*TL2845BD*

# *Quality, reliability & packaging data download*

Status: ACTIVE

Report date: 06/29/2022

Assembly site: **TI MALAYSIA A/T**

| | |
|---|---|
| **RoHS** | Yes |
| **REACH** | Yes |
| **Device marking** | TL2845B |
| **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** | | | | | | | |
| Copper and Its Alloys | Copper | 7440-50-8 | 0.042105 | 99.997625 | 999976 | 0.025997 | 260 |
| Precious Metals | Silver | 7440-22-4 | 0.000001 | 0.002375 | 24 | 0.000001 | 0 |
| Sub-total | — | — | 0.042106 | 100 | 1000000 | 0.025997 | 260 |
| **Die Attach Adhesive** | | | | | | | |
| Precious Metals | Silver | 7440-22-4 | 0.739717 | 80.000022 | 800000 | 0.456718 | 4567 |
| Thermoplastics | Epoxy | 85954-11-6 | 0.184929 | 19.999978 | 200000 | 0.114179 | 1142 |
| Sub-total | — | — | 0.924646 | 100 | 1000000 | 0.570897 | 5709 |
| **Lead Frame** | | | | | | | |
| Copper and Its Alloys | Copper | 7440-50-8 | 51.63279 | 99.870000 | 998700 | 31.879258 | 318793 |
| Copper and Its Alloys | Iron | 7439-89-6 | 0.0517 | 0.100000 | 1000 | 0.031921 | 319 |
| Copper and Its Alloys | Phosphorus | 7723-14-0 | 0.01551 | 0.030000 | 300 | 0.009576 | 96 |
| Sub-total | — | — | 51.70000 | 100 | 1000000 | 31.920755 | 319208 |
| **Lead Frame Plating** | | | | | | | |
| Nickel and Its Alloys | Nickel | 7440-02-0 | 0.741936 | 95.120000 | 951200 | 0.458088 | 4581 |
| Precious Metals | Gold | 7440-57-5 | 0.006084 | 0.780000 | 7800 | 0.003756 | 38 |
| Precious Metals | Palladium | 7440-05-3 | 0.03198 | 4.100000 | 41000 | 0.019745 | 197 |
| Sub-total | — | — | 0.780000 | 100 | 1000000 | 0.481590 | 4816 |
| **Mold Compound** | | | | | | | |
| Other Inorganic Materials | Fused Silica | 60676-86-0 | 92.831731 | 88.000000 | 880000 | 57.316420 | 573164 |
| Other Plastics and Rubber | Carbon Black | 1333-86-4 | 0.316472 | 0.300000 | 3000 | 0.195397 | 1954 |
| Other Plastics and Rubber | Organic Phosphorus | 1330-78-5 | 0.580198 | 0.550000 | 5500 | 0.358227 | 3582 |
| Thermoplastics | Epoxy | 85954-11-6 | 11.762202 | 11.150000 | 111500 | 7.262251 | 72623 |
| Sub-total | — | — | 105.490603 | 100 | 1000000 | 65.132295 | 651323 |
| **Semiconductor Device** | | | | | | | |
| Ceramics / Glass | Doped Silicon | 7440-21-3 | 3.026234 | 100.000000 | 1000000 | 1.868466 | 18685 |
| Sub-total | — | — | 3.026234 | 100 | 1000000 | 1.868466 | 18685 |
| Total | — | — | 161.963589 | — | — | 100 | 1000000 |

## MTBF/FIT estimates

| **MTBF / FIT** | | | | **MTBF / FIT supporting data** | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **MTBF** | **FIT** | **Usage temp (°C)** | **Conf level (%)** | **Activation energy (eV)** | **Test temp (°C)** | **Test duration (hours)** | **Sample size** | **Fails** | **Additional comments** |
| 1.54×10^9 | 0.6 | 55 | 60 | 0.7 | 125 | 1000 | 39752 | 1 | — |

# Qualification summary

| Stress | Reference | Min lot qty | SS / lot | Condition | Duration | Result |
|---|---|---|---|---|---|---|
| HTOL | JESD22-A108 | 3 | 77 | Life test, 125C | 1000 hours | Pass |
| HTSL | JESD22-A103 | 3 | 25 | High temp storage bake 150C | 1000 hours | Pass |
| AC/UHAST | JESD22-A102/JESD22-A118 | 3 | 25 | Autoclave 121C or unbiased HAST 130C / 85% RH | 96 hours | Pass |
| THB/HAST | JESD22-A101/JESD22-A110 | 3 | 25 | THB 85C/85%RH or HAST 130C/110C/85%RH | 1000 hours or 96 hours | Pass |
| TC | JESD22-A104 | 3 | 25 | Temperature cycle -65/150C | 500 cycles | Pass |
| SD | J-STD-002 | 3 | 22 | Per specification | >95% lead coverage | Pass |
| HBM | JS-001 | 1 | 3 | ESD - HBM | Classification | See data sheet |
| CDM | JESD22-C101 | 1 | 3 | ESD - CDM | Classification | See data sheet |
| LU | JESD78 | 1 | 3 | Latch-up | Per JESD78 | Pass |
| MSL | J-STD-020 | — | — | Per J-STD-020 | Classification | See data sheet |

# Ongoing reliability monitoring

## FAB process reliability data

| Fab Process | Reliability Test | Rolling Year (2Q21 - 1Q22) Sample Size | Cumulative Sample Size | Disposition |
|---|---|---|---|---|
| BIPOLAR | High Temperature Operating Life, 125C, 1000 Hours (or Equivalent) | 561 | 17445 | Pass |

## Assembly process reliability data

| Package Family | Reliability Test | Rolling Year (2Q21 - 1Q22) Sample Size | Cumulative Sample Size | Disposition |
|---|---|---|---|---|
| SOIC | Autoclave, 121C, 96 Hours | 7946 | 87021 | Pass |
| SOIC | Biased HAST, 110C/85%RH, 264 Hours | 518 | 518 | Pass |
| SOIC | Biased HAST, 130C/85%RH, 96 Hours | 2774 | 56055 | Pass |
| SOIC | High Temperature Storage Life, 150C, 1000 Hours | 899 | 19089 | Pass |
| SOIC | High Temperature Storage Life, 170C, 420 Hours | 231 | 30094 | Pass |
| SOIC | Temperature Cycle, -40/125C, 850 Cycles | 0 | 231 | Pass |
| SOIC | Temperature Cycle, -55/125C, 700 Cycles | 0 | 845 | Pass |
| SOIC | Temperature Cycle, -65/150C, 500 Cycles | 11025 | 133015 | Pass |
| SOIC | Temperature-Humidity Bias Test (85C/85%RH), 1000 Hours | 0 | 1823 | Pass |
| SOIC | Unbiased HAST, 110C/85%RH, 264 Hours | 178 | 158 | Pass |
| SOIC | Unbiased HAST, 130C/85%RH, 96 Hours | 717 | 15449 | Pass |

## 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

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