LATTICE SEMICONDUCTOR

Device Material Content

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

April, 2022

Package: 36 WLCSP
Total Device Weight 7.877 **Milligrams**

Package Code: UWG36
Products: LIF-MD6000

Assembly: ASEK
Size (mm): 2.535 x 2.583
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	68.13%	5.3667	68.131%	5.3667	Silicon chip	7440-21-3	100.00%	Die size: 2.535 x 2.583 mm
Repassivation PBO 1	1.92%	0.1512	0.960%	0.0756	4-Butyrolactone	96-48-0	50.00%	HD8820
			0.672%	0.0529	Polyamide	Trade Secret	35.00%	
			0.096%	0.0076	1-Methoxy-2-propyl acetate	108-65-6	5.00%	
			0.096%	0.0076	Photo Active Compound	Trade Secret	5.00%	
			0.096%	0.0076	Proprietary Additives	Trade Secret	5.00%	
RDL Metalization	5.10%	0.4017	0.042%	0.0033	Titanium (Ti)	7440-32-6	0.82%	
			5.058%	0.3984	Copper (Cu)	7440-50-8	99.18%	
UBM Metalization	6.980%	0.5498	0.042%	0.0033	Titanium (Ti)	7440-50-8	0.60%	
			6.940%	0.5467	Copper (Cu)	7440-50-8	99.43%	
Solder Balls	14.07%	1.1083	13.824%	1.0889	Tin (Sn)	7440-31-5	98.25%	Sn98.25/Ag1.2/Cu0.5/Ni0.05
			0.169%	0.0133	Silver (Ag)	7440-22-4	1.20%	
			0.070%	0.0055	Copper (Cu)	7440-50-8	0.50%	
			0.007%	0.0006	Nickel (Ni)	7440-02-0	0.05%	
BSC Coating film	3.790%	0.2985	2.464%	0.1940	Polybutylene terephthalate (PBT)	25038-59-9	65.00%	Adwill LC 2850
			0.739%	0.0582	Silica	60676-86-0	19.50%	
			0.284%	0.0224	Other Epoxy resins	Proprietary	7.50%	
			0.284%	0.0224	Other Acrylic resins	Proprietary	7.50%	
			0.019%	0.0015	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

Rev. C2

LATTICE SEMICONDUCTOR

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5555 NE Moore Ct.
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April, 2022

Package: **36 WLCSP**
Total Device Weight **8.950** **Milligrams**

Package Code: **UWG36**
Products: ICE40UP / ICE5

Assembly: ASEK
Size (mm): 2.078 x 2.078
Lead pitch (mm): 0.35
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	57.55%	5.1507	57.550%	5.1507	Silicon chip	7440-21-3	100.00%	Die size: 2.03 x 2.03 mm
Repassivation	0.94%	0.0841	0.470%	0.0421	4-Butyrolactone	96-48-0	50.00%	HD8820
			0.329%	0.0294	Polyamide	Trade Secret	35.00%	
			0.047%	0.0042	1-Methoxy-2-propyl acetate	108-65-6	5.00%	
			0.047%	0.0042	Photo Active Compound	Trade Secret	5.00%	
			0.047%	0.0042	Proprietary Additives	Trade Secret	5.00%	
RDL Metalization	11.29%	1.0105	0.093%	0.0083	Titanium (Ti)	7440-32-6	0.82%	
			11.197%	1.0021	Copper (Cu)	7440-50-8	99.18%	
UBM	10.440%	0.9344	0.063%	0.0056	Titanium (Ti)	7440-50-8	0.60%	
			10.380%	0.9290	Copper (Cu)	7440-50-8	99.43%	
Solder Balls	16.71%	1.4955	15.958%	1.4282	Tin (Sn)	7440-31-5	95.50%	SAC405
			0.668%	0.0598	Silver (Ag)	7440-22-4	4.00%	
			0.084%	0.0075	Copper (Cu)	7440-50-8	0.50%	
BSL	3.070%	0.2748	1.996%	0.1786	Polybutylene terephthalate (PBT)	25038-59-9	65.00%	Adwill LC 2850
			0.599%	0.0536	Silica	60676-86-0	19.50%	
			0.230%	0.0206	Other Epoxy resins	Proprietary	7.50%	
			0.230%	0.0206	Other Acrylic resins	Proprietary	7.50%	
			0.015%	0.0014	Carbon black	1333-86-4	0.50%	

Notes:

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Rev. C2

Device Material Content

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April, 2022

Package: **36 WLCSP**
Total Device Weight **5.874** **Milligrams**

Package Code: **UWG36**
Products: XO2/XO3L/LF/D

Assembly: ASEK
Size (mm): 2.541 x 2.487
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	53.01%	3.1139	53.01%	3.1139	Silicon chip	7440-21-3	100.00%	Die size: 2.541 x 2.487 mm
Repassivation	2.54%	0.1491	1.27%	0.0746	4-Butyrolactone	96-48-0	50.00%	HD8820
			0.89%	0.0522	Polyamide	-	35.00%	
			0.13%	0.0075	1-Methoxy-2-propyl acetate	108-65-6	5.00%	
			0.13%	0.0075	Photo Active Compound	-	5.00%	
			0.13%	0.0075	Proprietary Additives	-	5.00%	
RDL 1	0.056%	0.0033	0.06%	0.0033	Titanium (Ti)	7440-32-6	100.00%	
RDL 2	4.54%	0.2664	4.54%	0.2664	Copper (Cu)	7440-50-8	100.0%	
UBM 1	0.056%	0.0033	0.06%	0.0033	Titanium (Ti)	7440-32-6	100.0%	
UBM 2	9.179%	0.5392	0.06%	0.0033	Copper (Cu)	7440-50-8	100.0%	
Solder Balls	25.61%	1.5047	24.46%	1.4370	Tin (Sn)	7440-31-5	95.50%	SAC405
			1.02%	0.0602	Silver (Ag)	7440-22-4	4.00%	
			0.13%	0.0075	Copper (Cu)	7440-50-8	0.50%	
BSC Coating Film	5.013%	0.2945	3.26%	0.1914	Polybutylene terephthalate (PBT)	25038-59-9	65.00%	Adwill LC 2850
			0.98%	0.0574	Silica	60676-86-0	19.50%	
			0.38%	0.0221	Epoxy Resin	-	7.50%	
			0.38%	0.0221	Bisphenol A diglycidyl ether	1675-54-3	7.50%	
			0.03%	0.0015	Carbon black	1333-86-4	0.50%	

Notes:

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