	Copper (Cu)	7440-50-8	0.50%	
Substrate	13.70%	44.90						BT Resin CCL-HL832NX-A
			4.38%	14.366	BT Resins	-	32.00%	
			9.32%	30.529	Glass fiber	65997-17-3	68.00%	
Solder mask	6.66%	21.82						Solder mask PSR4000 AUS 320
			1.57%	5.131	Solvent naphtha (petroleum)	64742-94-5	23.52%	
			0.39%	1.282	Naphthalene	91-20-3	5.87%	
			0.98%	3.208	Phosphinoxide derivative	-	14.70%	
			0.98%	3.208	Talc (containing no asbestiform fibers）	14807-96-6	14.70%	
			1.17%	3.847	Dipropylene glycol monomethyl Ether	34590-94-8	17.63%	
			0.98%	3.208	Epoxy Resin	85954-11-6	14.70%	
			0.59%	1.938	Barium Sulfate	7727-43-7	8.88%	
Foil	18.79%	61.56						
			17.51%	57.356	Copper	7440-50-8	93.17%	
			1.06%	3.460	Nickel plating	7440-02-0	5.62%	
			0.23%	0.748	Gold plating	7440-57-5	1.21%	

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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PCN#09A-19
Rev. C

LATTICE SEMICONDUCTOR

Device Material Content

5555 NE Moore Ct.
Hillsboro OR 97124
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November, 2020

Package: 256 caBGA
Total Device Weight 0.520 Grams

Package Code: BG256
Products: LCMXO3D

Assembly: ATK
Size (mm): 14 x 14
Lead pitch (mm): 0.8
MSL: 3
Reflow max (ºC): 260

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	4.09%	0.0213						Die size: 5.23 x 6.26 x 0.279 mm
			4.090%	0.0213	Silicon chip	7440-21-3	100.00%	
Mold Compound	49.24%	0.2560						Mold Compound: Sumitomo EME G770SFE
			1.48%	0.00768	Epoxy Resin A	-	3.00%	
			1.48%	0.00768	Epoxy Resin B	-	3.00%	
			1.48%	0.00768	Phenol Resin	-	3.00%	
			35.70%	0.18563	Silica, vitreous	60676-86-0	72.50%	
			7.39%	0.03841	Silicon dioxide	7631-86-9	15.00%	
			1.48%	0.00768	Aluminium and its compounds	-	3.00%	
			0.25%	0.00128	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	0.69%	0.0036						Die attach epoxy: Henkel QMI-529HT
			0.59%	0.00305	Silver	7440-22-4	85.00%	
			0.07%	0.00036	Isobornyl Methacrylate	7534-94-3	10.00%	
			0.03%	0.00018	Bismaleimide Resin	-	5.00%	
Wire	0.36%	0.0019						Au coated PCC, 0.02mm dia
			0.35%	0.00182	Copper (Cu)	7440-50-8	97.05%	
			0.01%	0.00005	Palladium (Pd)	7440-05-3	2.80%	
			0.00%	0.000003	Gold (Au)	7440-57-5	0.15%	
Solder Balls	17.39%	0.0904						SAC305
			16.78%	0.0873	Tin (Sn)	7440-31-5	96.50%	
			0.52%	0.00271	Silver (Ag)	7440-22-4	3.00%	
			0.09%	0.00045	Copper (Cu)	7440-50-8	0.50%	
Substrate	15.07%	0.0784						BT Resin CCL-HL832NX-A
			4.14%	0.0216	BT Resins	-	27.50%	
			4.14%	0.0216	Inorganic filler	21645-51-2	27.50%	
			6.78%	0.0353	Glass fiber	65997-17-3	45.00%	
Solder mask	2.09%	0.0109						Solder mask PSR4000 AUS 320
			0.49%	0.00256	Solvent naphtha (petroleum)	64742-94-5	23.52%	
			0.12%	0.00064	Naphthalene	91-20-3	5.87%	
			0.31%	0.00160	Phosphinoxide derivative	-	14.70%	
			0.31%	0.00160	Talc (containing no asbestiform fibers）	14807-96-6	14.70%	
			0.37%	0.00192	Dipropylene glycol monomethyl Ether	34590-94-8	17.63%	
			0.31%	0.00160	Epoxy Resin	85954-11-6	14.70%	
			0.19%	0.00097	Barium Sulfate	7727-43-7	8.88%	
Foil	11.08%	0.0576						
			8.47%	0.0537	Copper	7440-50-8	93.17%	
			5.90%	0.0032	Nickel plating	7440-02-0	5.62%	
			1.28%	0.0007	Gold plating	7440-57-5	1.21%	

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Br/Cl/Sb Pb lead-free RoHS

Rev. C