| PCN Number: | 20231114004.1 | PCN Date: | November 15, 2023 |
|---|---|---|---|
| Title: | Qualification of RFAB using qualified Process Technology, Die Revision and additional Assembly site for select devices | | |
| Customer Contact: | Change Management team | Dept: | Quality Services |
| Proposed 1st Ship Date: | Feb 14, 2024 | Estimated Sample Availability: | Dec 14, 2023* |

***Sample requests received after December 14, 2023 will not be supported.**

| Change Type: | | | | | |
|---|---|---|---|---|---|
| ☒ | Assembly Site | ☒ | Design | ☐ | Wafer Bump Material |
| ☐ | Assembly Process | ☐ | Data Sheet | ☐ | Wafer Bump Process |
| ☐ | Assembly Materials | ☐ | Part number change | ☒ | Wafer Fab Site |
| ☐ | Mechanical Specification | ☐ | Test Site | ☒ | Wafer Fab Materials |
| ☒ | Packing/Shipping/Labeling | ☐ | Test Process | ☒ | Wafer Fab Process |

## PCN Details

**Description of Change:**

Texas Instruments is pleased to announce the addition of RFAB using the LBC9 qualified process technology and additional Assembly site (MLA) for select devices listed below in the product affected section.

| Current Fab Site | | | Additional Fab Site | | |
|---|---|---|---|---|---|
| **Current Fab Site** | **Process** | **Wafer Diameter** | **Additional Fab Site** | **Process** | **Wafer Diameter** |
| DL-LIN | LBC2 | 150 mm | RFAB | LBC9 | 300 mm |
| DL-LIN | LBC3S | 150 mm | | | |

The die was also changed as a result of the process change.

No material differences between Assembly sites.

Qual details are provided in the Qual Data Section.

**Reason for Change:**

These changes are part of our multiyear plan to transition products from our 150-millimeter factories to newer, more efficient manufacturing processes and technologies, underscoring our commitment to product longevity and supply continuity.

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

None

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

**Fab Site Information:**

| Chip Site | Chip Site Origin Code (20L) | Chip Site Country Code (21L) | Chip Site City |
|---|---|---|---|
| DL-LIN | DLN | USA | Dallas |
| **RFAB** | **RFB** | **USA** | **Richardson** |

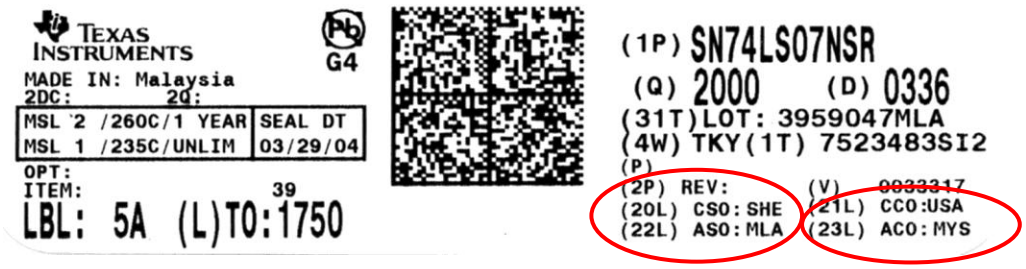
**Die Rev:**

| Current | New |
|---|---|
| Die Rev [2P] | **Die Rev [2P]** |
| A, - | **A** |

**Assembly Site Information:**

| Assembly Site | Assembly Site Origin (22L) | Assembly Country Code (23L) | Assembly City |
|---|---|---|---|
| TI Mexico | MEX | MEX | Aguascalientes |
| TI Taiwan | TAI | TWN | Chung Ho, New Taipei City |
| **TI Malaysia** | **MLA** | **MYS** | **Kuala Lumpur** |

Sample product shipping label (not actual product label)




## Product Affected: Wafer fab site

### Group 1 Device List: (RFAB/Process migration)

| |
|---|
| SN65LBC175DWR |

### Group 2 Device List: (RFAB/Process migration plus MLA as an additional Assembly site)

| | | | |
|---|---|---|---|
| SN65LBC173ADR | SN65LBC173DR | SN65LBC175AN | SN65LBC175N |
| SN65LBC173AN | SN65LBC175ADR | SN65LBC175DR | |

For alternate parts with similar or improved performance, please visit the product page on TI.com

**Qualification Results**

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

| Type | # | Test Name | Condition | Duration | Qual Device: SN65LBC175AN | Qual Device: SN65LBC175N | Qual Device: SN65LBC173AN | Qual Device: SN65LBC173ADR | Qual Device: SN65LBC175ADR | Qual Device: SN65LBC175DR | Qual Device: SN65LBC173DR | QBS Reference (Process): TLV9062ID | QBS Reference (Package): SN74HC595N | QBS Reference (Package): ULQ2003AQDRQ1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HAST | A2 | Biased HAST | 130C/85%RH | 96 Hours | - | - | - | - | - | - | - | - | - | 3/231/0 |
| UHAST | A3 | Autoclave | 121C/15psig | 96 Hours | - | - | - | - | - | - | - | - | 3/231/0 | 3/231/0 |
| TC | A4 | Temperature Cycle | -65C/150C | 500 Cycles | - | - | - | - | - | - | - | - | 3/231/0 | 3/231/0 |
| HTSL | A6 | High Temperature Storage Life | 150C | 1000 Hours | - | - | - | - | - | - | - | - | - | 3/135/0 |
| HTSL | A6 | High Temperature Storage Life | 170C | 420 Hours | - | - | - | - | - | - | - | - | 3/231/0 | - |
| HTOL | B1 | Life Test | 150C | 300 Hours | - | - | - | - | - | - | - | 3/231/0 | - | - |
| ELFR | B2 | Early Life Failure Rate | 125C | 48 Hours | - | - | - | - | - | - | - | 3/2400/1[1] | - | - |
| WBS | C1 | Ball Shear | 76 balls, 3 units min | Wires | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | - | - | - |
| WBP | C2 | Bond Pull | 76 Wires, 3 units min | Wires | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | - | - | - |
| SD | C3 | PB Solderability | Precondition w.155C Dry Bake (4 hrs +/- 15 minutes) | - | - | - | - | - | - | - | - | - | 3/66/0 | 1/15/0 |
| SD | C3 | PB-Free Solderability | Precondition w.155C Dry Bake (4 hrs +/- 15 minutes) | - | - | - | - | - | - | - | - | - | 3/66/0 | 1/15/0 |
| ESD | E2 | ESD CDM | - | 250 Volts | 1/3/0 | 1/3/0 | 1/3/0 | 1/3/0 | 1/3/0 | 1/3/0 | 1/3/0 | - | - | - |
| ESD | E2 | ESD HBM | - | 1000 Volts | - | - | - | 1/3/0 | 1/3/0 | 1/3/0 | 1/3/0 | - | - | - |
| LU | E4 | Latch-Up | Per JESD78 | - | - | - | - | 1/3/0 | 1/3/0 | 1/3/0 | 1/3/0 | - | - | - |

| Type | # | Test Name | Condition | Duration | Qual Device: SN65LBC175AN | Qual Device: SN65LBC175N | Qual Device: SN65LBC173AN | Qual Device: SN65LBC173ADR | Qual Device: SN65LBC175ADR | Qual Device: SN65LBC175DR | Qual Device: SN65LBC173DR | QBS Reference (Process): TLV9062ID | QBS Reference (Package): SN74HC595N | QBS Reference (Package): ULQ2003AQDRQ1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHAR | E5 | Electrical Characterization | Min, Typ, Max Temp | - | 1/30/0 | 1/30/0 | 1/30/0 | 1/30/0 | 1/30/0 | 1/30/0 | 1/30/0 | - | - | - |
| CHAR | E5 | Electrical Characterization | Per Datasheet Parameters | - | 1/30/0 | 1/30/0 | 1/30/0 | 1/30/0 | 1/30/0 | 1/30/0 | 1/30/0 | - | - | - |
| FTY | E6 | Final Test Yield | - | - | 1/1/0 | 1/1/0 | 1/1/0 | 1/1/0 | 1/1/0 | 1/1/0 | 1/1/0 | - | - | - |

- QBS: Qual By Similarity
- Qual Device SN65LBC175AN is qualified at NOT CLASSIFIED N/A
- Qual Device SN65LBC175N is qualified at NOT CLASSIFIED N/A
- Qual Device SN65LBC173AN is qualified at NOT CLASSIFIED N/A
- Qual Device SN65LBC173ADR is qualified at MSL1 260C
- Qual Device SN65LBC175ADR is qualified at MSL1 260C
- Qual Device SN65LBC175DR is qualified at MSL1 260C
- Qual Device SN65LBC173DR is qualified at MSL1 260C

- 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/

TI Qualification ID: R-CHG-2205-029

[1]-Die EOS
1 unit – Unresolved- Reran another group from same fab/assembly lot and passed.

**Qualification Results**

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

| Type | # | Test Name | Condition | Duration | Qual Device: SN65LBC175DWR | QBS Reference (Process): TLV9062ID | QBS Reference (Package): TPS5130PTR | QBS Reference (Package): TPIC6A596DW |
|---|---|---|---|---|---|---|---|---|
| HAST | A2 | Biased HAST | 130C/85%RH | 96 Hours | - | - | - | 3/231/0 |
| UHAST | A3 | Autoclave | 121C/15psig | 96 Hours | - | - | 1/77/0 | - |
| UHAST | A3 | Unbiased HAST | 130C/85%RH | 96 Hours | - | - | - | 3/231/0 |
| TC | A4 | Temperature Cycle | -65C/150C | 500 Cycles | - | - | 1/77/0 | 3/231/0 |
| HTSL | A6 | High Temperature Storage Life | 150C | 1000 Hours | - | - | - | 3/135/0 |
| HTSL | A6 | High Temperature Storage Life | 170C | 420 Hours | - | - | 1/77/0 | - |
| HTOL | B1 | Life Test | 150C | 300 Hours | - | 3/231/0 | - | - |
| ELFR | B2 | Early Life Failure Rate | 125C | 48 Hours | - | 3/2400/1[1] | - | - |
| WBS | C1 | Ball Shear | 76 balls, 3 units min | Wires | 1/76/0 | - | - | - |
| WBP | C2 | Bond Pull | 76 Wires, 3 units min | Wires | 1/76/0 | - | - | - |
| ESD | E2 | ESD CDM | - | 250 Volts | 1/3/0 | 3/9/0 | - | - |
| ESD | E2 | ESD HBM | - | 1000 Volts | 1/3/0 | 3/9/0 | - | - |

| Type | # | Test Name | Condition | Duration | Qual Device: SN65LBC175DWR | QBS Reference (Process): TLV9062ID | QBS Reference (Package): TPS5130PTR | QBS Reference (Package): TPIC6A596DW |
|---|---|---|---|---|---|---|---|---|
| LU | E4 | Latch-Up | Per JESD78 | - | 1/3/0 | 3/18/0 | - | - |
| CHAR | E5 | Electrical Characterization | Min, Typ, Max Temp | - | 1/30/0 | 3/90/0 | - | - |
| CHAR | E5 | Electrical Characterization | Per Datasheet Parameters | - | 1/30/0 | 3/90/0 | - | - |

- QBS: Qual By Similarity
- Qual Device SN65LBC175DWR is qualified at MSL1 260C

- 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/

TI Qualification ID: R-CHG-2205-033

[1]-Die EOS
1 unit – Unresolved- Reran another group from same fab/assembly lot and passed.

For questions regarding this notice, e-mails can be sent to the Change Management team or your local Field Sales Representative.

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