LATTICE SEMICONDUCTOR

Device Material Content

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

June, 2022

Package: **381 caBGA**
Total Device Weight **1.005** **Grams**

Package Code: BG381
Products: FE5

Assembly: ASEM
Size (mm): 17 x 17
Lead pitch (mm): 0.8
MSL: 3
Reflow max (°C): 260

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Material	Notes / Assumptions:
Die	2.65%	0.0266	2.65%	0.0266	Silicon chip	7440-21-3	100.00%	Die size: 6.55 x 7.04 mm
Mold Compound	40.47%	0.4067	2.83%	0.0285	Epoxy Resin	-	7.00%	Mold Compound: Sumitomo G750SE (ULA)
			2.02%	0.0203	Phenol Novolac	9003-35-4	5.00%	
			2.02%	0.0203	Metal Hydroxide	-	5.00%	
			0.20%	0.0020	Carbon Black	1333-86-4	0.50%	
			33.39%	0.3355	Silica Fused	60676-86-0	82.50%	
D/A Epoxy	0.38%	0.0038	0.30%	0.00306	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.08%	0.00076	Esters & resins	-	20.00%	
Wire	0.26%	0.0026	0.255%	0.00256	Copper	7440-50-8	98.50%	0.8 mil diameter; 1 wire per solder ball
			0.004%	0.00004	Palladium	7440-05-3	1.50%	
Solder Balls	9.44%	0.0949	9.11%	0.0916	Tin (Sn)	7440-31-5	96.50%	SAC305
			0.28%	0.0028	Silver (Ag)	7440-22-4	3.00%	
			0.05%	0.0005	Copper (Cu)	7440-50-8	0.50%	
Substrate	27.61%	0.2775	8.56%	0.0860	BT Resins	-	31.00%	BT Resin CCL-HL832NX-A
			18.77%	0.1887	Glass fiber	65997-17-3	68.00%	
Foil	12.56%	0.1262	10.30%	0.1035	Copper	7440-50-8	82.00%	
			1.90%	0.0190	Nickel	7440-02-0	15.10%	
			0.37%	0.0037	Gold	7440-57-5	2.91%	
Solder Mask	6.63%	0.0666	3.73%	0.0375	Quartz	14808-60-7	56.20%	Solder mask PSR4000 AUS 308
			1.06%	0.0107	3-methoxy-3-methylbutylacetate	103429-90-9	16.00%	
			1.46%	0.0147	Barium Sulfate	7727-43-7	22.00%	
			0.20%	0.0020	Talc (containing no asbestiform fibers)	14807-96-6	3.00%	
			0.19%	0.0019	Trade secret ingredients	-	2.80%	

www.latticesemi.com

Br/Cl/Sb
Pb lead-free
RoHS

Rev. G