

TPD4E05U06DQAR

Quality, reliability & packaging data download

Status: ACTIVE

Report date: 08/27/2024



Assembly site: TI Semiconductor

RoHS	Yes
REACH	Yes
Device marking	BLG, BRY, DQA, BRG
Lead finish/Ball material	NIPDAU
MSL rating/Peak reflow	Level-1-260C-UNLIM
Rating	Catalog

Material content

No results found

Assembly site: **Ext-Mfg**

RoHS	Yes
REACH	Yes
Device marking	BLG, BRY, DQA, BRG
Lead finish/Ball material	NIPDAU
MSL rating/Peak reflow	Level-1-260C-UNLIM
Rating	Catalog

Material content

				Homogeneous Material Level		Component Level	
Component	Substance	CAS Number	Amount (mg)	Percentage %	ppm	Percentage %	ppm
Bond Wire							
Precious Metals	Gold	7440-57-5	0.018645	100.000000	1000000	0.449323	4493
Sub-total	—	—	0.018645	100	1000000	0.449323	4493
Die Attach Adhesive							
Precious Metals	Silver	7440-22-4	0.032533	82.499873	824999	0.784008	7840
Thermoplastics	Epoxy	85954-11-6	0.006901	17.500127	175001	0.166306	1663
Sub-total	—	—	0.039434	100	1000000	0.950314	9503
Lead Frame							
Copper and Its Alloys	Copper	7440-50-8	2.143713	97.441500	974415	51.661013	516610
Copper and Its Alloys	Iron	7439-89-6	0.0517	2.350000	23500	1.245910	12459
Copper and Its Alloys	Phosphorus	7723-14-0	0.001815	0.082500	825	0.043739	437
Other Nonferrous Metals and Alloys	Lead	7439-92-1	0.000022	0.001000	10	0.000530	5
Zinc and Its Alloys	Zinc	7440-66-6	0.00275	0.125000	1250	0.066272	663
Sub-total	—	—	2.200000	100	1000000	53.017465	530175
Lead Frame Plating							
Nickel and Its Alloys	Nickel	7440-02-0	0.019024	95.120000	951200	0.458456	4585
Precious Metals	Gold	7440-57-5	0.000156	0.780000	7800	0.003759	38
Precious Metals	Palladium	7440-05-3	0.00082	4.100000	41000	0.019761	198
Sub-total	—	—	0.020000	100	1000000	0.481977	4820
Mold Compound							
Other Inorganic Materials	Fused Silica	60676-86-0	1.493933	84.999963	850000	36.002064	360021

Other Inorganic Materials	Silica	7631-86-9	0.008788	0.500009	5000	0.211781	2118
Other Organic Materials	Carbon Black	1333-86-4	0.001758	0.100025	1000	0.042366	424
Thermoplastics	Epoxy	85954-11-6	0.25309	14.400004	144000	6.099177	60992
Sub-total	—	—	1.757569	100	1000000	42.355388	423554
Semiconductor Device							
Ceramics / Glass	Doped Silicon	7440-21-3	0.113928	100.000000	1000000	2.745534	27455
Sub-total	—	—	0.113928	100	1000000	2.745534	27455
Total	—	—	4.149576	—	—	100	1000000

Assembly site: Ext-Mfg

RoHS	Yes
REACH	Yes
Device marking	BLG, BRY, DQA, BRG
Lead finish/Ball material	NIPDAU
MSL rating/Peak reflow	Level-1-260C-UNLIM
Rating	Catalog

Material content

				Homogeneous Material Level		Component Level	
Component	Substance	CAS Number	Amount (mg)	Percentage %	ppm	Percentage %	ppm
Bond Wire							
Precious Metals	Gold	7440-57-5	0.013237	100.000000	1000000	0.338808	3388
Sub-total	—	—	0.013237	100	1000000	0.338808	3388
Die Attach Adhesive							
Other Plastics and Rubber	Other Filler	—	0.005769	20.979708	209797	0.147660	1477
Precious Metals	Silver	7440-22-4	0.021729	79.020292	790203	0.556165	5562
Sub-total	—	—	0.027498	100	1000000	0.703825	7038
Lead Frame							
Copper and Its Alloys	Copper	7440-50-8	0.7503	50.020000	500200	19.204303	192043
Nickel and Its Alloys	Nickel	7440-02-0	0.1209	8.060000	80600	3.094496	30945
Other Inorganic Materials	Silica	7631-86-9	0.47799	31.866000	318660	12.234392	122344
Other Nonferrous Metals and Alloys	Metal Hydroxide	Trade Secret	0.0459	3.060000	30600	1.174833	11748

Other Plastics and Rubber	Carbon	7440-44-0	0.00126	0.084000	840	0.032250	323
Thermoplastics	Epoxy	85954-11-6	0.10365	6.910000	69100	2.652973	26530
Sub-total	—	—	1.50000	100	1000000	38.393248	383932
Lead Frame Plating							
Nickel and Its Alloys	Nickel	7440-02-0	0.38048	95.120000	951200	9.738575	97386
Precious Metals	Gold	7440-57-5	0.00312	0.780000	7800	0.079858	799
Precious Metals	Palladium	7440-05-3	0.0164	4.100000	41000	0.419766	4198
Sub-total	—	—	0.40000	100	1000000	10.238199	102382
Mold Compound							
Other Inorganic Materials	Fused Silica	60676-86-0	1.574079	84.810017	848100	40.289337	402893
Other Nonferrous Metals and Alloys	Metal Hydroxide	Trade Secret	0.096512	5.199983	52000	2.470273	24703
Other Organic Materials	Carbon Black	1333-86-4	0.003898	0.210021	2100	0.099771	998
Thermoplastics	Epoxy	85954-11-6	0.181517	9.779979	97800	4.646018	46460
Sub-total	—	—	1.856006	100	1000000	47.505399	475054
Semiconductor Device							
Ceramics / Glass	Doped Silicon	7440-21-3	0.110196	100.000000	1000000	2.820522	28205
Sub-total	—	—	0.110196	100	1000000	2.820522	28205
Total	—	—	3.906937	—	—	100	1000000

Assembly site: Ext-Mfg

RoHS	Yes
REACH	Yes
Device marking	BLG, BRY, DQA, BRG
Lead finish/Ball material	NIPDAU
MSL rating/Peak reflow	Level-1-260C-UNLIM
Rating	Catalog

Material content

Homogeneous Material Level Component Level							
Component	Substance	CAS Number	Amount (mg)	Percentage %	ppm	Percentage %	ppm
Bond Wire							
Precious Metals	Gold	7440-57-5	0.018098	99.994475	999945	0.484029	4840
Precious Metals	Palladium	7440-05-3	0.000001	0.005525	55	0.000027	0
Sub-total	—	—	0.018099	100	1000000	0.484056	4841
Die Attach Adhesive							
Other Inorganic Materials	Alkanes	68551-17-7	0.000312	1.000577	10006	0.008344	83
Other Organic Materials	Hydroxypropyl Methacrylate	27813-02-1	0.000312	1.000577	10006	0.008344	83
Other Plastics and Rubber	Other Filler	—	0.002183	7.000834	70008	0.058384	584
Precious Metals	Silver	7440-22-4	0.024945	79.998076	799981	0.667151	6672
Thermoplastics	Epoxy	85954-11-6	0.00343	10.999936	109999	0.091735	917
Sub-total	—	—	0.031182	100	1000000	0.833959	8340
Lead Frame							
Copper and Its Alloys	Copper	7440-50-8	1.703039	94.613278	946133	45.547567	455476
Other Nonferrous Metals and Alloys	Proprietary Metals (including Ag and Cu)	7440-22-4, 7440-50-8	0.096961	5.386722	53867	2.593210	25932
Sub-total	—	—	1.800000	100	1000000	48.140776	481408
Lead Frame Plating							
Nickel and Its Alloys	Nickel	7440-02-0	0.025682	95.118519	951185	0.686862	6869
Precious Metals	Gold	7440-57-5	0.000211	0.781481	7815	0.005643	56
Precious Metals	Palladium	7440-05-3	0.001107	4.100000	41000	0.029607	296
Sub-total	—	—	0.027000	100	1000000	0.722112	7221
Mold Compound							
Other Inorganic Materials	Aluminum Nitride	24304-00-5	0.006995	0.399983	4000	0.187080	1871
Other Inorganic Materials	Fused Silica	60676-86-0	1.535468	87.799980	878000	41.065901	410659
Other Nonferrous Metals and Alloys	Metal Oxide	Trade Secret	0.001749	0.100010	1000	0.046777	468
Other Organic Materials	Carbon Black	1333-86-4	0.003498	0.200020	2000	0.093554	936
Other Organic Materials	Organic Phosphorus	1330-78-5	0.010493	0.600003	6000	0.280634	2806
Other Plastics and Rubber	Silicone	218163-11-2	0.006995	0.399983	4000	0.187080	1871
Thermoplastics	Epoxy	85954-11-6	0.183627	10.500021	105000	4.911081	49111
Sub-total	—	—	1.748825	100	1000000	46.772107	467721
Semiconductor Device							
Ceramics / Glass	Doped Silicon	7440-21-3	0.113928	100.000000	1000000	3.046990	30470
Sub-total	—	—	0.113928	100	1000000	3.046990	30470
Total	—	—	3.739034	—	—	100	1000000

MTBF/FIT estimates

No results found

Qualification summary

Stress	Reference	Min lot qty	SS / lot	Condition	Duration	Result	Notes
HTOL	JESD22-A108	3	77	Life test, 125C	1000 hours	Pass	Or equivalent JEDEC condition
HTSL	JESD22-A103	3	25	High temp storage bake, 150C	1000 hours	Pass	Or equivalent JEDEC condition
AC/UHAST	JESD22-A102/JESD22-A118	3	25	Unbiased HAST 130C / 85% RH	96 hours	Pass	Or equivalent JEDEC condition
THB/HAST	JESD22-A101/JESD22-A110	3	25	HAST 130C/85%RH	96 hours	Pass	Or equivalent JEDEC condition
TC	JESD22-A104	3	25	Temperature cycle -65/150C	500 cycles	Pass	Or equivalent JEDEC condition
SD	J-STD-002	3	22	Per specification	>95% lead coverage	Pass	—
HBM	JS-001	1	3	ESD - HBM	Classification	See data sheet	—
CDM	JS-002	1	3	ESD - CDM	Classification	See data sheet	—
LU	JESD78	1	3	Latch-up	Per JESD78	Pass	As applicable per JESD78
MSL	J-STD-020	—	—	Per J-STD-020	Classification	See data sheet	—

Ongoing reliability monitoring

No results found

Additional resources

[General quality guidelines](#)

[Certifications](#)

[Conflict minerals specialized disclosure report](#)

[Restricted chemical test report](#)

For additional component information, please visit [Material content search](#)

For additional information, please contact [TI customer support center](#)

Important Notice and Disclaimer

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to [TI's Terms of Sale](#) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.