



# ON Semiconductor

## MATERIAL COMPOSITION DATA SHEET

Supplier Name: ON Semiconductor  
 Address: 5005 E McDowell Rd, Phoenix, AZ 85008  
 Tel.: 602-244-5114  
 Product Environmental Compliance Engineer  
 Vrbovska cesta 2617/102, Piestany  
 00421 33 7902422  
 jozef.vavro@onsemi.com  
 Prepared by Mircea Capanu, Prod Eng, mircea.capanu@onsemi.com

On Semi part# TCP-50XXUA-DT  
 On Semi packaging# WLCSP-3\_567PE  
 Die geometry 3bar bumps (die 940x722um2)

Part / Component	Substance	CAS Number	Amount [mg]	Homogeneous Material Level		Component Level		
				[%]	[ppm]	[%]	[ppm]	
Substrate	Ceramic	1344-28-1	0.5819681	95.00478	950047.77	87.2628	872628	
	SiO2	7631-86-9	0.0041031	0.66982	6698.20	0.6152	6152	
	Silicon	7440-21-3	7.8023E-06	0.00127	12.74	0.0012	12	
	Chromium	7440-47-3	1.3769E-06	0.00022	2.25	0.0002	2	
	Titanium	7440-32-6	5.5075E-05	0.00899	89.91	0.0083	83	
	Platinum	7440-06-4	0.0018083	0.29520	2952.00	0.2711	2711	
	BST (BaSrTiO3)	12430-73-8	0.00071165	0.11618	1161.76	0.1067	1067	
	Aluminium	7429-90-5	0.00230159	0.37573	3757.29	0.3451	3451	
	Copper	7440-50-8	1.1566E-05	0.00189	18.88	0.0017	17	
	Passivation (Si3N4 + impurities)	12033-89-5	0.02159864	3.52592	35259.21	3.2386	32386	
	<b>Sub-Total</b>			<b>0.6125672</b>	<b>100.000</b>	<b>1000000.00</b>	<b>91.85</b>	<b>918509.79</b>
	Bumps	SAC305 pillar	7440-31-5	0.0239112	87.90955	879095.49	3.5853	35853
Silver		7440-22-4	0.00037625	1.38330	13832.99	0.0564	564	
Nickel, 0.2um thick		7440-02-0	0.00188925	6.94581	69458.12	0.2833	2833	
Gold, 0.05um thick		7440-57-5	0.00102308	3.76134	37613.40	0.1534	1534	
<b>Sub-Total</b>				<b>0.0271998</b>	<b>100.000</b>	<b>1000000.000</b>	<b>4.078</b>	<b>40784.522</b>
BSP tape, LINTEC ADWILL LC2821H	polyethylene terephthalate	25038-59-9	0.01628832	60	600000.00	2.4423	24423	
	Silica Fused	60676-86-1	0.000814416	3	30000.00	0.1221	1221	
	Epoxy resin	Trade secret	0.00814416	30	300000.00	1.2212	12212	
	Silicone	Trade secret	0.001085888	4	40000.00	0.1628	1628	
	Acrylic ester	Trade secret	0.000271472	1	10000.00	0.0407	407	
	Carbon black	1333-86-4	0.000542944	2	20000.00	0.0814	814	
	<b>Sub-Total</b>			<b>0.0271472</b>	<b>100</b>	<b>1000000</b>	<b>4.0706</b>	<b>40705.68751</b>
<b>Total weight , mg</b>			<b>0.666914175</b>			<b>100.0000</b>	<b>1000000.000</b>	

measured 0.625

On Semi part# TCP-50XXUB-DT  
 On Semi packaging# WLCSP-6\_567NZ  
 Die geometry 6bump (die 1097x622um2)

Part / Component	Substance	CAS Number	Amount [mg]	Homogeneous Material Level		Component Level		
				[%]	[ppm]	[%]	[ppm]	
Substrate	Ceramic	1344-28-1	0.77203476	94.38831	943883.14	86.0652	860652	
	SiO2	7631-86-9	0.00568037	0.69448	6944.78	0.6332	6332	
	Silicon	7440-21-3	1.0802E-05	0.00132	13.21	0.0012	12	
	Chromium	7440-47-3	1.9062E-06	0.00023	2.33	0.0002	2	
	Titanium	7440-32-6	7.6247E-05	0.00932	93.22	0.0085	85	
	Platinum	7440-06-4	0.00250343	0.30607	3060.67	0.2791	2791	
	BST (BaSrTiO3)	12430-73-8	0.00098522	0.12045	1204.52	0.1098	1098	
	Aluminium	7429-90-5	0.00318635	0.38956	3895.60	0.3552	3552	
	Copper	7440-50-8	1.6012E-05	0.00196	19.58	0.0018	18	
	Passivation (Si3N4 + impurities)	12033-89-5	0.03343959	4.08830	40882.96	3.7278	37278	
	<b>Sub-Total</b>			<b>0.8179347</b>	<b>100.000</b>	<b>1000000.00</b>	<b>91.18</b>	<b>911820.72</b>
	Bumps	SAC305 pillar	7440-31-5	0.039798	92.36752	923675.17	4.4366	44366
Silver		7440-22-4	0.00037625	0.87325	8732.52	0.0419	419	
Nickel, 0.2um thick		7440-02-0	0.00188925	4.38477	43847.65	0.2106	2106	
Gold, 0.05um thick		7440-57-5	0.00102308	2.37447	23744.66	0.1141	1141	
<b>Sub-Total</b>				<b>0.0430866</b>	<b>100</b>	<b>1000000</b>	<b>4.803223641</b>	<b>48032.23641</b>
BSP tape, LINTEC ADWILL LC2821H	polyethylene terephthalate	25038-59-9	0.02160797	60	600000.00	2.4088	24088	
	Silica Fused	60676-86-1	0.001080398	3	30000.00	0.1204	1204	
	Epoxy resin	Trade secret	0.010803985	30	300000.00	1.2044	12044	
	Silicone	Trade secret	0.001440531	4	40000.00	0.1606	1606	
	Acrylic ester	Trade secret	0.000360133	1	10000.00	0.0401	401	
	Carbon black	1333-86-4	0.000720266	2	20000.00	0.0803	803	
	<b>Sub-Total</b>			<b>0.0360133</b>	<b>100</b>	<b>1000000</b>	<b>4.0147</b>	<b>40147.04154</b>
<b>Total weight</b>			<b>0.89703455</b>			<b>100.00</b>	<b>1000000</b>	