



Device Material Content

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

Assembly: ASEM

Size (mm): 17 x 17

Lead pitch (mm): 0.8

MSL: 3

Reflow max (°C): 260

January, 2020

Package: 332 caBGA
Total Device Weight: 1.04 Grams

Package Code:

BG332

Products:

XO2

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	0.72%	0.0075	0.72%	0.0075	Silicon chip	7440-21-3	100.00%	Die size: 4.41 x 4.36 mm
Mold Compound	45.53%	0.4735	2.28%	0.0237	Epoxy Resin A	-	5.00%	Mold Compound: Sumitomo G750SE (ULA)
			0.68%	0.0071	Epoxy Resin B	-	1.50%	
			2.28%	0.0237	Phenol Novolac	9003-35-4	5.00%	
			2.28%	0.0237	Metal Hydroxide	-	5.00%	
			0.14%	0.0014	Carbon Black	1333-86-4	0.30%	
			37.88%	0.3939	Silica Fused	60676-86-0	83.20%	
D/A Epoxy	0.10%	0.0011	0.08%	0.00085	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.02%	0.00021	Esters & resins	-	20.00%	
Wire	0.42%	0.0044	0.42%	0.0043	Copper	7440-50-8	98.50%	0.8 mil diameter; 1 wire per solder ball
			0.01%	0.0001	Palladium	7440-05-3	1.50%	
Solder Balls	11.32%	0.1177	10.92%	0.1136	Tin (Sn)	7440-31-5	96.50%	SAC305
			0.34%	0.0035	Silver (Ag)	7440-22-4	3.00%	
			0.06%	0.0006	Copper (Cu)	7440-50-8	0.50%	
Substrate	19.16%	0.1992	13.03%	0.1355	Glass fiber	65997-17-3	68.00%	BT Resin CCL-HL832NX-A
			6.13%	0.0638	BT Resins	-	32.00%	
Solder Mask	8.78%	0.0913	4.77%	0.0496	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.64%	0.0067	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.29%	0.0030	Morpholine derivative**	71868-10-5	3.32%	
			0.26%	0.0027	Silicon dioxide	7631-86-9	3.00%	
			0.26%	0.0027	Silica, amorphous	112945-52-5	3.00%	
			0.02%	0.0002	Carbon black	1333-86-4	0.24%	
			2.52%	0.0262	Trade secret ingredients	-	28.74%	
Foil	13.97%	0.1453	11.90%	0.1237	Copper	7440-50-8	85.15%	
			1.99%	0.0207	Nickel plating	7440-02-0	14.28%	
			0.08%	0.0008	Gold plating	7440-57-5	0.57%	

Notes: SVHC: * 0.13% max. concentration of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.
** 0.29% 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 subcontractors 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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BG332

Products:

XO2

January, 2020

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	0.72%	0.0075	0.72%	0.0075	Silicon chip	7440-21-3	100.00%	Die size: 4.41 x 4.36 mm
Mold Compound	45.53%	0.4735	39.84%	0.4143	Silica	60676-86-0	87.50%	Mold Compound: Kyocera KE-G2250 series (ULA)
			2.96%	0.0308	Epoxy resin	-	6.50%	
			2.50%	0.0260	Phenol Resin	-	5.50%	
			0.23%	0.0024	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	0.10%	0.0011	0.08%	0.00085	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.02%	0.00021	Esters & resins	-	20.00%	
Wire	0.42%	0.0044	0.42%	0.0043	Copper	7440-50-8	98.50%	0.8 mil diameter; 1 wire per solder ball
			0.01%	0.0001	Palladium	7440-05-3	1.50%	
Solder Balls	11.32%	0.1177	11.15%	0.1159	Tin (Sn)	7440-31-5	98.50%	SAC105
			0.11%	0.0012	Silver (Ag)	7440-22-4	1.00%	
			0.06%	0.0006	Copper (Cu)	7440-50-8	0.50%	
Substrate	19.16%	0.1992	13.03%	0.1355	Glass fiber	65997-17-3	68.00%	BT Resin CCL-HL832NX-A
			6.13%	0.0638	BT Resins	-	32.00%	
Solder Mask	8.78%	0.0913	4.77%	0.0496	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.64%	0.0067	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.29%	0.0030	Morpholine derivative**	71868-10-5	3.32%	
			0.26%	0.0027	Silicon dioxide	7631-86-9	3.00%	
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			0.02%	0.0002	Carbon black	1333-86-4	0.24%	
			2.52%	0.0262	Trade secret ingredients	-	28.74%	
Foil	13.97%	0.1453	11.90%	0.1237	Copper	7440-50-8	85.15%	
			1.99%	0.0207	Nickel plating	7440-02-0	14.28%	
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5555 NE Moore Ct. Hillsboro OR 97124 custreq@latticesemi.com		Package: 332 caBGA Total Device Weight: 1.04 Grams		Package Code: BG332 Products: XO2		Assembly: ATP Size (mm): 17 x 17 Lead pitch (mm): 0.8 MSL: 3 Reflow max (°C): 260		
January, 2020								
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Die	0.72%	0.0075	0.72%	0.0075	Silicon chip	7440-21-3	100.00%	Die size: 4.41 x 4.36 mm
Mold Compound	45.53%	0.4735	3.19%	0.0331	Solid Epoxy Resin	-	7.00%	Mold Compound: Hitachi GE-110LS-V (ULA)
			2.28%	0.0237	Phenol Resin	-	5.00%	
			38.70%	0.4025	Silica	60676-86-0	85.00%	
			1.14%	0.0118	Metal Hydroxide	-	2.50%	
			0.23%	0.0024	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	0.10%	0.0011	0.08%	0.00085	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2300
			0.02%	0.00021	Esters & resins	-	20.00%	
Wire	0.42%	0.0044	0.42%	0.0043	Copper	7440-50-8	98.50%	0.8 mil diameter; 1 wire per solder ball
			0.01%	0.0001	Palladium	7440-05-3	1.50%	
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