Device Material Content

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

January, 2020

Package: 184 csBGA
Total Device Weight 0.174 Grams

Package Code: MG184
Products: XO2

Assembly: ASEM
Size (mm): 8 x 8
Lead pitch (mm): 0.5
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	4.50%	0.0078						Die size: 3.63 x 3.73 mm
			4.50%	0.0078	Silicon chip	7440-21-3	100.00%	
Mold Compound	49.62%	0.0863						Mold Compound: Sumitomo G750SE (ULA)
			2.48%	0.0043	Epoxy Resin A	-	5.00%	
			0.74%	0.0013	Epoxy Resin B	-	1.50%	
			2.48%	0.0043	Phenol Novolac	9003-35-4	5.00%	
			2.48%	0.0043	Metal Hydroxide	-	5.00%	
			0.15%	0.0003	Carbon Black	1333-86-4	0.30%	
			41.28%	0.0718	Silica Fused	60676-86-0	83.20%	
D/A Epoxy	0.65%	0.0011						Die attach epoxy: Henkel (Ablebond) 2100A
			0.52%	0.00090	Silver	7440-22-4	80.00%	
			0.13%	0.00023	Esters & resins	-	20.00%	
Wire	5.29%	0.0092						0.8 mil diameter; 1 wire per solder ball
			5.21%	0.0091	Copper	7440-50-8	98.50%	
			0.08%	0.0001	Palladium	7440-05-3	1.50%	
Solder Balls	9.50%	0.0165						SAC305
			9.17%	0.0160	Tin (Sn)	7440-31-5	96.50%	
			0.29%	0.0005	Silver (Ag)	7440-22-4	3.00%	
			0.05%	0.0001	Copper (Cu)	7440-50-8	0.50%	
Substrate	20.70%	0.0360						BT Resin CCL-HL832NX-A*
			6.62%	0.0115	BT Resins	-	32.00%	
			14.07%	0.0245	Glass fiber	65997-17-3	68.00%	
Foil	4.68%	0.0081						
			3.80%	0.00661	Copper	7440-50-8	81.22%	
			0.85%	0.00147	Nickel plating	7440-02-0	18.06%	
			0.03%	0.00006	Gold plating	7440-57-5	0.71%	
Solder Mask	5.07%	0.0088						Solder mask PSR4000 AUS 308
			2.76%	0.00480	Quartz	14808-60-7	54.37%	
			0.37%	0.00065	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.17%	0.00029	Morpholine derivative**	71868-10-5	3.32%	
			0.15%	0.00026	Silicon dioxide	7631-86-9	3.00%	
			0.15%	0.00026	Silica, amorphous	112945-52-5	3.00%	
			0.01%	0.00002	Carbon black	1333-86-4	0.24%	
			1.46%	0.00254	Trade secret ingredients	-	28.74%	

Notes: SVHC:

* 0.21% max. concentration of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.

** 0.17% max. concentration of Morpholine derivative (CAS# 71868-10-5), contained in solder mask material.

Lattice regards this materials information to be correct but makes no guarantee as to its accuracy or completeness, including, but not limited to, with respect to its compliance with applicable environmental laws and regulations. Lattice subcontracts the production, test and assembly of hardware devices to independent third-party vendors and materials suppliers ("Contractors"). All data provided hereunder is based on information received from Contractors. Lattice has not independently verified the accuracy or completeness of this information which is provided solely for your reference in connection with the use of Lattice products.

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Rev. E

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Package: 184 csBGA
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Package Code: MG184
Products: XO2

Assembly: ASET
Size (mm): 8 x 8
Lead pitch (mm): 0.5
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Reflow max (^oC): 260

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	4.50%	0.0078	4.50%	0.0078	Silicon chip	7440-21-3	100.00%	Die size: 3.63 x 3.73 mm
Mold Compound	49.62%	0.0863	43.42%	0.0755	Silica	60676-86-0	87.50%	Mold Compound: Kyocera KE-G2250 series (ULA)
			3.23%	0.0056	Epoxy resin	-	6.50%	
			2.73%	0.0047	Phenol Resin	-	5.50%	
			0.25%	0.0004	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	0.65%	0.0011	0.52%	0.00090	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.13%	0.00023	Esters & resins	-	20.00%	
Wire	5.29%	0.0092	5.21%	0.0091	Copper	7440-50-8	98.50%	0.8 mil diameter; 1 wire per solder ball
			0.08%	0.0001	Palladium	7440-05-3	1.50%	
Solder Balls	9.50%	0.0165	9.36%	0.0163	Tin (Sn)	7440-31-5	98.50%	SAC105
			0.10%	0.0002	Silver (Ag)	7440-22-4	1.00%	
			0.05%	0.0001	Copper (Cu)	7440-50-8	0.50%	
Substrate	20.70%	0.0360	6.62%	0.0115	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			14.07%	0.0245	Glass fiber	65997-17-3	68.00%	
Foil	4.68%	0.0081	3.80%	0.00661	Copper	7440-50-8	81.22%	
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			0.37%	0.00065	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
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			1.46%	0.00254	Trade secret ingredients	-	28.74%	

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Rev. E