

|  |  |                                       |                                 |                          |
|--|--|---------------------------------------|---------------------------------|--------------------------|
| <b>PCN Number:</b>   | 20150928000A   |                                       | <b>PCN Date:</b>                | 11/24/2015               |
| <b>Title:</b>  | Qualification of TIPI as Additional Assembly and Test Site for Select SOT-23 Package Devices |                                       |                                 |                          |
| <b>Customer Contact:</b>   | <a href="#">PCN Manager</a>  | <b>Dept:</b>                          | Quality Services                |                          |
| <b>Proposed 1<sup>st</sup> Ship Date:</b>  | 02/24/2016   | <b>Estimated Sample Availability:</b> | Date Provided at Sample request |                          |
| <b>Change Type:</b>  |  |                                       |                                 |                          |
| <input checked="" type="checkbox"/>  | Assembly Site  | <input type="checkbox"/>              | Design                          | <input type="checkbox"/> |
| <input type="checkbox"/>   | Assembly Process   | <input type="checkbox"/>              | Data Sheet                      | <input type="checkbox"/> |
| <input checked="" type="checkbox"/>  | Assembly Materials   | <input type="checkbox"/>              | Part number change              | <input type="checkbox"/> |
| <input type="checkbox"/>   | Mechanical Specification   | <input checked="" type="checkbox"/>   | Test Site                       | <input type="checkbox"/> |
| <input checked="" type="checkbox"/>  | Packing/Shipping/Labeling  | <input type="checkbox"/>              | Test Process                    | <input type="checkbox"/> |
|  |  | <input type="checkbox"/>              | Wafer Bump Site                 | <input type="checkbox"/> |
|  |  | <input type="checkbox"/>              | Wafer Bump Material             | <input type="checkbox"/> |
|  |  | <input type="checkbox"/>              | Wafer Bump Process              | <input type="checkbox"/> |
|  |  | <input type="checkbox"/>              | Wafer Fab Site                  | <input type="checkbox"/> |
|  |  | <input type="checkbox"/>              | Wafer Fab Materials             | <input type="checkbox"/> |
|  |  | <input type="checkbox"/>              | Wafer Fab Process               | <input type="checkbox"/> |
| <b>PCN Details</b>   |  |                                       |                                 |                          |
| <b>Description of Change:</b>  |  |                                       |                                 |                          |
| Revision A is to announce the <u>addition</u> of new devices that were not included on the original PCN notification. These new devices are highlighted in the device list below under Product Affected Group 2. The expected first shipment date for these new devices will be 90 days from this notice for these newly added devices only. |  |                                       |                                 |                          |
| Texas Instruments Incorporated is announcing the qualification of TIPI as Additional Assembly and Test Site for select devices listed in the "Product Affected" Section. Current assembly sites and Material differences are as follows.   |  |                                       |                                 |                          |
| <b>Group 1 Devices:</b>  |  |                                       |                                 |                          |
| <b>Assembly Site</b>   | <b>Assembly Site Origin</b>  | <b>Assembly Country Code</b>          | <b>Assembly Site City</b>       |                          |
| NFME   | NFM  | CHN                                   | Nantong, Jiangsu                |                          |
| <a href="#">TI Philippines</a>   | <a href="#">PHI</a>  | <a href="#">PHL</a>                   | <a href="#">Baguio City</a>     |                          |
| <b>Material Components:</b>  |  |                                       |                                 |                          |
|  | <b>Current</b>   | <b>Additional Material</b>            |                                 |                          |
| Mount Compound   | SID #A-03  | 4207173                               |                                 |                          |
| Wire Type  | Au   | Cu                                    |                                 |                          |
| Mold compound  | SID #R-13  | 4222226                               |                                 |                          |
| <b>Group 2 Devices:</b>  |  |                                       |                                 |                          |
| <b>Assembly Site</b>   | <b>Assembly Site Origin</b>  | <b>Assembly Country Code</b>          | <b>Assembly Site City</b>       |                          |
| NFME   | NFM  | CHN                                   | Nantong, Jiangsu                |                          |
| LEN  | LIN  | TW                                    | Taichung                        |                          |
| <a href="#">TI Philippines</a>   | <a href="#">PHI</a>  | <a href="#">PHL</a>                   | <a href="#">Baguio City</a>     |                          |
| <b>Material Components:</b>  |  |                                       |                                 |                          |
|  | <b>Current</b>   |                                       | <b>Additional Material</b>      |                          |
|  | <b>NFME</b>  | <b>LEN</b>                            | <a href="#">TI Philippines</a>  |                          |
| Mount Compound   | SID #A-03  | SID#0003C10332                        | 4207173                         |                          |
| Wire Type  | Au   | Au                                    | Cu                              |                          |
| Mold compound  | SID #R-13  | SID#0011G60007                        | 4222226                         |                          |
| Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.   |  |                                       |                                 |                          |
| <b>Reason for Change:</b>  |  |                                       |                                 |                          |
| Continuity of supply.  |  |                                       |                                 |                          |
| <b>Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):</b>  |  |                                       |                                 |                          |

None

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

|                                |                            |                          |
|--------------------------------|----------------------------|--------------------------|
| Assembly Site                  |                            |                          |
| NFME                           | Assembly Site Origin (22L) | ASO: NFM                 |
| LEN                            | Assembly Site Origin (22L) | ASO: LIN                 |
| <a href="#">TI-Philippines</a> | Assembly Site Origin (22L) | ASO: <a href="#">PHI</a> |

Sample product shipping label (not actual product label)

**TEXAS INSTRUMENTS**  
 MADE IN: Malaysia  
 2DC: 2Q:  
 MSL '2 /260C/1 YEAR SEAL DT  
 MSL 1 /235C/UNLIM 03/29/04  
 OPT: 39  
 ITEM:  
**LBL: 5A (L)TO:1750**

**(1P) SN74LS07NSR**  
**(Q) 2000 (D) 0336**  
**(31T) LOT: 3959047MLA**  
**(4W) TKY (1T) 7523483SI2**  
 (P)  
 (2P) REV: (V) 0033317  
 (20L) CSO: SHE (21L) CCO:USA  
 (22L) **ASO: MLA** (23L) ACO: MYS

ASSEMBLY SITE CODES: NFME = E, LEN = 3, [TIPI](#) = W

**Product Affected Group 1:**

|                |                |                |              |
|----------------|----------------|----------------|--------------|
| TPS76933DBVR   | TPS76933DBVT   | TPS77025DBVR   | TPS77025DBVT |
| TPS76933DBVRG4 | TPS76933DBVTG4 | TPS77025DBVRG4 |              |

**Product Affected Group 2:**

|               |                  |                |                |
|---------------|------------------|----------------|----------------|
| 900-0380801   | TPS2051CDBVT     | TPS76133DBVT   | TPS76950DBVT   |
| 905X0205100   | TPS2061CDBVR     | TPS76133DBVTG4 | TPS76950DBVTG4 |
| FX1077        | TPS2061CDBVT     | TPS76138DBVR   | TPS77012DBVR   |
| HPA00385DBVR  | TPS2065CDBVR     | TPS76138DBVT   | TPS77012DBVT   |
| HPA00714DBVR  | TPS2065CDBVR-2   | TPS76150DBVR   | TPS77012DBVTG4 |
| HPA01085DBVR  | TPS2065CDBVT     | TPS76150DBVRG4 | TPS77015DBVR   |
| HPA01085DVBR  | TPS2065CDBVT-2   | TPS76150DBVT   | TPS77015DBVT   |
| HPA01091DBVR  | TPS2069CDBVR     | TPS76150DBVTG4 | TPS77015DBVTG4 |
| HPA01198DBVR  | TPS2069CDBVT     | TPS76316DBVR   | TPS77018DBVR   |
| HPA02257DBVR  | TPS2513DBVR      | TPS76316DBVRG4 | TPS77018DBVRG4 |
| SN1409057DBVR | TPS2513DBVT      | TPS76316DBVT   | TPS77018DBVT   |
| TLV70130DBVR  | TPS2514DBVR      | TPS76316DBVTG4 | TPS77018DBVTG4 |
| TLV70130DBVT  | TPS2514DBVT      | TPS76318DBVR   | TPS77027DBVR   |
| TLV70133DBVR  | TPS2552DBVR      | TPS76318DBVRG4 | TPS77027DBVRG4 |
| TLV70133DBVT  | TPS2552DBVT      | TPS76318DBVT   | TPS77027DBVT   |
| TLV70212DBVR  | TPS2553DBVR      | TPS76318DBVTG4 | TPS77027DBVTG4 |
| TLV70212DBVT  | TPS2553DBVR-1    | TPS76325DBVR   | TPS77028DBVR   |
| TLV70215DBVR  | TPS2553DBVT      | TPS76325DBVRG4 | TPS77028DBVT   |
| TLV70215DBVT  | TPS2553DBVT-1    | TPS76325DBVT   | TPS77028DBVTG4 |
| TLV70215PDBVR | TPS3110E15DBVR   | TPS76325DBVTG4 | TPS77030DBVR   |
| TLV70215PDBVT | TPS3110E15DBVRG4 | TPS76327DBVR   | TPS77030DBVRG4 |
| TLV70218DBVR  | TPS3110E15DBVT   | TPS76327DBVT   | TPS77030DBVT   |
| TLV70218DBVT  | TPS3110E15DBVTG4 | TPS76327DBVTG4 | TPS77030DBVTG4 |
| TLV70220PDBVR | TPS3124J18DBVR   | TPS76328DBVR   | TPS77033DBVR   |
| TLV70220PDBVT | TPS3124J18DBVT   | TPS76328DBVRG4 | TPS77033DBVRG4 |
| TLV70225DBVR  | TPS3124J18DBVTG4 | TPS76328DBVT   | TPS77033DBVT   |
| TLV70225DBVT  | TPS3125J12DBVR   | TPS76328DBVTG4 | TPS77033DBVTG4 |
| TLV70228DBVR  | TPS3125J12DBVRG4 | TPS76330DBVR   | TPS77050DBVR   |

|                |                  |                |                 |
|----------------|------------------|----------------|-----------------|
| TLV70228DBVT   | TPS3125J12DBVT   | TPS76330DBVRG4 | TPS77050DBVRG4  |
| TLV70228PDBVR  | TPS3125J12DBVTG4 | TPS76330DBVT   | TPS77050DBVT    |
| TLV70228PDBVT  | TPS3125L30DBVR   | TPS76330DBVTG4 | TPS77050DBVTG4  |
| TLV70229DBVR   | TPS3125L30DBVRG4 | TPS76333DBVR   | TPS78833DBVR    |
| TLV70229DBVT   | TPS3125L30DBVT   | TPS76333DBVRG4 | TPS78833DBVT    |
| TLV70230DBVR   | TPS3125L30DBVTG4 | TPS76333DBVT   | TPS78833DBVTG4  |
| TLV70230DBVT   | TPS3808G01DBVR   | TPS76333DBVTG4 | TPS79118DBVR    |
| TLV70231DBVR   | TPS3808G01DBVRG4 | TPS76338DBVR   | TPS79118DBVRG4  |
| TLV70231DBVT   | TPS3808G01DBVT   | TPS76338DBVT   | TPS79118DBVT    |
| TLV70233DBVR   | TPS3808G01DBVTG4 | TPS76338DBVTG4 | TPS79118DBVTG4  |
| TLV70233DBVT   | TPS3808G09DBVR   | TPS76350DBVR   | TPS79133DBVR    |
| TLV70233PDBVR  | TPS3808G09DBVRG4 | TPS76350DBVRG4 | TPS79133DBVRG4  |
| TLV70233PDBVT  | TPS3808G09DBVT   | TPS76350DBVT   | TPS79133DBVT    |
| TLV70235DBVR   | TPS3808G09DBVTG4 | TPS76350DBVTG4 | TPS79133DBVTG4  |
| TLV70235DBVT   | TPS3808G18DBVR   | TPS76433DBVR   | TPS79147DBVR    |
| TLV70237DBVR   | TPS3808G18DBVRG4 | TPS76433DBVRG4 | TPS79147DBVT    |
| TLV70237DBVT   | TPS3808G18DBVT   | TPS76433DBVT   | TPS79147DBVTG4  |
| TLV70245DBVR   | TPS3808G18DBVTG4 | TPS76433DBVTG4 | TPS79225DBVR    |
| TLV70245DBVT   | TPS3808G30DBVR   | TPS76912DBVR   | TPS79225DBVT    |
| TLV702475DBVR  | TPS3808G30DBVRG4 | TPS76912DBVRG4 | TPS79225DBVTG4  |
| TLV702475DBVT  | TPS3808G30DBVT   | TPS76912DBVT   | TPS79228DBVR    |
| TLV70430DBVR   | TPS3808G30DBVTG4 | TPS76912DBVTG4 | TPS79228DBVRG4  |
| TLV70430DBVT   | TPS73018DBVR     | TPS76915DBVR   | TPS79228DBVT    |
| TLV70433DBVR   | TPS73018DBVRG4   | TPS76915DBVRG4 | TPS79228DBVTG4  |
| TLV70433DBVT   | TPS73018DBVT     | TPS76915DBVT   | TPS79230DBVR    |
| TLV70436DBVR   | TPS73018DBVTG4   | TPS76915DBVTG4 | TPS79230DBVRG4  |
| TLV70436DBVT   | TPS73025DBVR     | TPS76918DBVR   | TPS79230DBVT    |
| TLV70450DBVR   | TPS73025DBVRG4   | TPS76918DBVRG4 | TPS79230DBVTG4  |
| TLV70450DBVT   | TPS73025DBVT     | TPS76918DBVT   | TPS79318DBVR    |
| TLV71209DBVR   | TPS73025DBVTG4   | TPS76918DBVTG4 | TPS79318DBVRG4  |
| TLV71209DBVT   | TPS730285DBVR    | TPS76925DBVR   | TPS79318DBVT    |
| TLV71210DBVR   | TPS730285DBVT    | TPS76925DBVRG4 | TPS79318DBVTG4  |
| TLV71210DBVT   | TPS730285DBVTG4  | TPS76925DBVT   | TPS79325DBVR    |
| TLV73310PDBVR  | TPS73028DBVR     | TPS76925DBVTG4 | TPS79325DBVRG4  |
| TLV73311PDBVR  | TPS73028DBVRG4   | TPS76927DBVR   | TPS793285DBVR   |
| TLV73312PDBVR  | TPS73028DBVT     | TPS76927DBVT   | TPS793285DBVRG4 |
| TLV73315PDBVR  | TPS73028DBVTG4   | TPS76927DBVTG4 | TPS793285DBVT   |
| TLV73318PDBVR  | TPS73030DBVR     | TPS76928DBVR   | TPS793285DBVTG4 |
| TLV73325PDBVR  | TPS73030DBVRG4   | TPS76928DBVRG4 | TPS79328DBVR    |
| TLV733285PDBVR | TPS73030DBVT     | TPS76928DBVT   | TPS79328DBVRG4  |
| TLV73328PDBVR  | TPS73030DBVTG4   | TPS76928DBVTG4 | TPS79330DBVR    |
| TLV73330PDBVR  | TPS73033DBVR     | TPS76930DBVR   | TPS79330DBVRG4  |
| TLV73333PDBVR  | TPS73033DBVRG4   | TPS76930DBVRG4 | TPS79333DBVR    |
| TPS2041CDBVR   | TPS73033DBVT     | TPS76930DBVT   | TPS79333DBVRG4  |
| TPS2041CDBVT   | TPS73033DBVTG4   | TPS76930DBVTG4 | TPS793475DBVR   |
| TPS2051BDBVR   | TPS76133DBVR     | TPS76950DBVR   | TPS793475DBVRG4 |
| TPS2051CDBVR   | TPS76133DBVRG4   | TPS76950DBVRG4 |                 |

# Group 1: Qualification Report

## TIPI SOT: Phase-1 (5pin DBV) Qualification

### Product Attributes

| Attributes                      | Qual Device:<br>TPS76933DBVR |
|---------------------------------|------------------------------|
| <b>Die Attributes</b>           | -                            |
| <b>Die Revision</b>             | A                            |
| <b>Wafer Fab Supplier</b>       | DL-LIN                       |
| <b>Wafer Process</b>            | LBC3S                        |
| <b>Package Attributes</b>       | -                            |
| <b>Assembly Site</b>            | TIPI                         |
| <b>Package Family</b>           | SOT                          |
| <b>Package Designator</b>       | DBV                          |
| <b>Package Size (mils)</b>      | 62.99 X 114.17               |
| <b>Body Thickness (mils)</b>    | 47.24                        |
| <b>Pin Count</b>                | 5                            |
| <b>Lead Frame Type</b>          | CU                           |
| <b>Lead Finish</b>              | NIPDAU                       |
| <b>Lead Pitch(mils)</b>         | 37.4                         |
| <b>Mount Compound</b>           | 4207173                      |
| <b>Mold Compound</b>            | 4222226                      |
| <b>Bond Wire Composition</b>    | Cu                           |
| <b>Bond Wire Diameter(mils)</b> | 1.0                          |
| <b>Flammability Rating</b>      | UL 94 V-0                    |

- QBS: Qual By Similarity

- Qual Device TPS76933DBVR is qualified at LEVEL1-260CG

### Qualification Results

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

| Type | Test Name / Condition                     | Duration                      | Qual Device:<br>TPS76933DBVR |
|------|---|-------------------------------|------------------------------|
| AC   | Autoclave 121C                            | 96 Hours                      | 3/231/0                      |
| CDM  | ESD - CDM                                 | 1500 V                        | 3/9/0                        |
| DS   | Die Shear                                 | -                             | 3/30/0                       |
| ED   | Electrical Characterization, side by side | Per Datasheet Parameters      | Pass                         |
| FLAM | Flammability (UL 94V-0)                   | --                            | 3/15/0                       |
| HAST | Biased HAST, 130C/85%RH                   | 96 Hours                      | 3/231/0                      |
| HBM  | ESD - HBM                                 | 4000 V                        | 3/9/0                        |
| HTOL | Life Test, 150C                           | 300 Hours                     | 3/230/0                      |
| HTSL | High Temp Storage Bake 170C               | 420 Hours                     | 3/231/0                      |
| LI   | Lead Fatigue                              | Leads                         | 3/66/0                       |
| LI   | Lead Pull to Destruction                  | Leads                         | 3/66/0                       |
| MISC | Salt Atmosphere                           | 24 Hours                      | 3/66/0                       |
| MQ   | Manufacturability (Assembly)              | (per mfg. Site specification) | Pass                         |
| MSL  | Moisture Sensitivity, JEDEC               | Level 1-260C                  | 3/36/0                       |
| PD   | Physical Dimensions                       | (per mechanical drawing)      | 3/15/0                       |
| PKG  | Lead Finish Adhesion                      | Leads                         | 3/45/0                       |
| SD   | Solderability                             | 8 Hours Steam Age             | 3/66/0                       |
| TC   | Temperature Cycle, -65/150C               | 500 Cycles                    | 3/231/0                      |
| VM   | Visual / Mechanical                       | (per mfg. Site specification) | 3/984/0                      |
| VM   | Visual Quality Reliability Inspection     | Post Autoclave                | 3/6/0                        |
| VM   | Visual Quality Reliability Inspection     | Post Biased HAST              | 3/6/0                        |
| VM   | Visual Quality Reliability Inspection     | Post Temperature Cycle        | 3/6/0                        |
| WBP  | Bond Pull                                 | Wires                         | 3/228/0                      |

| Type | Test Name / Condition | Duration        | Qual Device:<br>TPS76933DBVR |
|------|-----------------------|-----------------|------------------------------|
| WBS  | Ball Bond Shear       | Wires           | 3/228/0                      |
| XRAY | X-ray                 | (top side only) | 3/15/0                       |

- 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 an 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 an 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

## Group 2: Qualification Report

### TIPI SOT: Phase-1 (5pin DBV) Cu wire, 300mm Wafer

#### Product Attributes

| Attributes          | Qual Device:<br>TLV70233DBVR |
|---------------------|------------------------------|
| Assembly Site       | PHI (TIPI)                   |
| Package Family      | SOT-23                       |
| Flammability Rating | UL 94 V-0                    |
| Wafer Fab Supplier  | RFAB                         |
| Wafer Fab Process   | LBC7                         |

- QBS: Qual By Similarity

- Qual Device TLV70233DBVR is qualified at LEVEL1-260C

#### Qualification Results

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

| Type | Test Name / Condition                     | Duration                      | Qual Device:<br>TLV70233DBVR |
|------|---|-------------------------------|------------------------------|
| MSL  | Moisture Sensitivity, Jedec               | Level 1-260C                  | 3/36/0                       |
| AC   | Autoclave 121C                            | 96 Hours                      | 3/231/0                      |
| DS   | Die Shear                                 | -                             | 3/30/0                       |
| ED   | Electrical Characterization, side by side | Per Datasheet Parameters      | Pass                         |
| HTSL | High Temp Storage Bake 170C               | 420 Hours                     | 3/231/0                      |
| MQ   | Manufacturability (Assembly)              | (per mfg. Site specification) | Pass                         |
| PD   | Physical Dimensions                       | (per mechanical drawing)      | 3/15/0                       |
| SD   | Solderability                             | Steam 8 hrs                   | 3/66/0                       |
| TC   | Temperature Cycle, -65/150C               | 500 Cycles                    | 3/231/0                      |
| VM   | Visual / Mechanical                       | (per mfg. Site specification) | 3/984/0                      |
| VM   | Visual Quality Reliability Inspection     | Post Autoclave                | 3/6/0                        |
| VM   | Visual Quality Reliability Inspection     | Post Temp Cycle               | 3/6/0                        |
| WBP  | Bond Pull                                 | Wires                         | 3/228/0                      |
| WBS  | Ball Bond Shear                           | Wires                         | 3/228/0                      |
| XRAY | X-ray                                     | (top side only)               | 3/15/0                       |

- 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 an 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 an 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

## TIPI SOT: Phase-1 (6 pin DBV) Cu wire, 200mm Wafer

### Product Attributes

| Attributes                 | Qual Device:<br>TPS3808G01DBVR |
|----------------------------|--------------------------------|
| <b>Assembly Site</b>       | TIPI                           |
| <b>Package Family</b>      | SOT                            |
| <b>Flammability Rating</b> | UL 94 V-0                      |
| <b>Wafer Fab Supplier</b>  | FFAB                           |
| <b>Wafer Fab Process</b>   | 3370A12X3                      |

- QBS: Qual By Similarity

- Qual Device TPS3808G01DBVR is qualified at LEVEL1-260CG

### Qualification Results

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

| Type | Test Name / Condition                     | Duration                      | Qual Device:<br>TPS3808G01DBVR |
|------|---|-------------------------------|--------------------------------|
| MSL  | Moisture Sensitivity, Jedec               | Level 1-260C                  | 3/36/0                         |
| AC   | Autoclave 121C                            | 96 Hours                      | 3/231/0                        |
| DS   | Die Shear                                 | -                             | 3/30/0                         |
| ED   | Electrical Characterization, side by side | Per Datasheet Parameters      | Pass                           |
| HTSL | High Temp Storage Bake 170C               | 420 Hours                     | 3/231/0                        |
| MQ   | Manufacturability (Assembly)              | (per mfg. Site specification) | Pass                           |
| PD   | Physical Dimensions                       | (per mechanical drawing)      | 3/15/0                         |
| SD   | Solderability                             | Steam 8 hrs                   | 3/66/0                         |
| TC   | Temperature Cycle, -65/150C               | 500 Cycles                    | 3/231/0                        |
| VM   | Visual / Mechanical                       | (per mfg. Site specification) | 3/984/0                        |
| VM   | Visual Quality Reliability Inspection     | Post Autoclave                | 3/6/0                          |
| VM   | Visual Quality Reliability Inspection     | Post Temp Cycle               | 3/6/0                          |
| WBP  | Bond Pull                                 | Wires                         | 3/228/0                        |
| WBS  | Ball Bond Shear                           | Wires                         | 3/228/0                        |
| XRAY | X-ray                                     | (top side only)               | 3/15/0                         |

- 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 an 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 an 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

## TIPI SOT: Phase-1 (5pin DBV) METDCu Cu wire

### Product Attributes

| Attributes                 | Qual Device:<br>TPS2051CDBVR |
|----------------------------|------------------------------|
| <b>Assembly Site</b>       | PHI (TIPI)                   |
| <b>Package Family</b>      | SOT-23                       |
| <b>Flammability Rating</b> | UL 94 V-0                    |
| <b>Wafer Fab Supplier</b>  | RFAB                         |
| <b>Wafer Fab Process</b>   | LBC7 X DCU                   |

- QBS: Qual By Similarity
- Qual Device TPS2051CDBVR is qualified at LEVEL2-260C

### Qualification Results

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

| Type | Test Name / Condition                     | Duration                      | Qual Device:<br>TPS2051CDBVR |
|------|---|-------------------------------|------------------------------|
| MSL  | Moisture Sensitivity, Jedec               | Level 1-260C                  | 3/36/0                       |
| MSL  | Moisture Sensitivity, Jedec               | Level 2-260C                  | 3/36/0                       |
| AC   | Autoclave 121C                            | 96 Hours                      | 3/231/0                      |
| DS   | Die Shear                                 | -                             | 3/30/0                       |
| ED   | Electrical Characterization, side by side | Per Datasheet Parameters      | Pass                         |
| HTSL | High Temp Storage Bake 170C               | 420 Hours                     | 3/231/0                      |
| MQ   | Manufacturability (Assembly)              | (per mfg. Site specification) | Pass                         |
| PD   | Physical Dimensions                       | (per mechanical drawing)      | 3/15/0                       |
| TC   | Temperature Cycle, -65/150C               | 500 Cycles                    | 3/231/0                      |
| VM   | Visual / Mechanical                       | (per mfg. Site specification) | 3/984/0                      |
| VM   | Visual Quality Reliability Inspection     | Post Autoclave                | 3/6/0                        |
| VM   | Visual Quality Reliability Inspection     | Post Temp Cycle               | 3/6/0                        |
| WBP  | Bond Pull                                 | Wires                         | 3/228/0                      |
| WBS  | Ball Bond Shear                           | Wires                         | 3/228/0                      |
| XRAY | X-ray                                     | (top side only)               | 3/15/0                       |

- 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 an 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 an 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

## TIPI SOT: Phase-1 (6-pin DBV) -- 2.0 mil Cu Wire, BOAC

### Product Attributes

| Attributes          | Qual Device: TPS2552DBVR |
|---------------------|--------------------------|
| Assembly Site       | TIPI                     |
| Package Family      | SOT                      |
| Flammability Rating | UL 94 V-0                |
| Wafer Fab Supplier  | MH8                      |
| Wafer Process       | LBC7                     |

- QBS: Qual By Similarity
- Qual Device TPS2552DBVR is qualified at LEVEL1-260CG

### Qualification Results

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

| Type | Test Name / Condition       | Duration                 | Qual Device:<br>TPS2552DBVR |
|------|-----------------------------|--------------------------|-----------------------------|
| AC   | Autoclave 121C              | 96 Hours                 | 3/231/0                     |
| ED   | Electrical Characterization | Per Datasheet Parameters | Pass                        |
| HTSL | High Temp Storage Bake 170C | 420 Hours                | 3/231/0                     |
| PD   | Physical Dimensions         | --                       | 3/15/0                      |
| TC   | Temperature Cycle, -65/150C | 500 Cycles               | 3/231/0                     |
| WBP  | Bond Pull                   | Wires                    | 3/228/0                     |
| WBS  | Ball Bond Shear             | Wires                    | 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 an 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 an 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

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

| Location     | E-Mail   |
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| USA          | <a href="mailto:PCNAmericasContact@list.ti.com">PCNAmericasContact@list.ti.com</a> |
| Europe       | <a href="mailto:PCNEuropeContact@list.ti.com">PCNEuropeContact@list.ti.com</a>     |
| Asia Pacific | <a href="mailto:PCNAsiaContact@list.ti.com">PCNAsiaContact@list.ti.com</a>         |
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