



Device Material Content

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

Assembly: ASEM
Size (mm): 23 x 23

Package Code:

FN672

Lead pitch (mm): 1.0

MSL: 3

Reflow max (°C): 250

Package: 672 fpBGA

Total Device Weight 3.17 Grams

Products:

FE2, FE3, XP2

August, 2019

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	1.33%	0.0422			Silicon chip	7440-21-3	100.00%	Die size: 8.79 x 8.31 mm
Mold Compound	36.81%	1.1686	2.58% 1.84% 1.84% 0.18% 30.37%	0.0818 0.0584 0.0584 0.0058 0.9641	Epoxy Resin Phenol Novolac Metal Hydroxide Carbon Black Silica Fused	- 9003-35-4 - 1333-86-4 60676-86-0	7.00% 5.00% 5.00% 0.50% 82.50%	Mold Compound: Sumitomo G750SE
D/A Epoxy	0.19%	0.0061	0.15% 0.04%	0.00490 0.00122	Silver Esters & resins	7440-22-4 -	80.00% 20.00%	Die attach epoxy: Henkel (Ablebond) 2100A
Wire	0.23%	0.0074	0.23% 0.00%	0.0073 0.0001	Copper Palladium	7440-50-8 7440-05-3	98.45% 1.55%	0.8 mil diameter; 1 wire per solder ball
Solder Balls	20.54%	0.6520	19.82% 0.62% 0.10%	0.6292 0.0196 0.0033	Tin (Sn) Silver (Ag) Copper (Cu)	7440-31-5 7440-22-4 7440-50-8	96.50% 3.00% 0.50%	SAC305
Substrate	21.91%	0.6953	7.01% 14.90%	0.2225 0.4728	BT Resins Glass fiber	- 65997-17-3	32.00% 68.00%	BT Resin CCL-HL832NX-A*
Foil	15.19%	0.4821	13.80% 1.31% 0.07%	0.4381 0.0417 0.0023	Copper Nickel plating Gold plating	7440-50-8 7440-02-0 7440-57-5	90.87% 8.64% 0.48%	
Solder Mask	3.80%	0.1206	2.07% 0.28% 0.13% 0.11% 0.11% 0.01% 1.09%	0.0656 0.0088 0.0040 0.0036 0.0036 0.0003 0.0347	Quartz Dipropylene glycol monomethyl ether Morpholine derivative Silicon dioxide Silica, amorphous Carbon black Trade secret ingredients	14808-60-7 34590-94-8 71868-10-5 7631-86-9 112945-52-5 1333-86-4 -	54.37% 7.33% 3.32% 3.00% 3.00% 0.24% 28.74%	Solder mask PSR4000 AUS 308

Notes: * 0.22% max. concentration (of total pkg wt.) of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.

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Device Material Content

5555 NE Moore Ct.
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Assembly: ASET
Size (mm): 23 x 23

Package Code:

FN672

Lead pitch (mm): 1.0

Package: 672 fpBGA
Total Device Weight 3.17 Grams

Products:

FE2, FE3, XP2

MSL: 3

Reflow max (°C): 250

August, 2019

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	1.33%	0.0422			Silicon chip	7440-21-3	100.00%	Die size: 8.79 x 8.31 mm
Mold Compound	36.81%	1.1686	1.84%	0.0584	Epoxy Resin	-	5.00%	Mold Compound: Hitachi CEL9750ZHF10AKL-U (ULA)
			1.84%	0.0584	Phenol Resin	-	5.00%	
			0.07%	0.0023	Carbon Black	1333-86-4	0.20%	
			32.32%	1.0260	Silica	60676-86-0	87.80%	
			0.74%	0.0234	Others	-	2.00%	
D/A Epoxy	0.19%	0.0061	0.15%	0.00490	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.04%	0.00122	Esters & resins	-	20.00%	
Wire	0.23%	0.0074	0.23%	0.0073	Copper	7440-50-8	98.45%	0.8 mil diameter; 1 wire per solder ball
			0.00%	0.0001	Palladium	7440-05-3	1.55%	
Solder Balls	20.54%	0.6520	19.82%	0.6292	Tin (Sn)	7440-31-5	96.50%	Ag 3.5
			0.72%	0.0228	Silver (Ag)	7440-22-4	3.50%	
Substrate	21.91%	0.6953	7.01%	0.2225	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			14.90%	0.4728	Glass fiber	65997-17-3	68.00%	
Foil	15.19%	0.4821	13.80%	0.4381	Copper	7440-50-8	90.87%	
			1.31%	0.0417	Nickel plating	7440-02-0	8.64%	
			0.07%	0.0023	Gold plating	7440-57-5	0.48%	
Solder Mask	3.80%	0.1206	2.07%	0.0656	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.28%	0.0088	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.13%	0.0040	Morpholine derivative	71868-10-5	3.32%	
			0.11%	0.0036	Silicon dioxide	7631-86-9	3.00%	
			0.11%	0.0036	Silica, amorphous	112945-52-5	3.00%	
			0.01%	0.0003	Carbon black	1333-86-4	0.24%	
			1.09%	0.0347	Trade secret ingredients	-	28.74%	

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Device Material Content

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Package Code:

FN672

Assembly: ATP

Size (mm): 23 x 23

Lead pitch (mm): 1.0

MSL: 3

Reflow max (°C): 250

Package: 672 fpBGA

Total Device Weight 3.17 Grams

Products:

FE2, FE3, XP2

August, 2019

	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	1.33%	0.0422			Silicon chip	7440-21-3	100.00%	Die size: 8.79 x 8.31 mm
Mold Compound	36.81%	1.1686	2.58%	0.0818	Solid Epoxy Resin	-	7.00%	Mold Compound: Hitachi GE-110LS-V (ULA)
			1.84%	0.0584	Phenol Resin	-	5.00%	
			31.29%	0.9933	Silica	60676-86-0	85.00%	
			0.92%	0.0292	Metal Hydroxide	-	2.50%	
			0.18%	0.0058	Carbon Black	1333-86-4	0.50%	
D/A Epoxy	0.19%	0.0061	0.15%	0.00490	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A
			0.04%	0.00122	Esters & resins	-	20.00%	
Wire	0.23%	0.0074	0.23%	0.0073	Copper	7440-50-8	98.45%	0.8 mil diameter; 1 wire per solder ball
			0.00%	0.0001	Palladium	7440-05-3	1.55%	
Solder Balls	20.54%	0.6520	19.61%	0.6226	Tin (Sn)	7440-31-5	95.50%	SAC405
			0.82%	0.0261	Silver (Ag)	7440-22-4	4.00%	
			0.10%	0.0033	Copper (Cu)	7440-50-8	0.50%	
Substrate	21.91%	0.6953	7.01%	0.2225	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*
			14.90%	0.4728	Glass fiber	65997-17-3	68.00%	
Foil	15.19%	0.4821	13.80%	0.4381	Copper	7440-50-8	90.87%	
			1.31%	0.0417	Nickel plating	7440-02-0	8.64%	
			0.07%	0.0023	Gold plating	7440-57-5	0.48%	
Solder Mask	3.80%	0.1206	2.07%	0.0656	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308
			0.28%	0.0088	Dipropylene glycol monomethyl ether	34590-94-8	7.33%	
			0.13%	0.0040	Morpholine derivative	71868-10-5	3.32%	
			0.11%	0.0036	Silicon dioxide	7631-86-9	3.00%	
			0.11%	0.0036	Silica, amorphous	112945-52-5	3.00%	
			0.01%	0.0003	Carbon black	1333-86-4	0.24%	
			1.09%	0.0347	Trade secret ingredients	-	28.74%	

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