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|--|--|---------------------------------------|---|
| <b>PCN Number:</b>   | 20181129000.1  | <b>PCN Date:</b>                      | Dec 18, 2018  |
| <b>Title:</b>  | Qualification of Mold Compound and Mount Compound for selected TSSOP package devices |                                       |   |
| <b>Proposed 1<sup>st</sup> Ship Date:</b>  | Mar 18, 2019   | <b>Estimated Sample Availability:</b> | Provided upon Request   |
| <b>Change Type:</b>  |  |                                       |   |
| <input type="checkbox"/>   | Assembly Site  | <input type="checkbox"/>              | Design  |
| <input type="checkbox"/>   | Assembly Process   | <input type="checkbox"/>              | Wafer Bump Site   |
| <input checked="" type="checkbox"/>  | Assembly Materials   | <input type="checkbox"/>              | Wafer Bump Material   |
| <input type="checkbox"/>   | Mechanical Specification   | <input type="checkbox"/>              | Wafer Bump Process  |
| <input type="checkbox"/>   | Packing/Shipping/Labeling  | <input type="checkbox"/>              | Wafer Fab Site  |
|  |  | <input type="checkbox"/>              | Wafer Fab Materials   |
|  |  | <input type="checkbox"/>              | Wafer Fab Process   |
| <b>PCN Details</b>   |  |                                       |   |
| <b>Description of Change:</b>  |  |                                       |   |
| Texas Instruments is pleased to announce the qualification of Mold Compound 4211471 and Mount Compound 4147858 for select TSSOP package devices. Devices will remain in their current assembly facility and material differences are shown in the following table: |  |                                       |   |
| <b>Change From:</b>  |  | <b>Change To:</b>                     |   |
| <b>Mount Compound</b>  | 4042500  |                                       | 4147858   |
| <b>Mold Compound</b>   | 4209002, 4206193   |                                       | 4211471   |
| <b>Reason for Change:</b>  |  |                                       |   |
| Continuity of supply.  |  |                                       |   |
| <b>Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):</b>  |  |                                       |   |
| None.  |  |                                       |   |
| <b>Anticipated impact on Material Declaration</b>  |  |                                       |   |
| <input type="checkbox"/>   | No Impact to the Material Declaration  | <input checked="" type="checkbox"/>   | 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 <a href="#">TI Eco-Info website</a> . There is no impact to the material meeting current regulatory compliance requirements with this PCN change. |
| <b>Changes to product identification resulting from this PCN:</b>  |  |                                       |   |
| None.  |  |                                       |   |
| <b>Product Affected:</b>   |  |                                       |   |
| ADS1119IPW   | ADS112C04IPW   | SN74GTL2014PWR                        |   |
| ADS1119IPWR  | ADS112C04IPWR  | TLV4379IPWR                           |   |
| ADS1119IPWT  | ADS1219IPWT  | TLV9704IPWR                           |   |

# Qualification Report

Approve Date 26-Aug-2016

## Qualification Results

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

| Type | Test Name / Condition                 | Duration                      | Qual Device:<br>8BT245MDGGEP | Qual Device:<br>8X512DGGR | Qual Device:<br>ADS1259BIPWR | Qual Device:<br>CLVC374APWR | Qual Device:<br>E8722DGGR | Qual Device:<br>SN200708045DAR | Qual Device:<br>SN65MLVD129DGG |
|------|---------------------------------------|-------------------------------|------------------------------|---------------------------|------------------------------|-----------------------------|---------------------------|--------------------------------|--------------------------------|
| AC   | Autoclave 121C                        | 96 Hours                      | 3/231/0                      | -                         | -                            | -                           | 3/231/0                   | 3/231/0                        | 1/77/0                         |
| ED   | Electrical Characterization           | Per Datasheet Parameters      | -                            | -                         | -                            | Pass                        | -                         | -                              | -                              |
| HAST | Biased HAST, 130C/85%RH               | 192 Hours                     | -                            | -                         | -                            | -                           | -                         | -                              | -                              |
| HAST | Biased HAST, 130C/85%RH               | 96 Hours                      | -                            | -                         | -                            | -                           | -                         | -                              | -                              |
| HTSL | High Temp Storage Bake 170C           | 420 Hours                     | 3/231/0                      | 3/231/0                   | -                            | -                           | -                         | -                              | -                              |
| MQ   | Manufacturability (Assembly)          | (per mfg. Site specification) | Pass                         | Pass                      | Pass                         | Pass                        | Pass                      | Pass                           | Pass                           |
| TC   | Temperature Cycle, -65/150C           | 500 Cycles                    | 3/231/0                      | 3/231/0                   | 3/231/0                      | 3/231/0                     | 3/231/0                   | 3/231/0                        | 1/77/0                         |
| VM   | Visual Quality Reliability Inspection | Post Autoclave 96 Hours       | -                            | -                         | -                            | -                           | -                         | 3/6/0                          | -                              |
| VM   | Visual Quality Reliability Inspection | Post Biased HAST 96 Hours     | -                            | -                         | -                            | -                           | -                         | -                              | -                              |
| VM   | Visual Quality Reliability Inspection | Post Temp Cycle 500 Cycles    | -                            | 3/6/0                     | -                            | -                           | -                         | 3/6/0                          | -                              |

| Type | Test Name / Condition                 | Duration                      | Qual Device:<br>THS4524IDBTR | Qual Device:<br>TPS2111PWR | Qual Device:<br>TPS23861PWR | Qual Device:<br>TPS43000PW | QBS Package Reference:<br>SN65C1168PWR | QBS Package Reference:<br>TAS5086DBT | QBS Package Reference:<br>TPIC1353DBTRG4 |
|------|---------------------------------------|-------------------------------|------------------------------|----------------------------|-----------------------------|----------------------------|--|--------------------------------------|--|
| AC   | Autoclave 121C                        | 96 Hours                      | 3/231/0                      | 3/231/0                    | -                           | -                          | 3/231/0                                | 3/231/0                              | 3/231/0                                  |
| ED   | Electrical Characterization           | Per Datasheet Parameters      | -                            | -                          | -                           | -                          | -                                      | -                                    | -  |
| HAST | Biased HAST, 130C/85%RH               | 192 Hours                     | -                            | -                          | 3/231/0                     | -                          | 3/227/0                                | -                                    | -  |
| HAST | Biased HAST, 130C/85%RH               | 96 Hours                      | -                            | -                          | 3/231/0                     | -                          | 3/227/0                                | 3/231/0                              | 3/231/0                                  |
| HTSL | High Temp Storage Bake 170C           | 420 Hours                     | -                            | -                          | -                           | 3/231/0                    | 3/231/0                                | 3/231/0                              | 3/231/0                                  |
| MQ   | Manufacturability (Assembly)          | (per mfg. Site specification) | Pass                         | Pass                       | Pass                        | Pass                       | Pass                                   | Pass                                 | Pass                                     |
| TC   | Temperature Cycle, -65/150C           | 500 Cycles                    | 3/231/0                      | 3/231/0                    | -                           | 3/231/0                    | 3/230/0                                | 3/231/0                              | 3/231/0                                  |
| VM   | Visual Quality Reliability Inspection | Post Autoclave 96 Hours       | 3/6/0                        | 3/6/0                      | -                           | -                          | -                                      | -                                    | -  |
| VM   | Visual Quality Reliability Inspection | Post Biased HAST 96 hours     | -                            | -                          | 3/6/0                       | -                          | -                                      | -                                    | -  |
| VM   | Visual Quality Reliability Inspection | Post Temp Cycle 500 Cycles    | 3/6/0                        | 3/6/0                      | -                           | 3/6/0                      | -                                      | -                                    | -  |

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL1-260CG: E8722DGGR, TPS43000PW, SN200708045DAR, CLVC374APWR, TPS2111PWR, 8X512DGGR, 8BT245MDGGEP, ADS1259BIPWR

- Qual Devices qualified at LEVEL2-260CG: SN65MLVD129DGG, THS4524IDBTR, TPS23861PWR

- Device THS4524IDBTR contains multiple dies.

- 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

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