

|                                                                                                                                                                                                                             |                                                                                                                         |                          |                                       |                                  |                          |                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------|----------------------------------|--------------------------|-----------------------|
| <b>PCN Number:</b>                                                                                                                                                                                                          | 20151009001                                                                                                             |                          |                                       | <b>PCN Date:</b>                 | 10/16/2015               |                       |
| <b>Title:</b>                                                                                                                                                                                                               | Qualification of Additional Fab Site Options (MFAB for select LM3646YFQ Devices and MIH8 for select TPS51631RSM device) |                          |                                       |                                  |                          |                       |
| <b>Customer Contact:</b>                                                                                                                                                                                                    | <a href="#">PCN Manager</a>                                                                                             |                          |                                       | <b>Dept:</b>                     | Quality Services         |                       |
| <b>Proposed 1<sup>st</sup> Ship Date:</b>                                                                                                                                                                                   | 01/16/2015                                                                                                              |                          | <b>Estimated Sample Availability:</b> | Date provided at sample request. |                          |                       |
| <b>Change Type:</b>                                                                                                                                                                                                         |                                                                                                                         |                          |                                       |                                  |                          |                       |
| <input type="checkbox"/>                                                                                                                                                                                                    | Assembly Site                                                                                                           | <input type="checkbox"/> | Assembly Process                      | <input type="checkbox"/>         | Assembly Materials       |                       |
| <input type="checkbox"/>                                                                                                                                                                                                    | Design                                                                                                                  | <input type="checkbox"/> | Electrical Specification              | <input type="checkbox"/>         | Mechanical Specification |                       |
| <input type="checkbox"/>                                                                                                                                                                                                    | Test Site                                                                                                               | <input type="checkbox"/> | Packing/Shipping/Labeling             | <input type="checkbox"/>         | Test Process             |                       |
| <input type="checkbox"/>                                                                                                                                                                                                    | Wafer Bump Site                                                                                                         | <input type="checkbox"/> | Wafer Bump Material                   | <input type="checkbox"/>         | Wafer Bump Process       |                       |
| <input checked="" type="checkbox"/>                                                                                                                                                                                         | Wafer Fab Site                                                                                                          | <input type="checkbox"/> | Wafer Fab Materials                   | <input type="checkbox"/>         | Wafer Fab Process        |                       |
|                                                                                                                                                                                                                             |                                                                                                                         | <input type="checkbox"/> | Part number change                    |                                  |                          |                       |
| <b>PCN Details</b>                                                                                                                                                                                                          |                                                                                                                         |                          |                                       |                                  |                          |                       |
| <b>Description of Change:</b>                                                                                                                                                                                               |                                                                                                                         |                          |                                       |                                  |                          |                       |
| This change notification is to announce the qualification of additional fab site options (MFAB for select LM3646YFQ devices and MIH8 for the TPS51631RSM device). These devices are listed in the Product Affected Section. |                                                                                                                         |                          |                                       |                                  |                          |                       |
| <b>Group 1: LM3646YFQ (adding MFAB)</b>                                                                                                                                                                                     |                                                                                                                         |                          |                                       |                                  |                          |                       |
| <b>Group 2: TPS51631RSM (adding MIH8)</b>                                                                                                                                                                                   |                                                                                                                         |                          |                                       |                                  |                          |                       |
| <b>Current</b>                                                                                                                                                                                                              |                                                                                                                         |                          |                                       | <b>Additional</b>                |                          |                       |
| <b>Device Group</b>                                                                                                                                                                                                         | <b>Current Fab Site</b>                                                                                                 | <b>Process</b>           | <b>Wafer Diameter</b>                 | <b>Additional Fab Site</b>       | <b>Process</b>           | <b>Wafer Diameter</b> |
| 1                                                                                                                                                                                                                           | Aizu                                                                                                                    | CMOS7                    | 200 mm                                | MFAB                             | CMOS7                    | 200mm                 |
| 2                                                                                                                                                                                                                           | RFAB                                                                                                                    | LBC7                     | 300mm                                 | MIH8                             | LBC7                     | 200 mm                |
| <b>Reason for Change:</b>                                                                                                                                                                                                   |                                                                                                                         |                          |                                       |                                  |                          |                       |
| Continuity of Supply                                                                                                                                                                                                        |                                                                                                                         |                          |                                       |                                  |                          |                       |
| <b>Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):</b>                                                                                                                             |                                                                                                                         |                          |                                       |                                  |                          |                       |
| None                                                                                                                                                                                                                        |                                                                                                                         |                          |                                       |                                  |                          |                       |
| <b>Changes to product identification resulting from this PCN:</b>                                                                                                                                                           |                                                                                                                         |                          |                                       |                                  |                          |                       |
| <b>Current</b>                                                                                                                                                                                                              |                                                                                                                         |                          |                                       |                                  |                          |                       |
| Chip Sites                                                                                                                                                                                                                  | Chip site code (20L)                                                                                                    | Chip country code (21L)  | Chip Site City                        |                                  |                          |                       |
| AIZU                                                                                                                                                                                                                        | CU2                                                                                                                     | JPN                      | Aizuwakamatsu-shi                     |                                  |                          |                       |
| RFAB                                                                                                                                                                                                                        | RFB                                                                                                                     | USA                      | Richardson                            |                                  |                          |                       |
| <b>New</b>                                                                                                                                                                                                                  |                                                                                                                         |                          |                                       |                                  |                          |                       |
| Chip Site                                                                                                                                                                                                                   | Chip site code (20L)                                                                                                    | Chip country code (21L)  | Chip Site City                        |                                  |                          |                       |
| MAINEFAB                                                                                                                                                                                                                    | CUA                                                                                                                     | USA                      | South Portland                        |                                  |                          |                       |
| MIH8                                                                                                                                                                                                                        | MH8                                                                                                                     | JPN                      | Ibaraki                               |                                  |                          |                       |
| Sample product shipping label (not actual product label)                                                                                                                                                                    |                                                                                                                         |                          |                                       |                                  |                          |                       |

**TEXAS INSTRUMENTS**

MADE IN: Malaysia  
2DC: 20:



(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

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

OPT:  
ITEM: 39  
LBL: 5A (L) TO: 1750

**Product Affected:**

**Group 1: Currently at Aizu, Adding MFAB**

|             |             |
|-------------|-------------|
| LM3646AYFQR | LM3646BYFQT |
| LM3646AYFQT | LM3646YFQR  |
| LM3646BYFQR |             |

**Group 2: TPS51631RSM Currently at RFAB Adding MIH8**

|              |              |
|--------------|--------------|
| TPS51631RSMR | TPS51631RSMT |
|--------------|--------------|

**Group 1: Qualification Report**

**LM3646A PRODUCT QUALIFICATION - CMOS7 at MFAB  
Approved 10/05/2015**

**Product Attributes**

| Attributes          | QBS Product: LM3564A1TMX |
|---------------------|--------------------------|
| Assembly Site       | TIEM-MALACCA             |
| Package Family      | DSBGA                    |
| Flammability Rating | UL 94 V-0                |
| Wafer Fab Site      | MFAB                     |
| Wafer Fab Process   | CMOS7 5V                 |

- QBS: Qual By Similarity
- Qual Device LM3646YFQ is qualified at LEVEL1-260C

**Qualification Results**

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

| Test Name / Condition       | Duration    | QBS Product: LM3564A1TMX |
|-----------------------------|-------------|--------------------------|
| PreCon Level 1              | Visual Post | 3/462/0                  |
| Biased HAST, 130C/85%RH     | 96 Hours    | 3/231/0                  |
| Temperature Cycle, -65/150C | 500 Cycles  | 3/231/0                  |
| High Temp Storage Bake 150C | 1000 Hours  | 3/231/0                  |
| Life Test, 125C             | 1000 Hours  | 3/231/0                  |
| ESD - HBM                   | 2000 V      | 3/9/0                    |
| ESD - CDM                   | 750 V       | 3/9/0                    |
| Latch-up                    | 25C         | 3/18/0                   |
| Latch-up                    | 85C         | 3/18/0                   |

- 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

### TPS51631RSMR/T Miho die in Clark Approve Date 9/17/2015

#### Product Attributes

| Attributes                 | Qual Device: TPS51631RSM | QBS Product Reference:<br>TPS51622RSM | QBS Product Reference:<br>TPS51631RSM | QBS Process Reference:<br>TPS62110RSA |
|----------------------------|--------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| <b>Assembly Site</b>       | CLARK-AT                 | CARZ                                  | CLARK-AT                              | CAR                                   |
| <b>Flammability Rating</b> | UL 94 V-0                | UL 94 V-0                             | UL 94 V-0                             | UL 94 V-0                             |
| <b>Wafer Fab Supplier</b>  | MIHO                     | MIHO                                  | RFAB                                  | MIHO                                  |
| <b>Wafer Process</b>       | LBC7                     | LBC7                                  | LBC7                                  | LBC7                                  |

- QBS: Qual By Similarity
- Qual Device TPS51631RSM is qualified at LEVEL2-260CG

#### Qualification Results

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

| Test Name / Condition         | Duration                 | Qual Device:<br>TPS51631RSM | QBS Product Reference:<br>TPS51622RSM | QBS Product Reference:<br>TPS51631RSM | QBS Process Reference:<br>TPS62110RSA |
|-------------------------------|--------------------------|-----------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Autoclave 121C                | 96 Hours                 | -                           | 1/77/0                                | -                                     | 3/231/0                               |
| Electrical Characterization.  | Per Datasheet Parameters | Pass                        | Pass                                  | Pass                                  | -                                     |
| Biased HAST, 130C/85%RH       | 96 Hours                 | -                           | -                                     | -                                     | 3/231/0                               |
| ESD - HBM                     | 2500 V                   | 1/3/0                       | 1/3/0                                 | -                                     | -                                     |
| ESD - CDM                     | 1500 V                   | 1/3/0                       | 1/3/0                                 | -                                     | -                                     |
| HTOL/Life Test, 125C          | 1000 Hours               | -                           | -                                     | 1/77/0                                | -                                     |
| HTOL/Life Test, 140C          | 480 Hours                | -                           | -                                     | -                                     | 3/231/0                               |
| High Temp. Storage Bake, 170C | 420 Hours                | -                           | -                                     | 1/77/0                                | 3/231/0                               |
| Latch-up                      | (per JESD78)             | 1/6/0                       | 1/6/0                                 | 1/6/0                                 | 3/15/0                                |
| Temperature Cycle, -65/150C   | 500 Cycles               | -                           | 1/77/0                                | 1/77/0                                | 3/231/0                               |

For questions regarding this notice, e-mails can be sent to the regional contacts shown below, or you can contact 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>         |
| Japan        | <a href="mailto:PCNJapanContact@list.ti.com">PCNJapanContact@list.ti.com</a>       |