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# Texas Instruments Enhanced Plastic Products Reliability Report

(Subject To Attached Disclaimers)

| | |
|---|---|
| Device Type/Device Family: | TMS5703137CGWTMEP |
| Package Type: | 337/GWT |
| Wafer Fabrication Facility: | TSMC-F14 |
| Assembly/Test Facility: | TIPI |
| Compiled: | 10/13 |

## Biased Life Test

| | |
|---|---|
| Test Method: | JESD22-A108 |
| Test Condition: | 125°C / 1000 hours or equivalent |
| Sample Size: | 6189 |
| Rejects: | 3 |
| Activation Energy (eV): | 0.5 |
| Equivalent Device Hours: | 1.70E+08 |
| Failure Rate (FIT)*: | 3 |

*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

| Description | Condition | Referenced Method | Sample Size | Rejects | |
|---|---|---|---|---|---|
| Biased Humidity or HAST | 85°C / 85% / 1000 hours or 130°C / 85% / 96 hours | JESD22-A101 or JESD22-A110 | 615 | 0 | * |
| Autoclave or Unbiased HAST | 121°C / 2 atm / 96 hours or 130°C / 85% / 96 hours | JESD22-A102 | 231 | 0 | * |
| Temperature Cycle | -65°C to +150°C non-biased for 500 cycles or equivalent | JESD22-A104 | 231 | 0 | * |
| High Temp Storage | 150°C / 1,000 hours | JESD22-A103-A | 77 | 0 | * |

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

## Initial Product Qualification

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

| Description | Condition | Referenced Method | Sample Size | |
|---|---|---|---|---|
| Electrical Characterization | TI Data Sheet | N/A | 3 lot(s)/30 Units | |
| Electrostatic Discharge Sensitivity | HBM<br>MM<br>CDM | EIA/JESD22-A114<br>EIA/JESD22-A115<br>JESD22-C101 | N/A<br>N/A<br>N/A | |
| Latch-up | Per Technology | EIA/JESD78 | 20/0 | |
| Physical Dimensions | TI Data Sheet | EIA/JESD22- B100 | 30/0 | |
| Thermal Impedance | Theta-JA on board | EIA/JESD51 | Per Pin-Package | |
| Bias Life Test | 125°C / 1000 hours or equivalent | JESD22-A108 | 231/0 | |
| Biased Humidity or HAST | 85°C / 85% / 1000 hours or 130°C / 85% / 96 hours | JESD22-A101<br>JESD22-A110 | 615/1 See Note below | * |
| Autoclave or Unbiased HAST | 121°C @ 2 atm / 96 hours or 130°C / 85% / 96 hours | JESD22-A102<br>JESD22-A110 | 231/0 | * |
| Temperature Cycle | -65°C to +150°C non-biased for 500 cycles or equivalent | JESD22-A104 | 231/0 | * |
| High Temp Storage | 150°C / 1,000 hours | JESD22-A103-A | 45/0 | * |
| Solderability | Condition A (steam age for 8 hours) | ANSI/J-STD-002-92 | N/A | |
| Bond Strength | - | ASTM F-459 | / | |
| Moisture Sensitivity | Surface Mount Only | J-STD-020-A | 24/0 | |

* Preconditioning per JEDEC Std. 22, Method A112/A113
Note: THB fail at 500 hrs associated with improper PCC wirebond profile; 8D report available. EP device with Au wire not susceptible to this fail mode.

## Suplemental Device Characteristics

Master Die: YF771529C/Q
Wafer Fab: TSMC-F14
Fab Process: 12F021.M6
Fab Technology: CMOS
Die Revision: C
Passivation:
Metal 1: Cu
Metal 2: Cu
Metal 3: Cu
Metal 4: Cu
Metal 5: Cu
Metal 6: Cu + AlCap (AlCu bond pad)

Assembly Site: TIPI
Pin/Package Type: 337/GWT
Solder Ball Composition: SnPb

Mount Compound: ABLESTIK 2000T
Bond: Au/0.8 MILS
Mold Compound: SHINETSU KMC3580LTVA
Packaged Die Thickness: 11 MILS/ 280 UM
MSL Level: LEVEL3-260CG
ESD Class (per MIL-PRF-38535): 2kV HBM; 500V CDM

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