



## Device Material Content

5555 NE Moore Ct. Hillsboro OR 97124 <a href="mailto:custreq@latticesemi.com">custreq@latticesemi.com</a>				<b>Package Code:</b> <b>MG132</b>			Assembly: ASEM Size (mm): 8 x 8 Lead pitch (mm): 0.5 MSL: 3 Reflow max (°C): 250	
<b>Package:</b> <b>132 csBGA</b>		<b>Total Device Weight</b> <b>0.124 Grams</b>		<b>Products:</b> <b>XO2</b>				
June, 2020								
	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	6.93%	0.0086	6.93%	0.0086	Silicon chip	7440-21-3	100.00%	Die size: 4.71 x 2.90 mm
Mold Compound	56.76%	0.0704	2.84% 0.85% 2.84% 2.84% 0.17% 47.22%	0.0035 0.0011 0.0035 0.0035 0.0002 0.0586	Epoxy Resin A Epoxy Resin B Phenol Novolac Metal Hydroxide Carbon Black Silica Fused	- - 9003-35-4 - 1333-86-4 60676-86-0	5.00% 1.50% 5.00% 5.00% 0.30% 83.20%	Mold Compound: Sumitomo G750SE (ULA)
D/A Epoxy	1.12%	0.0014	0.90% 0.22%	0.00111 0.00028	Silver Esters & resins	7440-22-4 -	80.00% 20.00%	Die attach epoxy: Henkel (Ablebond) 2100A
Wire	1.44%	0.0018	1.42% 0.02%	0.0018 0.0000	Copper Palladium	7440-50-8 7440-05-3	98.50% 1.50%	0.8 mil diameter; 1 wire per solder ball
Solder Balls	11.20%	0.0139	10.81% 0.34% 0.06%	0.0134 0.0004 0.0001	Tin (Sn) Silver (Ag) Copper (Cu)	7440-31-5 7440-22-4 7440-50-8	96.50% 3.00% 0.50%	SAC305
Substrate	14.65%	0.0182	4.54% 9.96% 0.15%	0.0056 0.0124 0.0002	BT Resins Glass fiber Bisphenol A	- 65997-17-3 80-05-7	31.00% 68.00% 1.00%	BT Resin CCL-HL832NX-A
Foil	5.48%	0.0068	4.63% 0.81% 0.04%	0.0057 0.0010 0.0001	Copper Nickel plating Gold plating	7440-50-8 7440-02-0 7440-57-5	84.57% 14.70% 0.74%	
Solder Mask	2.42%	0.0030	1.36% 0.39% 0.53% 0.07% 0.01% 0.06%	0.00169 0.00048 0.00066 0.00009 0.00002 0.00007	Quartz 3-methoxy-3-methylbutylacetate Barium Sulfate Talc Naphthalene Trade secret ingredients	14808-60-7 103429-90-9 7727-43-7 14807-96-6 91-20-3 -	56.20% 16.00% 22.00% 3.00% 0.50% 2.30%	Solder mask PSR4000 AUS 308

**Notes:** SVHC: \* 0.15% max. concentration of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.

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Assembly: ASEK  
Size (mm): 8 x 8

Package: 132 csBGA  
Total Device Weight 0.124 Grams

Package Code:

MG132

Lead pitch (mm): 0.5

MSL: 3

Reflow max (°C): 250

June, 2020

Products:

XO2

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	6.93%	0.0086	6.93%	0.0086	Silicon chip	7440-21-3	100.00%	Die size: 4.71 x 2.90 mm
Mold Compound	56.76%	0.0704	49.66%	0.0616	Silica	60676-86-0	87.50%	Mold Compound: Kyocera KE-G2250 series (ULA)
			3.69%	0.0046	Epoxy resin	-	6.50%	
			3.12%	0.0039	Phenol Resin	-	5.50%	
			0.28%	0.0004	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	1.12%	0.0014	0.90%	0.00111	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.22%	0.00028	Esters & resins	-	20.00%	
Wire	1.44%	0.0018	1.42%	0.0018	Copper	7440-50-8	98.50%	0.8 mil diameter; 1 wire per solder ball
			0.02%	0.0000	Palladium	7440-05-3	1.50%	
Solder Balls	11.20%	0.0139	11.04%	0.0137	Tin (Sn)	7440-31-5	98.50%	SAC105
			0.11%	0.0001	Silver (Ag)	7440-22-4	1.00%	
			0.06%	0.0001	Copper (Cu)	7440-50-8	0.50%	
Substrate	14.65%	0.0182	4.54%	0.0056	BT Resins	-	31.00%	BT Resin CCL-HL832NX-A
			9.96%	0.0124	Glass fiber	65997-17-3	68.00%	
			0.15%	0.0002	Bisphenol A	80-05-7	1.00%	
Foil	5.48%	0.0068	4.63%	0.0057	Copper	7440-50-8	84.57%	
			0.81%	0.0010	Nickel plating	7440-02-0	14.70%	
			0.04%	0.0001	Gold plating	7440-57-5	0.74%	
Solder Mask	2.42%	0.0030	1.36%	0.00169	Quartz	14808-60-7	56.20%	Solder mask PSR4000 AUS 308
			0.39%	0.00048	3-methoxy-3-methylbutylacetate	103429-90-9	16.00%	
			0.53%	0.00066	Barium Sulfate	7727-43-7	22.00%	
			0.07%	0.00009	Talc	14807-96-6	3.00%	
			0.01%	0.00002	Naphthalene	91-20-3	0.50%	
			0.06%	0.00007	Trade secret ingredients	-	2.30%	

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Rev. 0



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Mold Compound	56.76%	0.0704	3.97%	0.0049	Solid Epoxy Resin	-	7.00%	Mold Compound: Hitachi (Nitto) GE-110LS-V (ULA)
			2.84%	0.0035	Phenol Resin	-	5.00%	
			48.24%	0.0598	Silica	60676-86-0	85.00%	
			1.42%	0.0018	Metal Hydroxide	-	2.50%	
			0.28%	0.0004	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	1.12%	0.0014	0.90%	0.00111	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2300
			0.22%	0.00028	Esters & resins	-	20.00%	
Wire	1.44%	0.0018	1.42%	0.0018	Copper	7440-50-8	98.50%	0.8 mil diameter; 1 wire per solder ball
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Substrate	14.65%	0.0182	4.54%	0.0056	BT Resins	-	31.00%	BT Resin CCL-HL832NX-A*
			9.96%	0.0124	Glass fiber	65997-17-3	68.00%	
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			0.39%	0.00048	3-methoxy-3-methylbutylacetate	103429-90-9	16.00%	
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