



## Device Material Content

5555 NE Moore Ct. Hillsboro OR 97124 <a href="mailto:custreq@latticesemi.com">custreq@latticesemi.com</a>		<b>Package: 237 ftBGA</b> <b>Total Device Weight 0.814 Grams</b>				<b>Package Code:</b> <b>FTG237</b>	Assembly: ASEM Size (mm): 17 x 17 Lead pitch (mm): 1.0 MSL: 3 Reflow max (°C): 260		
January, 2020						<b>Products:</b> LPTM21			
	% of Total Pkg. Wt.	Weight (g)	% of Total Pkg. Wt.	Weight (g)	Substance	CAS #	% of Subst.	Notes / Assumptions:	
Die	1.06%	0.0086	1.06%	0.0086	Silicon chip	7440-21-3	100.00%	Die 1: 2.58 x 2.52 mm Die 2: 2.89 x 2.89 mm Side-by-side (dual-die)	
Mold Compound	49.90%	0.4062	2.50%	0.0203	Epoxy Resin A	-	5.00%	Mold compound: Sumitomo EME-G750E	
			0.85%	0.0069	Epoxy Resin B	-	1.70%		
			2.50%	0.0203	Phenol Novolac	9003-35-4	5.00%		
			41.42%	0.3371	Silica Fused	60676-86-0	83.00%		
			2.50%	0.0203	Metal Hydroxide	-	5.00%		
			0.15%	0.0012	Carbon Black	1333-86-4	0.30%		
D/A Epoxy	0.15%	0.0012	0.12%	0.00098	Silver	7440-22-4	80.00%	Die attach epoxy: Henkel (Ablebond) 2100A	
			0.03%	0.00024	Esters & resins	-	20.00%		
Wire	0.38%	0.0031	0.38%	0.0031	Gold (Au)	7440-57-5	99.00%	Pd coated Au, 0.8 mil diameter; 1 wire per solder ball	
			0.00%	0.0000	Palladium	7440-05-3	1.00%		
Solder Balls	14.14%	0.1151	13.65%	0.1111	Tin (Sn)	7440-31-5	96.50%	SAC305	
			0.42%	0.0035	Silver (Ag)	7440-22-4	3.00%		
			0.07%	0.0006	Copper (Cu)	7440-50-8	0.50%		
Substrate	23.87%	0.1943	7.64%	0.0622	BT Resins	-	32.00%	BT Resin CCL-HL832NX-A*	
			16.23%	0.1321	Glass fiber	65997-17-3	68.00%		
Foil	4.77%	0.0389	2.86%	0.0233	Copper	7440-50-8	59.97%		
			1.81%	0.0148	Nickel plating	7440-02-0	38.01%		
			0.10%	0.0008	Gold plating	7440-57-5	2.02%		
Solder Mask	5.73%	0.0466	3.12%	0.0254	Quartz	14808-60-7	54.37%	Solder mask PSR4000 AUS 308	
			0.42%	0.0034	Dipropylene glycol monomethyl ether	34590-94-8	7.33%		
			0.19%	0.0015	Morpholine derivative**	71868-10-5	3.32%		
			0.17%	0.0014	Silicon dioxide	7631-86-9	3.00%		
			0.17%	0.0014	Silica, amorphous	112945-52-5	3.00%		
			0.01%	0.0001	Carbon black	1333-86-4	0.24%		
			1.65%	0.0134	Trade secret ingredients	-	28.74%		
<b>Notes:</b>									
		SVHC:		*	0.19%	max. concentration of Bisphenol A (CAS# 80-05-7), contained in substrate laminate material as impurity - not intentionally added.			
				**	0.19%	max. concentration of Morpholine derivative (CAS# 71868-10-5), contained in solder mask material.			
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