| PCN Number: | 20161104001 | PCN Date: | Nov 07 2016 |
|---|---|---|---|
| Title: | Qualification of additional Assembly & Test sites for select devices in the SOT Package | | |
| Customer Contact: | PCN Manager | Dept: | Quality Services |
| Proposed 1st Ship Date: | Feb 07 2017 | Estimated Sample Availability: | Provided upon Request |

**Change Type:**

| | | | | | |
|---|---|---|---|---|---|
| ☒ | Assembly Site | ☐ | Assembly Process | ☒ | Assembly Materials |
| ☐ | Design | ☐ | Electrical Specification | ☐ | Mechanical Specification |
| ☒ | Test Site | ☐ | Packing/Shipping/Labeling | ☐ | Test Process |
| ☐ | Wafer Bump Site | ☐ | Wafer Bump Material | ☐ | Wafer Bump Process |
| ☐ | Wafer Fab Site | ☐ | Wafer Fab Materials | ☐ | Wafer Fab Process |
| | | ☐ | Part number change | | |

## PCN Details

**Description of Change:**

Texas Instruments is pleased to announce the qualification of JCET Chuzhou and GTBF as alternate Assembly and Test sites for the devices listed in the Product Affected section below. Construction differences are as follows:

| What | NFME | JCETCZ | GTBF |
|---|---|---|---|
| Mount Compound | SID# A-06 | **S#011204001902** | **S#011204001902** |
| Mold Compound | SID#R-17 | **S#013101006201** | **SID#EN0000052** |

Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.

**Reason for Change:**

Continuity of Supply

**Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):**

None

**Anticipated impact on Material Declaration**

| | | | |
|---|---|---|---|
| ☐ | No Impact to the Material Declaration | ☒ | Material Declarations or Product Content reports are driven from production data and will be available following the production release. Upon production release the revised reports can be obtained from the TI ECO website. |

**Changes to product identification resulting from this PCN:**

| Assembly Site | Assembly Site Origin (22L) | Assembly Country Code (21L) | Assembly City |
|---|---|---|---|
| NFME | NFM | CHN | Economic Development Zone |
| **JCETCZ** | **GP6** | **CHN** | **Chuzhou Anhui** |
| **GTBF** | **GTF** | **CHN** | **Sci. Park Phasell Shatin** |

Sample product shipping label (not actual product label)


**Topside Device marking (if included)**:
Assembly site code for NFM= E
**Assembly site code for GP6 = F**
**Assembly site code for GTF= T**

## Product Affected

**Group 1 Devices: Current AT - NFME; New AT - GTBF & JCETCZ:**

| | | | |
|---|---|---|---|
| TLV1117-15CDCYR | TLV1117-25CDCYRG3 | TLV1117-33IDCYR | TLV1117-50IDCYR |
| TLV1117-15CDCYRG3 | TLV1117-25IDCYR | TLV1117-33IDCYRG3 | TLV1117-50IDCYRG3 |
| TLV1117-15IDCYR | TLV1117-33CDCYR | TLV1117-50CDCYR | UA78M08CDCYR |
| TLV1117-25CDCYR | TLV1117-33CDCYRG3 | TLV1117-50CDCYRG3 | |

**Group 2 Devices: Current AT - NFME & JCETCZ; New AT – GTBF:**

| | | | |
|---|---|---|---|
| LM317DCYR | TLV1117-18CDCYRG3 | TLV1117CDCYRG3 | UA78M05CDCYRG3 |
| LM317DCYRG3 | TLV1117-18IDCYR | TLV1117IDCYR | UA78M05IDCYR |
| LM317MDCYR | TLV1117-18IDCYRG3 | TLV1117IDCYRE3 | UA78M05IDCYRG3 |
| LM317MDCYRG3 | TLV1117CDCYR | TLV1117IDCYRG3 | UA78M33CDCYR |
| SN78MCDCYR | TLV1117CDCYRE3 | UA78M05CDCYR | UA78M33CDCYRG3 |
| TLV1117-18CDCYR | | | |

# Qualification Report

## Additional 4 pin DCY package offload to JCETCZ
**Approve Date 11-Aug-2016**

**Product Attributes**

| Attributes | Qual Device: TLV1117-15CDCYR | Qual Device: TLV1117-25CDCYR | Qual Device: TLV1117-33CDCYR | Qual Device: TLV1117-50CDCYR | Qual Device: UA78M08CDCYR | QBS Package Reference: LM317DCYR |
|---|---|---|---|---|---|---|
| **Assembly Site** | JCET CHUZHOU | JCET CHUZHOU | JCET CHUZHOU | JCET CHUZHOU | JCET CHUZHOU | JCET CHUZHOU |
| **Package Family** | SOT223 | SOT223 | SOT223 | SOT223 | SOT223 | SOT223 |
| **Flammability Rating** | UL 94 V-0 | UL 94 V-0 | UL 94 V-0 | UL 94 V-0 | UL 94 V-0 | UL 94 V-0 |
| **Wafer Fab Supplier** | SFAB | SFAB | SFAB | SFAB | SFAB | SFAB |
| **Wafer Process** | JI1 | JI1 | JI1 | JI1 | JI1 | JI1 |

- QBS: Qual By Similarity
- Qual Devices qualified at LEVEL2-260CG: TLV1117-33CDCYR, TLV1117-25CDCYR, TLV1117-15CDCYR, TLV1117-50CDCYR, UA78M08CDCYR

**Qualification Results**

Data Displayed as: Number of lots / Total sample size / Total failed

| Type | Test Name / Condition | Duration | Qual Device: TLV1117-15CDCYR | Qual Device: TLV1117-25CDCYR | Qual Device: TLV1117-33CDCYR | Qual Device: TLV1117-50CDCYR | Qual Device: UA78M08CDCYR | QBS Package Reference: LM317DCYR |
|---|---|---|---|---|---|---|---|---|
| AC | Autoclave 121C, 2 atm | 96 Hours | - | - | - | - | - | 3/231/0 |
| ED | Electrical Characterization | Datasheet Parameters | Pass | Pass | Pass | Pass | Pass | Pass |
| FLAM | Flammability (IEC 695-2-2) | -- | - | - | - | - | - | 3/15/0 |
| FLAM | Flammability (UL 94V-0) | -- | - | - | - | - | - | 3/15/0 |
| FLAM | Flammability (UL-1694) | -- | - | - | - | - | - | 3/15/0 |
| HAST | Biased HAST, 130C/85%RH | 96 Hours | - | - | - | - | - | 3/231/0 |
| HTOL | Life Test, 150C | 300 Hours | - | - | - | - | - | 3/231/0 |
| HTSL | High Temp. Storage Bake, 170C | 600 Hours | - | - | - | - | - | 3/231/0 |
| LI | Lead Fatigue | Leads | - | - | - | - | - | 3/66/0 |
| LI | Lead Pull to Destruction | Leads | - | - | - | - | - | 3/66/0 |
| PD | Physical Dimensions | -- | - | - | - | - | - | Pass |
| SD | Surface Mount Solderability | Pb Free | - | - | - | - | - | 3/66/0 |
| TC | Temperature Cycle, -65/150C | 1000 Cycles | - | - | - | - | - | 3/227/0 |
| WBP | Bond Pull | Wires | - | - | - | 1/76/0 | 1/76/0 | 3/228/0 |
| WBS | Ball Bond Shear | Wires | - | - | - | 1/76/0 | 1/76/0 | 3/228/0 |

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable
- The following are equivalent HTOL options based on activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/

**Green/Pb-free Status:**

Qualified Pb-Free(SMT) and Green

# Qualification Report

## Qualify GTBF as Subcon A/T Site for PWR Packages: Phase 2 Devices (SOT 223 –DCY (4-pin))

### Product Attributes

| Attributes | Qual Device: LM317DCY | Qual Device: LM317MDCYR | Qual Device: TLV1117-50IDCYR |
|---|---|---|---|
| **Wafer Fab Supplier** | SFAB | SFAB | SFAB |
| **Wafer Process** | JI1 | JI1 | JI1 |
| **Assembly Site** | GTBF | GTBF | GTBF |
| **Package Family** | SOT223 | SOT223 | SOT223 |
| **Package Designator** | DCY | DCY | DCY |

- Qual Device LM317DCY is qualified at LEVEL2-260CG
- Qual Device TLV1117-50IDCYR is qualified at LEVEL2-260CG
- Qual Device LM317MDCYR is qualified at LEVEL2-260CG

### Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

| Type | Test Name / Condition | Duration | Qual Device: LM317DCY | Qual Device: LM317MDCYR | Qual Device: TLV1117-50IDCYR |
|---|---|---|---|---|---|
| - | Burn In, 125C | 336 Hours | 1/77/0 | - | 1/77/0 |
| AC | Autoclave, 121C | 96 Hours | 3/77/0 | 1/77/0 | 1/77/0 |
| CDM | ESD CDM | +/- 1000V | 3/3/0 | - | - |
| ED | Electrical Characterization | Per Datasheet Parameters | 3/10/0 | - | - |
| HAST | Biased HAST, 130C/85%RH | 96 Hours | 3/77/0 | - | - |
| HTSL | High Temperature Storage Life, 170C | 420 Hours | 3/77/0 | - | 1/77/0 |
| MSL | Moisture Sensitivity | Level 2 – 260CG | 3/12/0 | 1/12/0 | - |
| TC | Temperature Cycling, 65C/150C | 500 Cycles | 3/77/0 | - | 1/77/0 |
| TS | Thermal Shock, -65C/+150C | 200 Cycles | 3/77/0 | - | 1/77/0 |
| VM | Visual Quality Reliability Inspection | Post Autoclave (96 Hours) | PASS | PASS | PASS |
| VM | Visual Quality Reliability Inspection | Post Biased HAST (96 hours) | PASS | - | - |
| VM | Visual Quality Reliability Inspection | Post Temp Cycle (500 Cycles) | PASS | - | PASS |
| VM | Visual Quality Reliability Inspection | Post Thermal Shock (500 Cycles) | PASS | - | PASS |
| YLD | FTY and Bin Summary | - | PASS | PASS | PASS |

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable
- The following are equivalent HTOL options based on an activation energy of 0.7eV: 125C/1000 Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV: 150C/1000 Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47: -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/

**Green/Pb-free Status:**

Qualified Pb-Free (SMT) and Green

For questions regarding this notice, e-mails can be sent to the regional contacts shown below or your local Field Sales Representative.

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