



Device Material Content

5555 NE Moore Ct. Hillsboro OR 97124 custreq@latticesemi.com January, 2020		Package: 100 csBGA Total Device Weight 0.147 Grams		Package Code: <div style="border: 1px solid black; padding: 2px; display: inline-block;">MN100</div> Products: <div style="border: 1px solid black; padding: 2px; display: inline-block;">XO</div>		Assembly: ASEM Size (mm): 8 x 8 Lead pitch (mm): 0.5 MSL: 3 Reflow max (°C): 260		
	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	5.85%	0.0086	5.85%	0.0086	Silicon chip	7440-21-3	100.00%	Die size: 4.71 x 2.90 mm
Mold Compound	66.11%	0.0972	4.63%	0.0068	Epoxy Resin	-	7.00%	Mold Compound: Sumitomo G750SE
			3.31%	0.0049	Phenol Novolac	9003-35-4	5.00%	
			3.31%	0.0049	Metal Hydroxide	-	5.00%	
			0.33%	0.0005	Carbon Black	1333-86-4	0.50%	
			54.54%	0.0802	Silica Fused	60676-86-0	82.50%	
D/A Epoxy	0.94%	0.0014	0.76%	0.00111	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.19%	0.00028	Esters & resins	-	20.00%	
Wire	0.92%	0.0014	0.91%	0.0013	Copper	7440-50-8	98.50%	Pd coated Copper, 0.8 mil diameter
			0.01%	0.0000	Palladium	7440-05-3	1.50%	
Solder Balls	7.16%	0.0105	6.91%	0.0102	Tin (Sn)	7440-31-5	96.50%	SAC305
			0.21%	0.0003	Silver (Ag)	7440-22-4	3.00%	
			0.04%	0.0001	Copper (Cu)	7440-50-8	0.50%	
Substrate	12.36%	0.0182	3.96%	0.0058	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			8.41%	0.0124	Glass fiber	65997-17-3	68.00%	
Foil	4.62%	0.0068	3.91%	0.00574	Copper	7440-50-8	84.56%	
			0.68%	0.00100	Nickel plating	7440-02-0	14.70%	
			0.03%	0.00005	Gold plating	7440-57-5	0.74%	
Solder Mask	2.04%	0.0030	1.11%	0.00163	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.15%	0.00022	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.07%	0.00010	Morpholine derivative**	71868-10-5	3.32%	
			0.06%	0.00009	Silicon dioxide	7631-86-9	3.00%	
			0.06%	0.00009	Silica, amorphous	112945-52-5	3.00%	
			0.00%	0.00001	Carbon black	1333-86-4	0.24%	
			0.59%	0.00086	Trade secret ingredients	-	28.74%	

Notes: SVHC: * 0.12% max. concentration of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.
 ** 0.07% 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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Device Material Content

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Package Code:

MN100

Assembly: ASEK

Size (mm): 8 x 8

Lead pitch (mm): 0.5

MSL: 3

Reflow max (°C): 260

Package: 100 csBGA
Total Device Weight 0.147 Grams

Products:

XO

January, 2020

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	5.85%	0.0086	5.85%	0.0086	Silicon chip	7440-21-3	100.00%	Die size: 4.71 x 2.90 mm
Mold Compound	66.11%	0.0972	57.84%	0.0850	Silica	60676-86-0	87.50%	Mold Compound: Kyocera KE-G2250 series (ULA)
			4.30%	0.0063	Epoxy resin	-	6.50%	
			3.64%	0.0053	Phenol Resin	-	5.50%	
			0.33%	0.0005	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	0.94%	0.0014	0.76%	0.00111	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.19%	0.00028	Esters & resins	-	20.00%	
Wire	0.92%	0.0014	0.91%	0.0013	Copper	7440-50-8	98.50%	Pd coated Copper, 0.8 mil diameter
			0.01%	0.0000	Palladium	7440-05-3	1.50%	
Solder Balls	7.16%	0.0105	7.05%	0.0104	Tin (Sn)	7440-31-5	98.50%	SAC105
			0.07%	0.0001	Silver (Ag)	7440-22-4	1.00%	
			0.04%	0.0001	Copper (Cu)	7440-50-8	0.50%	
Substrate	12.36%	0.0182	3.96%	0.0058	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			8.41%	0.0124	Glass fiber	65997-17-3	68.00%	
Foil	4.62%	0.0068	3.91%	0.00574	Copper	7440-50-8	84.56%	
			0.68%	0.00100	Nickel plating	7440-02-0	14.70%	
			0.03%	0.00005	Gold plating	7440-57-5	0.74%	
Solder Mask	2.04%	0.0030	1.11%	0.00163	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.15%	0.00022	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.07%	0.00010	Morpholine derivative**	71868-10-5	3.32%	
			0.06%	0.00009	Silicon dioxide	7631-86-9	3.00%	
			0.06%	0.00009	Silica, amorphous	112945-52-5	3.00%	
			0.00%	0.00001	Carbon black	1333-86-4	0.24%	
			0.59%	0.00086	Trade secret ingredients	-	28.74%	

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Rev. O



Device Material Content

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Assembly: ATP

Size (mm): 8 x 8

Lead pitch (mm): 0.5

MSL: 3

Reflow max (°C): 260

January, 2020

Package: 100 csBGA
Total Device Weight 0.147 Grams

Package Code:

MN100

Products:

XO

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	5.85%	0.0086	5.85%	0.0086	Silicon chip	7440-21-3	100.00%	Die size: 4.71 x 2.90 mm
Mold Compound	66.11%	0.0972	4.63%	0.0068	Solid Epoxy Resin	-	7.00%	Mold Compound: Hitachi GE-110LS-V (ULA)
			3.31%	0.0049	Phenol Resin	-	5.00%	
			56.19%	0.0826	Silica	60676-86-0	85.00%	
			1.65%	0.0024	Metal Hydroxide	-	2.50%	
			0.33%	0.0005	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	0.94%	0.0014	0.76%	0.00111	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2300
			0.19%	0.00028	Esters & resins	-	20.00%	
Wire	0.92%	0.0014	0.91%	0.0013	Copper	7440-50-8	98.50%	Pd coated Copper, 0.8 mil diameter
			0.01%	0.0000	Palladium	7440-05-3	1.50%	
Solder Balls	7.16%	0.0105	7.05%	0.0104	Tin (Sn)	7440-31-5	98.50%	SAC105
			0.07%	0.0001	Silver (Ag)	7440-22-4	1.00%	
			0.04%	0.0001	Copper (Cu)	7440-50-8	0.50%	
Substrate	12.36%	0.0182	3.96%	0.0058	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			8.41%	0.0124	Glass fiber	65997-17-3	68.00%	
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			0.07%	0.00010	Morpholine derivative**	71868-10-5	3.32%	
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Rev. 0