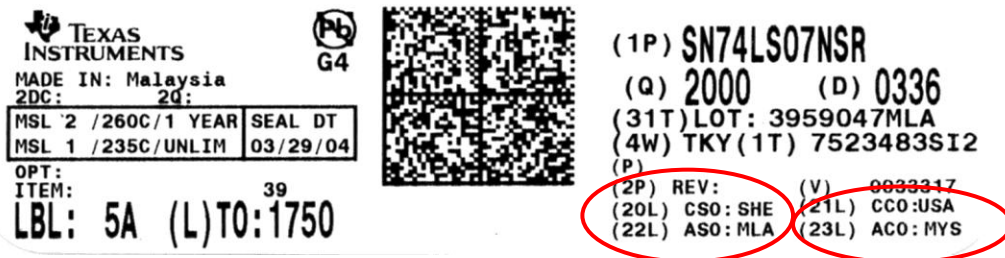


|  |  |   |   |                  |                       |
|--|--|---|---|------------------|-----------------------|
| <b>PCN Number:</b>   | 20240116006.1  |   | <b>PCN Date:</b>                              | January 16, 2024 |                       |
| <b>Title:</b>  | Qualification of RFAB using qualified Process Technology, Die Revision and additional Assembly Site for select devices |   |   |                  |                       |
| <b>Customer Contact:</b>   | Change Management team   |   | <b>Dept:</b>                                  | Quality Services |                       |
| <b>Proposed 1<sup>st</sup> Ship Date:</b>  | Apr 16, 2024   |   | <b>Estimated Sample Availability:</b>         | Feb 16, 2024*    |                       |
| <b>*Sample requests received after February 16, 2024 will not be supported.</b>  |  |   |   |                  |                       |
| <b>Change Type:</b>  |  |   |   |                  |                       |
| <input checked="" type="checkbox"/> Assembly Site  | <input checked="" type="checkbox"/> Design   | <input type="checkbox"/> Wafer Bump Material            |   |                  |                       |
| <input type="checkbox"/> Assembly Process  | <input type="checkbox"/> Data Sheet  | <input type="checkbox"/> Wafer Bump Process             |   |                  |                       |
| <input type="checkbox"/> Assembly Materials  | <input type="checkbox"/> Part number change  | <input checked="" type="checkbox"/> Wafer Fab Site      |   |                  |                       |
| <input type="checkbox"/> Mechanical Specification  | <input type="checkbox"/> Test Site   | <input checked="" type="checkbox"/> Wafer Fab Materials |   |                  |                       |
| <input checked="" type="checkbox"/> Packing/Shipping/Labeling  | <input type="checkbox"/> Test Process  | <input checked="" type="checkbox"/> Wafer Fab Process   |   |                  |                       |
|  |  |   |   |                  |                       |
| <b>PCN Details</b>   |  |   |   |                  |                       |
| <b>Description of Change:</b>  |  |   |   |                  |                       |
| Texas Instruments is pleased to announce the addition of RFAB using the LBC9 qualified process technology in addition to an Assembly site option for the devices listed below.   |  |   |   |                  |                       |
| <b>Current Fab Site</b>  |  |   | <b>Additional Fab Site</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> |
| SFAB   | J11  | 150 mm  | RFAB  | LBC9             | 300 mm                |
| The die was also changed as a result of the process change.  |  |   |   |                  |                       |
| There are no construction differences for this notification.   |  |   |   |                  |                       |
| Qual details are provided in the Qual Data Section.  |  |   |   |                  |                       |
| <b>Reason for Change:</b>  |  |   |   |                  |                       |
| 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. |  |   |   |                  |                       |
| <b>Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):</b>  |  |   |   |                  |                       |
| None   |  |   |   |                  |                       |
| <b>Impact on Environmental Ratings:</b>  |  |   |   |                  |                       |
| Checked boxes indicate the status of environmental ratings following implementation of this change. If below boxes are checked, there are no changes to the associated environmental ratings.  |  |   |   |                  |                       |
| <b>RoHS</b>  | <b>REACH</b>   | <b>Green Status</b>                                     | <b>IEC 62474</b>                              |                  |                       |
| <input checked="" type="checkbox"/> No Change  | <input checked="" type="checkbox"/> No Change  | <input checked="" type="checkbox"/> No Change           | <input checked="" type="checkbox"/> No Change |                  |                       |
| <b>Changes to product identification resulting from this PCN:</b>  |  |   |   |                  |                       |
| <b>Fab Site Information:</b>   |  |   |   |                  |                       |
| Chip Site  | Chip Site Origin Code (20L)  | Chip Site Country Code (21L)                            | Chip Site City                                |                  |                       |
| SH-BIP-1   | SHE  | USA   | Sherman                                       |                  |                       |
| <b>RFAB</b>  | <b>RFB</b>   | <b>USA</b>  | <b>Richardson</b>                             |                  |                       |
| <b>Die Rev:</b>  |  |   |   |                  |                       |
| <b>Current</b>   | <b>New</b>   |   |   |                  |                       |
| Die Rev [2P]   | Die Rev [2P]   |   |   |                  |                       |
| A, B   | -  |   |   |                  |                       |

**Assembly Site Information:**

| Assembly Site | Assembly Site Origin (22L) | Assembly Country Code (23L) | Assembly City       |
|---------------|----------------------------|-----------------------------|---------------------|
| FMX           | MEX                        | MEX                         | Aguascalientes      |
| <b>MLA</b>    | <b>MLA</b>                 | <b>MYS</b>                  | <b>Kuala Lumpur</b> |

Sample product shipping label (not actual product label)

**Product Affected:**

**Group 1 Device list (RFAB/Process migration, Die Change & MLA as an additional Assembly site):**

|           |            |              |
|-----------|------------|--------------|
| SN75157DR | UA9637ACDR | UA9637ACDRE4 |
|-----------|------------|--------------|

**Group 2 Device list (RFAB/Process migration & Die Change only):**

|          |            |
|----------|------------|
| SN75157P | SN75157PSR |
|----------|------------|

For alternate parts with similar or improved performance, please visit the product page on [TI.com](https://www.ti.com)

**Qualification Results**

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

| Type | #  | Test Name                           | Condition                | Duration      | Qual Device:<br>UA9637ACDR | Qual Device:<br>SN75157DR | Qual Device:<br>SN75157PSR | QBS<br>Reference<br>(Process):<br>TLV9062ID | QBS Reference<br>(Package):<br>TCAN1044VDRQ1<br>PG2.0 | QBS Reference<br>(Package):<br>TCAN1044VDRQ1<br>PG1.1 | QBS<br>Reference<br>(Package):<br>TL092CPS |
|------|----|-------------------------------------|--------------------------|---------------|----------------------------|---------------------------|----------------------------|---|---|---|--|
| HAST | A2 | Biased HAST                         | 130C/85%RH               | 96<br>Hours   | -                          | -                         | -                          | -   | 1/77/0  | 2/154/0   | -  |
| UHA  | A3 | Autoclave                           | 121C/15psig              | 96<br>Hours   | -                          | -                         | -                          | -   | 1/77/0  | 2/154/0   | 3/230/0                                    |
| TC   | A4 | Temperature<br>Cycle                | -65C/150C                | 500<br>Cycles | -                          | -                         | -                          | -   | 1/77/0  | 2/154/0   | 3/231/0                                    |
| HTSL | A6 | High<br>Temperature<br>Storage Life | 170C                     | 420<br>Hours  | -                          | -                         | -                          | -   | -   | -   | 3/231/0                                    |
| HTSL | A6 | High<br>Temperature<br>Storage Life | 175C                     | 500<br>Hours  | -                          | -                         | -                          | -   | 1/45/0  | 2/90/0  | -  |
| HTOL | B1 | Life Test                           | 125C                     | 1000<br>Hours | -                          | -                         | -                          | -   | 1/77/0  | 2/154/0   | -  |
| HTOL | B1 | Life Test                           | 150C                     | 300<br>Hours  | -                          | -                         | -                          | 3/231/0                                     | -   | -   | -  |
| ELFR | B2 | Early Life<br>Failure Rate          | 125C                     | 48<br>Hours   | -                          | -                         | -                          | 3/2400/1 <sup>1</sup>                       | -   | -   | -  |
| WBP  | C2 | Bond Pull                           | 76 Wires, 3<br>units min | Wires         | 1/76/0                     | 1/76/0                    | 1/76/0                     | -   | -   | -   | -  |

| Type | #  | Test Name                      | Condition   | Duration      | Qual Device:<br>UA9637ACDR | Qual Device:<br>SN75157DR | Qual Device:<br>SN75157PSR | QBS<br>Reference<br>(Process):<br>TLV9062ID | QBS Reference<br>(Package):<br>TCAN1044VDRQ1<br>PG2.0 | QBS Reference<br>(Package):<br>TCAN1044VDRQ1<br>PG1.1 | QBS<br>Reference<br>(Package):<br>TL092CPS |
|------|----|--------------------------------|---|---------------|----------------------------|---------------------------|----------------------------|---|---|---|--|
| SD   | C3 | PB Solderability               | Precondition<br>w.155C Dry<br>Bake (4 hrs<br>+/- 15<br>minutes) | -             | -                          | -                         | -                          | -   | -   | 1/15/0  | -  |
| SD   | C3 | PB-Free<br>Solderability       | Precondition<br>w.155C Dry<br>Bake (4 hrs<br>+/- 15<br>minutes) | -             | -                          | -                         | -                          | -   | -   | 1/15/0  | -  |
| PD   | C4 | Physical<br>Dimensions         | Cpk>1.67  | -             | -                          | -                         | -                          | -   | 1/10/0  | 2/20/0  | -  |
| ESD  | E2 | ESD CDM                        | -   | 250<br>Volts  | 1/3/0                      | 1/3/0                     | 1/3/0                      | -   | -   | -   | -  |
| ESD  | E2 | ESD HBM                        | -   | 1000<br>Volts | -                          | 1/3/0                     | -                          | -   | -   | -   | -  |
| LU   | E4 | Latch-Up                       | Per JESD78  | -             | -                          | 1/3/0                     | -                          | -   | -   | -   | -  |
| CHAR | E5 | Electrical<br>Characterization | Min, Typ, Max<br>Temp   | -             | -                          | 1/30/0                    | -                          | -   | -   | -   | -  |
| CHAR | E5 | Electrical<br>Characterization | Per<br>Datasheet<br>Parameters                                  | -             | -                          | 1/30/0                    | -                          | -   | -   | -   | -  |

- QBS: Qual By Similarity
- Qual Device UA9637ACDR is qualified at MSL1 260C
- Qual Device SN75157DR is qualified at MSL1 260C
- Qual Device SN75157PSR 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-2205-015

### Qualification Results

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

| Type  | #  | Test Name                     | Condition   | Duration   | Qual<br>Device:<br>SN75157P | QBS<br>Reference<br>(Process):<br>TLV9062ID | QBS<br>Reference<br>(Package):<br>NE5532P | QBS<br>Reference<br>(Package):<br>UCC37322P | QBS<br>Reference<br>(Process,<br>Product):<br>SN75157DR |
|-------|----|-------------------------------|---|------------|-----------------------------|---|---|---|---|
| HAST  | A2 | Biased HAST                   | 130C/85%RH  | 96 Hours   | -                           | -   | 3/231/0                                   | -   | -   |
| UHAST | A3 | Autoclave                     | 121C/15psig   | 96 Hours   | -                           | -   | -   | 3/231/0                                     | -   |
| TC    | A4 | Temperature Cycle             | -65C/150C   | 500 Cycles | -                           | -   | -   | 3/231/0                                     | -   |
| HTSL  | A6 | High Temperature Storage Life | 170C  | 420 Hours  | -                           | -   | -   | 3/231/0                                     | -   |
| HTOL  | B1 | Life Test                     | 150C  | 300 Hours  | -                           | 3/231/0                                     | 3/231/0                                   | -   | -   |
| ELFR  | B2 | Early Life Failure Rate       | 125C  | 48 Hours   | -                           | 3/2400/1 <sup>1</sup>                       | -   | -   | -   |
| 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                      | -   | -   | -   | -   |
| SD    | C3 | PB-Free Solderability         | 8 Hours Steam Age   | -          | -                           | -   | 3/66/0                                    | 3/66/0                                      | -   |
| SD    | C3 | PB-Free Solderability         | Precondition w.155C<br>Dry Bake (4 hrs +/- 15<br>minutes); PB-Free<br>Solder, | -          | -                           | -   | 3/66/0                                    | 3/66/0                                      | -   |
| ESD   | E2 | ESD CDM                       | -   | 250 Volts  | 1/3/0                       | -   | -   | -   | -   |

| Type | #  | Test Name                   | Condition                | Duration   | Qual Device:<br><a href="#">SN75157P</a> | QBS Reference (Process):<br><a href="#">TLV9062ID</a> | QBS Reference (Package):<br><a href="#">NE5532P</a> | QBS Reference (Package):<br><a href="#">UCC37322P</a> | QBS Reference (Process, Product):<br><a href="#">SN75157DR</a> |
|------|----|-----------------------------|--------------------------|------------|--|---|---|---|--|
| ESD  | E2 | ESD HBM                     | -                        | 1000 Volts | -  | -   | -   | -   | 1/3/0  |
| LU   | E4 | Latch-Up                    | Per JESD78               | -          | -  | -   | -   | -   | 1/3/0  |
| CHAR | E5 | Electrical Characterization | Min, Typ, Max Temp       | -          | 1/30/0                                   | -   | -   | -   | 1/30/0   |
| CHAR | E5 | Electrical Characterization | Per Datasheet Parameters | -          | 1/30/0                                   | -   | -   | -   | 1/30/0   |

- QBS: Qual By Similarity
- 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-2205-022

[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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