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Texas Instruments Enhanced Products Reliability Report

(Subject To Attached Disclaimers)

Device Type/Device Family: TLC7705QPWREP
 Package Type: 8 TSSOP
 Wafer Fabrication Facility: Dallas Linear
 Assembly/Test Facility: Ti Malaysia
 Compiled: 04/11

Biased Life Test

Test Method: JESD22-A108
 Test Condition: 150°/500 hours
 Sample Size: 847
 Rejects: 0
 Activation Energy (eV): .7
 Equivalent Device Hours: 124.07E6
 Failure Rate (FIT)*: 7.4

*Derated to +55°C with a 60% Confidence Level

Note: Data for EP product is specific to device technology and foundry. For this reason the FIT rate above may differ from Ti's external web page. This does not reflect a difference in quality but only a difference in sample size.

Package Related Tests

| <u>Description</u> | <u>Condition</u> | <u>Referenced Method</u> | <u>Sample Size/Rejects</u> | |
|-------------------------|--|----------------------------|----------------------------|---|
| Biased Humidity or HAST | 130°C / 85% / 250 hours** | JESD22-A101 JESD22-A110 | 231/0 | * |
| Autoclave | 121 °C @ 2 atmospheres absolute for 96 hours | JESD22-A102 | 231/0 | * |
| Temperature Cycle | -65 °C to +150 °C non-biased for 1000 cycles | JESD22-A104 | 231/0 | * |
| High Temp Storage | 170 °C / 420 hours | JESD22-A103-A | 77/0 | * |

* Preconditioning per JEDEC Std. 22, Method A112/A113

** This device has been qualified to the elevated standard of 250 Hrs 130/85 HAST (Highly Accelerated Stress Test). This qualification level surpasses JEDEC requirements.

Initial Product Qualification

The subject Enhanced Plastic device, device family, and/or package family have passed Texas Instruments product qualification as follows:

| <u>Description</u> | <u>Condition</u> | <u>Sample Size</u> | <u>Referenced Method</u> | |
|-------------------------------------|---|--------------------|------------------------------------|---|
| Electrical Characterization | TI Data Sheet | 50 units/lot | N/A | |
| Electrostatic Discharge Sensitivity | HBM MM | 3 units/voltage | EIA/JESD22-A114 EIA/JESD22-A115 | |
| Latch-up | Per Technology | 5/0 units/lot | EIA/JESD78 | |
| Physical Dimensions | TI Data Sheet | 5/0 | EIA/JESD22- B100 | |
| Thermal Impedance | Theta-JA on board | Per Pin-Package | EIA/JESD51 | |
| Bias Life Test | 125°C / 1000 hours or equivalent | 116/0 | JESD22-A108 | * |
| Biased Humidity | 85°C / 85% / 1000 hours or HAST | 77/0 | JESD22-A101 | * |
| | 130°C / 85% / 96 hours | | JESD22-A110 | |
| Autoclave | 121 °C @ 2 atmospheres absolute for 96 hours | 77/0 | JESD22-A102 | * |
| Temperature Cycle | -65 °C to +150 °C non-biased for 1,000 cycles | 77/0 | JESD22-A104 | * |
| Solder Heat | 260 °C for 10 seconds | 22/0 | JESD22-B106 | |
| Resistance to Solvents | Ink symbol only | 12/0 | JESD22-B107 | |
| Solderability | Condition A (steam age for 8 hours) | 22/0 | ANSI/J-STD-002-92 | |
| Flammability | Method A / Method B | 5/0 | UL-1964 | |
| Bond Strength | - | 76/0 wires | ASTM F-459 | |
| Die Shear | - | 5/0 | MIL-STD-883 Method 2019 | |
| High Temp Storage | 150 °C / 1,000 hours | 45/0 | JESD22-A103-A | * |
| Moisture Sensitivity | Surface Mount Only | 12/0 | J-STD-020-A | |

* Precondition performed

Supplemental Device Characteristics

| | | | |
|-----------------|--------------|-------------------|------------------|
| Die Revision: | A | Assembly Site: | MLA |
| Master Die: | BTLC7705SAIK | Package Type: | PW |
| Wafer Fab: | DLIN | Pin Count: | 20 |
| Fab Technology: | BiCmos | Mold Compound: | Nitto GE-1030MDP |
| Fab Process: | LBC2 | Mount Compound: | Hitachi EN4088Z |
| Process Code: | - | Bond: | .96 Mil Au |
| Passivation: | Nitride | Lead Composition: | Cu |
| Metal System | Two Layer | Lead Finish: | NiPdAu |
| | | Die Size: | 57x69 Mils |

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