



## Device Material Content

5555 NE Moore Ct.  
Hillsboro OR 97124  
[custreq@latticesemi.com](mailto:custreq@latticesemi.com)

Assembly: ASEM  
Size (mm): 35 x 35

**Package Code:**

**FN1156**

**Package:** 1156 fpBGA  
**Total Device Weight** 5.37 Grams

Lead pitch (mm): 1.0  
MSL: 3

January, 2020

**Products:**

FE3

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>	1.02%	0.0548	1.02%	0.0548	Silicon chip	7440-21-3	100.00%	Die size: 9.78 x 8.81 mm
<b>Mold Compound</b>	34.14%	1.8333	2.39%	0.1283	Epoxy Resin	-	7.00%	Mold Compound: Sumitomo G750SE (ULA)
			1.71%	0.0917	Phenol Novolac	9003-35-4	5.00%	
			1.71%	0.0917	Metal Hydroxide	-	5.00%	
			0.17%	0.0092	Carbon Black	1333-86-4	0.50%	
			28.17%	1.5125	Silica Fused	60676-86-0	82.50%	
<b>D/A Epoxy</b>	0.13%	0.0070	0.10%	0.00558	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.03%	0.00140	Esters & resins	-	20.00%	
<b>Wire</b>	0.16%	0.0086	0.16%	0.0085	Copper	7440-50-8	98.45%	0.8 mil diameter; 1 wire per solder ball
			0.00%	0.0001	Palladium	7440-05-3	1.45%	
<b>Solder Balls</b>	20.89%	1.1218	20.16%	1.0825	Tin (Sn)	7440-31-5	96.50%	SAC305
			0.63%	0.0337	Silver (Ag)	7440-22-4	3.00%	
			0.10%	0.0056	Copper (Cu)	7440-50-8	0.50%	
<b>Substrate</b>	23.39%	1.2560	7.48%	0.4019	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			15.91%	0.8541	Glass fiber	65997-17-3	68.00%	
<b>Foil</b>	15.59%	0.8372	14.73%	0.7910	Copper	7440-50-8	94.48%	
			0.78%	0.0420	Nickel plating	7440-02-0	5.01%	
			0.08%	0.0042	Gold plating	7440-57-5	0.50%	
<b>Solder Mask</b>	4.68%	0.2513	2.54%	0.1366	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.34%	0.0184	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.16%	0.0083	Morpholine derivative**	71868-10-5	3.32%	
			0.14%	0.0075	Silicon dioxide	7631-86-9	3.00%	
			0.14%	0.0075	Silica, amorphous	112945-52-5	3.00%	
			0.01%	0.0006	Carbon black	1333-86-4	0.24%	
			1.35%	0.0722	Trade secret ingredients	-	28.74%	

**Notes:** SVHC: \* 0.23% max. concentration of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.  
\*\* 0.16% 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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Assembly: ASEK  
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**Package Code:**

**FN1156**

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**Package:** 1156 fpBGA  
**Total Device Weight** 5.37 Grams

**Products:**

FE3

MSL: 3

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January, 2020

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
<b>Die</b>	1.02%	0.0548	1.02%	0.0548	Silicon chip	7440-21-3	100.00%	Die size: 9.78 x 8.81 mm
<b>Mold Compound</b>	34.14%	1.8333	1.71%	0.0917	Epoxy Resin	-	5.00%	Mold Compound: Hitachi CEL9750ZHF10AKL-U (ULA)
			1.71%	0.0917	Phenol Resin	-	5.00%	
			0.07%	0.0037	Carbon Black	1333-86-4	0.20%	
			29.97%	1.6097	Silica	60676-86-0	87.80%	
			0.68%	0.0367	Others	-	2.00%	
<b>D/A Epoxy</b>	0.13%	0.0070	0.10%	0.00558	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.03%	0.00140	Esters & resins	-	20.00%	
<b>Wire</b>	0.16%	0.0086	0.16%	0.0085	Copper	7440-50-8	98.45%	0.8 mil diameter; 1 wire per solder ball
			0.00%	0.0001	Palladium	7440-05-3	1.45%	
<b>Solder Balls</b>	20.89%	1.1218	20.16%	1.0825	Tin (Sn)	7440-31-5	96.50%	Ag 3.5
			0.73%	0.0393	Silver (Ag)	7440-22-4	3.50%	
<b>Substrate</b>	23.39%	1.2560	7.48%	0.4019	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			15.91%	0.8541	Glass fiber	65997-17-3	68.00%	
<b>Foil</b>	15.59%	0.8372	14.73%	0.7910	Copper	7440-50-8	94.48%	
			0.78%	0.0420	Nickel plating	7440-02-0	5.01%	
			0.08%	0.0042	Gold plating	7440-57-5	0.50%	
<b>Solder Mask</b>	4.68%	0.2513	2.54%	0.1366	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.34%	0.0184	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.16%	0.0083	Morpholine derivative**	71868-10-5	3.32%	
			0.14%	0.0075	Silicon dioxide	7631-86-9	3.00%	
			0.14%	0.0075	Silica, amorphous	112945-52-5	3.00%	
			0.01%	0.0006	Carbon black	1333-86-4	0.24%	
			1.35%	0.0722	Trade secret ingredients	-	28.74%	

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<b>Mold Compound</b>	34.14%	1.8333	2.39%	0.1283	Solid Epoxy Resin	-	7.00%	Mold Compound: Hitachi GE-110LS-V (ULA)
			1.71%	0.0917	Phenol Resin	-	5.00%	
			29.02%	1.5583	Silica	60676-86-0	85.00%	
			0.85%	0.0458	Metal Hydroxide	-	2.50%	
			0.17%	0.0092	Carbon Black	1333-86-4	0.50%	
<b>D/A Epoxy</b>	0.13%	0.0070	0.10%	0.00558	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2300
			0.03%	0.00140	Esters & resins	-	20.00%	
<b>Wire</b>	0.16%	0.0086	0.16%	0.0085	Copper	7440-50-8	98.45%	0.8 mil diameter; 1 wire per solder ball
			0.00%	0.0001	Palladium	7440-05-3	1.45%	
<b>Solder Balls</b>	20.89%	1.1218	19.95%	1.0713	Tin (Sn)	7440-31-5	95.50%	SAC405
			0.84%	0.0449	Silver (Ag)	7440-22-4	4.00%	
			0.10%	0.0056	Copper (Cu)	7440-50-8	0.50%	
<b>Substrate</b>	23.39%	1.2560	7.48%	0.4019	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			15.91%	0.8541	Glass fiber	65997-17-3	68.00%	
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