

|   |   |                                       |                            |                                     |
|---|---|---------------------------------------|----------------------------|-------------------------------------|
| <b>PCN Number:</b>  | 20140930003A  |                                       | <b>PCN Date:</b>           | 12/04/2014                          |
| <b>Title:</b>   | Qualification of Amkor Philippines as an Additional Assembly and Test location for Select Devices in the SOIC package |                                       |                            |                                     |
| <b>Customer Contact:</b>  | <a href="#">PCN Manager</a>   | <b>Phone:</b>                         | +1(214)480-6037            | <b>Dept:</b> Quality Services       |
| <b>Proposed 1<sup>st</sup> Ship Date:</b>   | 03/04/2015  | <b>Estimated Sample Availability:</b> | Date provided upon request |                                     |
| <b>Change Type:</b>   |   |                                       |                            |                                     |
| <input checked="" type="checkbox"/>   | Assembly Site   | <input type="checkbox"/>              | Assembly Process           | <input checked="" type="checkbox"/> |
| <input type="checkbox"/>  | Design  | <input type="checkbox"/>              | Electrical Specification   | <input type="checkbox"/>            |
| <input checked="" type="checkbox"/>   | Test Site   | <input type="checkbox"/>              | Packing/Shipping/Labeling  | <input type="checkbox"/>            |
| <input type="checkbox"/>  | Wafer Bump Site   | <input type="checkbox"/>              | Wafer Bump Material        | <input type="checkbox"/>            |
| <input type="checkbox"/>  | Wafer Fab Site  | <input type="checkbox"/>              | Wafer Fab Materials        | <input type="checkbox"/>            |
| <input type="checkbox"/>  |   | <input type="checkbox"/>              | Part number change         |                                     |
| <b>PCN Details</b>  |   |                                       |                            |                                     |
| <b>Description of Change:</b>   |   |                                       |                            |                                     |
| Revision A is to announce the <u>addition</u> of devices that were not included on the original PCN notification. The additional device are highlighted and <b>bolded</b> in the device list below. The expected first shipment date for these new devices will be 90 days from this notice for these newly added devices only. The retracted devices are highlighted <del><b>bolded</b></del> , and struck through in the device list below. |   |                                       |                            |                                     |
| Texas Instruments is pleased to announce the qualification of Amkor Philippines as an additional Assembly and Test location for the devices listed below. Assembly material differences are noted below:  |   |                                       |                            |                                     |
|   | <b>ASEH</b>   | <b>Amkor Philippines</b>              |                            |                                     |
| <b>Mount Compound</b>   | SID#EY1000063   | <b>SID#101374994</b>                  |                            |                                     |
| <b>Mold Compound</b>  | SID#EN2000509   | <b>SID#101379294</b>                  |                            |                                     |
| 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 Fit, Form, Function, Quality or Reliability (positive / negative):</b>   |   |                                       |                            |                                     |
| None  |   |                                       |                            |                                     |
| <b>Changes to product identification resulting from this PCN:</b>   |   |                                       |                            |                                     |
| <i>Assembly Site</i>  |   |                                       |                            |                                     |
| ASE Shanghai  | Assembly Site Origin (22L)  |                                       | ASO: ASH                   |                                     |
| <b>AMKOR (AP1)</b>  | <b>Assembly Site Origin (22L)</b>   |                                       | <b>ASO: AKR</b>            |                                     |
| Sample product shipping label (not actual product label)  |   |                                       |                            |                                     |



MADE IN: Malaysia  
2DC: 2Q:

|                     |          |
|---------------------|----------|
| MSL '2 /260C/1 YEAR | SEAL DT  |
| MSL 1 /235C/UNLIM   | 03/29/04 |

OPT:  
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

### Topside Device marking:

Assembly site code for ASH= A

Assembly site code for AKR= 4

### Product Affected

|                     |               |                     |              |
|---------------------|---------------|---------------------|--------------|
| 905X5433200         | TPS54228DDA   | TPS54332DDA         | TPS54527DDAR |
| HPA01123DDAR        | TPS54228DDAR  | TPS54332DDAR        | TPS54528DDA  |
| SN1101004DDAR       | TPS54229DDA   | TPS54335DDA         | TPS54528DDAR |
| SN1101005DDAR       | TPS54229DDAR  | TPS54335DDAR        | TPS54627DDA  |
| SN1106041DDAR       | TPS54229EDDA  | <b>TPS54427DDA</b>  | TPS54627DDAR |
| SN1110024DDAR       | TPS54229EDDAR | <b>TPS54427DDAR</b> | TPS54628DDA  |
| SN1208017DDAR       | TPS5432DDA    | TPS54428DDA         | TPS54628DDAR |
| SN54229EDDAR        | TPS5432DDAR   | TPS54428DDAR        | TPS56628DDA  |
| <b>TPS54227DDA</b>  | TPS54332CDDA  | TPS54527DDA         | TPS56628DDAR |
| <b>TPS54227DDAR</b> | TPS54332CDDAR |                     |              |

## Qualification Report

Amkor: Qualify Amkor Assembly (AP1) with 101379294 mold compound, 101374994 mount compound + Cu wire (2.0 MIL) on PWR DCS SOIC devices with BOAC

Approval 09/18/2014

### Product Attributes

| Attributes          | Qual Device:<br>TPS54327DDA | Qual Device: TPS54627DDA |
|---------------------|-----------------------------|--------------------------|
| Assembly Site       | AMKOR AP1                   | AMKOR AP1                |
| Package Family      | SOIC                        | SOIC                     |
| Flammability Rating | UL 94 V-0                   | UL 94 V-0                |
| Wafer Fab Site      | RFAB                        | RFAB                     |
| Wafer Fab Process   | LBC7                        | LBC7                     |

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL2-260C: TPS54327DDA, TPS54627DDA

## Qualification Results

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

| Type  | Test Name / Condition                         | Duration                       | Qual Device:<br>TPS54327DDA | Qual Device:<br>TPS54627DDA |
|-------|---|--------------------------------|-----------------------------|-----------------------------|
| THB   | Biased Temperature and Humidity,<br>85C/85%RH | 1000 Hours                     | 3/231/0                     | -                           |
| AC    | Autoclave 121C                                | 96 Hours                       | 3/231/0                     | 3/231/0                     |
| TC-BP | Auto Post Temp. Cycle Bond Pull               | per MIL-STD 883<br>Method 2011 | 3/15/0                      | 3/15/0                      |
| TC    | Temperature Cycle, -65/150C                   | 500 Cycles                     | 3/231/0                     | 3/231/0                     |
| HTSL  | High Temp Storage Bake 170C                   | 420 Hours                      | 3/229/0                     | -                           |
| ED    | Electrical Characterization.                  | Per Datasheet<br>Parameters    | 1/30/0                      | -                           |
| FLAM  | Flammability (UL 94V-0)                       | --                             | 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

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   |
|--------------|--|
| 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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