



## 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> 132 csBGA <b>Total Device Weight</b> 0.124 Grams		<b>Products:</b> XO2							
November, 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%	0.0035	Epoxy Resin A	-	5.00%	Mold Compound: Sumitomo G750SE (ULA)	
			0.85%	0.0011	Epoxy Resin B	-	1.50%		
			2.84%	0.0035	Phenol Novolac	9003-35-4	5.00%		
			2.84%	0.0035	Metal Hydroxide	-	5.00%		
			0.17%	0.0002	Carbon Black	1333-86-4	0.30%		
			47.22%	0.0586	Silica Fused	60676-86-0	83.20%		
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	10.81%	0.0134	Tin (Sn)	7440-31-5	96.50%	SAC305	
			0.34%	0.0004	Silver (Ag)	7440-22-4	3.00%		
			0.06%	0.0001	Copper (Cu)	7440-50-8	0.50%		
Substrate	14.65%	0.0182	4.69%	0.0058	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A	
			9.96%	0.0124	Glass fiber	65997-17-3	68.00%		
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%		

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 subcontracters 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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Assembly: ASEK  
Size (mm): 8 x 8  
Lead pitch (mm): 0.5  
MSL: 3  
Reflow max (°C): 250

**Package:** 132 csBGA  
**Total Device Weight:** 0.124 Grams

**Package Code:** MG132  
**Products:** XO2

November, 2020

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
<b>Die</b>	6.93%	0.0086	6.93%	0.0086	Silicon chip	7440-21-3	100.00%	Die size: 4.71 x 2.90 mm
<b>Mold Compound</b>	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%	
<b>D/A Epoxy</b>	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%	
<b>Wire</b>	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%	
<b>Solder Balls</b>	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%	
<b>Substrate</b>	14.65%	0.0182	4.69%	0.0058	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A
			9.96%	0.0124	Glass fiber	65997-17-3	68.00%	
<b>Foil</b>	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%	
<b>Solder Mask</b>	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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**Package:** 132 csBGA  
**Total Device Weight** 0.124 Grams

**Package Code:**

**MG132**

**Products:**

XO2

Assembly: ATP  
Size (mm): 8 x 8  
Lead pitch (mm): 0.5  
MSL: 3  
Reflow max (°C): 250

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
<b>Die</b>	6.93%	0.0086	6.93%	0.0086	Silicon chip	7440-21-3	100.00%	Die size: 4.71 x 2.90 mm
<b>Mold Compound</b>	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%	
<b>D/A Epoxy</b>	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%	
<b>Wire</b>	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%	
<b>Solder Balls</b>	11.20%	0.0139	11.04%	0.0137	Tin (Sn)	7440-31-5	98.50%	SAC105
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<b>Substrate</b>	14.65%	0.0182	4.69%	0.0058	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			9.96%	0.0124	Glass fiber	65997-17-3	68.00%	
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Rev. P