XILINX

PK1076 (v1.0) March 25, 2020

100% Material Declaration Data Sheet for Virtex UltraScale+ FPGA XQVU11P-FLRC2104

Average Weight : 32.9943 g

Component	Substance Description	CAS # or Description	% of component	Use in product	Component weight / substance weight (in grams)	Component % of total
Silicon die					**0.877878**	**2.66%**
	Silicon	7440-21-3	100.00	basis	0.877878	
Micro-bump					**0.212808**	**0.64%**
	Copper	7440-50-8	54.80	metal	0.116619	
	Nickel	7440-02-0	22.69	metal	0.048277	
	Tin	7440-31-5	21.87	metal	0.046544	
	Silver	7440-22-4	0.64	metal	0.001367	
Micro-bump underfill					**0.046572**	**0.14%**
	Amorphous silica	trade secret	46.87	Filler	0.021827	
	Amine compound	trade secret	20.84	Glue	0.009704	
	Epoxy resin compound-A	trade secret	15.63	Glue	0.007278	
	Epoxy resin compound-B	trade secret	15.63	Glue	0.007278	
	Epoxy resin compound-C	trade secret	1.04	Glue	0.000485	
Mold compound					**0.116736**	**0.35%**
	Silica filler	trade secret	86.02	Filler	0.100418	
	Epoxy resin	trade secret	8.60	Glue	0.010042	
	Hardener resin	trade secret	5.38	Glue	0.006276	
Interposer die					**0.205293**	**0.62%**
	Silicon	7440-21-3	100.00	basis	0.205293	
C4 Bump					**0.148286**	**0.45%**
	Copper	7440-50-8	5.41	metal	0.008018	
	Nickel	7440-02-0	3.22	metal	0.004779	
	Tin	7440-31-5	57.53		0.085312	
	Lead	7439-92-1	33.84	metal	0.050178	
Underfill					**0.163000**	**0.49%**
	Bisphenol F type liquid	9003-36-5	20.00	basis	0.032600	
	Phenolic resin	trade secret	15.00	basis	0.024450	
	Bisphenol A type liquid	25068-38-6	5.00	basis	0.008150	
	Amine type accelerator	trade secret	5.00	basis	0.008150	
	Silicon dioxide	60676-86-0	51.50	filler	0.083945	
	Carbon black	1333-86-4	1.00	color agent	0.001630	
	Additives	trade secret	2.50	Main material	0.004075	
Solder Paste					**0.039060**	**0.12%**
	Tin	7440-31-5	54.50	metal	0.021288	
	Lead	7439-92-1	33.00	metal	0.012890	
	Additives	trade secret	12.50	flux	0.004883	
Capacitor 1					**0.525000**	**1.59%**
	Barium titanate	12047-27-7	75.40	Ceramic	0.395850	
	Manganese	1313-13-9	11.00	Ceramic	0.057750	
	Nickel	7440-02-0	4.00	Internal Electrode	0.021000	
	Copper	7440-50-8	6.80	Termination	0.035700	
	Glass oxide	65997-17-3	0.20	Termination	0.001050	
	Nickel	7440-02-0	0.99	Plating	0.005187	
	Tin	7440-31-5	1.48	Plating	0.007781	
	Lead	7439-92-1	0.13	Plating	0.000683	
Heat sink					**15.200000**	**46.07%**
	Copper	7440-50-8	98.35	Main material	14.949200	
	Nickel	7440-02-0	1.65	Main material	0.250800	
Heat sink TIM					**0.500000**	**1.52%**
	Aluminium Oxide Al2O3	trade secret	86.50	Main material	0.432500	
	Silicone resin	trade secret	7.50	Main material	0.037500	
	Zinc Oxide	1314-13-2	4.00	Main material	0.020000	
	Alkoxysilane	trade secret	2.00	Main material	0.010000	
Heat sink Adhesive					**0.050000**	**0.15%**
	Silica,Vitreous	60676-86-0	59.80	Main material	0.029900	
	Cyclosiloxanes,3a,4,5,6,7,7a-hexahydro-4,7-methano-1H-inden-5-yl Me, Me hydrogen	trade secret	25.00	Main material	0.012500	
	Styrene Polymer with 1,3-	9003-55-8	10.00	Main material	0.005000	
	Boron Nitride	10043-11-5	4.00	Main material	0.002000	
	Carbon black	1333-86-4	0.60	Main material	0.000300	
	Toluene	108-88-3	0.60	Main material	0.000300	
Solder Ball					**2.368234**	**7.18%**
	Tin	7440-31-5	63.00	Main material	1.491987	
	Lead	7439-92-1	37.00	Main material	0.876247	
Substrate					**12.541478**	**38.01%**
	Copper	7440-50-8	38.15		4.784599	
	Tin	7440-31-5	0.28		0.035150	
	Lead	7439-92-1	0.16		0.020644	
	Core	N/A	43.18		5.415000	
	ABF	N/A	17.27		2.166000	
	Solder Mask	N/A	0.96		0.120084	

Revision History

Date	Version	Description of Revisions
3/25/2020	1.0	Initial Xilinx release.

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