LATTICE SEMICONDUCTOR

Device Material Content

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

June, 2020

Package: 49 WLCSP
Total Device Weight 12.14 **Milligrams**

Package Code: UWG49
Products: XO2, XO3

Assembly: ASEK
Size (mm): 3.158 x 3.046
Lead pitch (mm): 0.4
MSL: 3
Reflow max (ºC): 260

	% of Total Pkg. Wt.	Weight (mg)	% of Total Pkg. Wt.	Weight (mg)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	59.46%	7.2169	59.46%	7.2169	Silicon chip	7440-21-3	100.00%	Die size: 3.106 x 3.185 mm
Polyimide (Repassivation)	1.93%	0.2342	0.965%	0.1171	4-Butyrolactone	96-48-0	50.00%	PBO HD8820
			0.675%	0.0820	Polyamide	-	35.00%	
			0.096%	0.0117	1-Methoxy-2-propyl acetate	108-65-6	5.00%	
			0.096%	0.0117	Photo Active Compound	-	5.00%	
			0.096%	0.0117	Proprietary Additives	-	5.00%	
RDL(1) metalization	0.04%	0.0049	0.040%	0.0049	Titanium (Ti)	7440-32-6	100.00%	
RDL(2) metalization	3.45%	0.4188	3.450%	0.4188	Copper (Cu)	7440-50-8	100.00%	
UBM (1)	0.04%	0.0049	0.040%	0.0049	Titanium (Ti)	7440-32-6	100.00%	
UBM (2)	6.98%	0.8473	6.980%	0.8473	Copper (Cu)	7440-50-8	100.00%	
Solder Balls	24.30%	2.9496	23.207%	2.8169	Tin (Sn)	7440-31-5	95.50%	SAC405
			0.972%	0.1180	Silver (Ag)	7440-22-4	4.00%	
			0.122%	0.0147	Copper (Cu)	7440-50-8	0.50%	
BSC (coating film)	3.81%	0.4625	2.477%	0.3006	Polybutylene terephthalate (PBT)	25038-59-9	65.00%	Lintec Adwill LC 2850
			0.743%	0.0902	Silica	60676-86-0	19.50%	
			0.286%	0.0347	Other Epoxy resins	-	7.50%	
			0.286%	0.0347	Other Acrylic resins	-	7.50%	
			0.019%	0.0023	Carbon black	1333-86-4	0.50%	

Notes:

The values listed above are nominal values based on studies of representatives of this particular package type, and are believed to be as accurate as possible.

Constituent substances and proportions in epoxy materials are before curing.

The information provided above is representative of the package as of the date listed, and is subject to change at any time.

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Br/Cl/Sb Pb lead-free RoHS

PCN#09A-19
Rev. F1

LATTICE SEMICONDUCTOR

Device Material Content

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

October, 2019

Package: 49 WLCSP
Total Device Weight 20.525 **Milligrams**

Package Code: UWG49
Products: XO2, XO3

Assembly: ATT
Size (mm): 3.106 x 3.185
Lead pitch (mm): 0.4
MSL: 1
Reflow max (ºC): 260

	% of Total Pkg. Wt.	Weight (mg)	% of Total Pkg. Wt.	Weight (mg)	Substance	CAS #	% of Subst.	Notes / Assumptions:
Die	82.67%	16.9682	82.67%	16.9682	Silicon chip	7440-21-3	100.00%	Die size: 3.106 x 3.185 mm
Sputter 1	0.06%	0.0123	0.005%	0.0010	Titanium (Ti)	7440-32-6	7.74%	Ti & Cu
			0.055%	0.0114	Copper (Cu)	7440-50-8	92.26%	
Polyimide 1 (Repassivation) (PBO 1)	0.41%	0.0842	0.205%	0.0421	4-Butyrolactone	96-48-0	50.00%	PBO HD8820
			0.144%	0.0295	Polyamide	-	35.00%	
			0.021%	0.0042	1-Methoxy-2-propyl acetate	108-65-6	5.00%	
			0.021%	0.0042	Photo Active Compound	-	5.00%	
			0.021%	0.0042	Proprietary Additives	-	5.00%	
RDL(1) metalization	0.72%	0.1478	0.72%	0.1478	Copper (Cu)	7440-50-8	100.00%	
Sputter 2	0.07%	0.0144	0.09%	0.0123	Ti/W	7440-32-6 7440-33-7	49.82%	TiW & Cu
			11.20%	1.5022	Copper (Cu)	7440-50-8	50.18%	
Polyimide 2 (Repassivation) (PBO 2)	0.41%	0.0842	0.205%	0.0421	4-Butyrolactone	96-48-0	50.00%	PBO HD8820
			0.144%	0.0295	Polyamide	-	35.00%	
			0.021%	0.0042	1-Methoxy-2-propyl acetate	108-65-6	5.00%	
			0.021%	0.0042	Photo Active Compound	-	5.00%	
			0.021%	0.0042	Proprietary Additives	-	5.00%	
UBM	0.84%	0.1724	0.840%	0.1724	Copper (Cu)	7440-50-8	100.00%	
Solder Balls	14.82%	3.0418	14.15%	2.9050	Tin (Sn)	7440-31-5	95.50%	SAC405
			0.59%	0.1217	Silver (Ag)	7440-22-4	4.00%	
			0.07%	0.0152	Copper (Cu)	7440-50-8	0.50%	

Notes:

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Rev. E