

| PCN Number: | 20250325001.2 | | | PCN Date: | March 26, 2025 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---|--|---|---------------------|---------------|---------------|---------------|-----------------------|------------------------------------|----------------|----------------------|----------------|----------------|--------------|-------------------|-------------|---------------|---------------|------------------|-------------|--------------|---------------|------------------|-------------|---------------|---------------|------------------|--------------|-------------|---------------|--------------------|----------------|------------|---------------|--------------------|----------------|
| Title: | Qualification of additional BOM materials for selected devices | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Customer Contact: | Change Management team | | Dept: | Quality Services | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Proposed 1st Ship Date: | September 22, 2025 | | Sample Requests accepted until: | May 25, 2025* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Sample requests received after May 25, 2025 will not be supported. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Change Type: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Assembly Site | <input 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 checked="" type="checkbox"/> | Assembly Materials | <input type="checkbox"/> | Part number change | <input type="checkbox"/> | Wafer Fab Site | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Mechanical Specification | <input type="checkbox"/> | Test Site | <input type="checkbox"/> | Wafer Fab Material | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Packing/Shipping/Labeling | <input type="checkbox"/> | Test Process | <input type="checkbox"/> | Wafer Fab Process | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PCN Details | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Description of Change: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| This PCN is to inform of the qualification of an additional BOM materials for the list of devices in the product affected sections below. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>What</th> <th>Current</th> <th>Additional</th> </tr> </thead> <tbody> <tr> <td>Mount Compound</td> <td>4205846, 4208458 or 4042500</td> <td>4147858</td> </tr> <tr> <td>Mold Compound</td> <td>4209640</td> <td>4211880</td> </tr> </tbody> </table> | | | | | | What | Current | Additional | Mount Compound | 4205846, 4208458 or 4042500 | 4147858 | Mold Compound | 4209640 | 4211880 | | | | | | | | | | | | | | | | | | | | | | | |
| What | Current | Additional | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mount Compound | 4205846, 4208458 or 4042500 | 4147858 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mold Compound | 4209640 | 4211880 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Qualification results are shown below | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Reason for Change: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Standardization | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative): | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Impact on Environmental Ratings | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RoHS | | REACH | | Green Status | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> No Change | | <input checked="" type="checkbox"/> No Change | | <input checked="" type="checkbox"/> No Change | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Changes to product identification resulting from this PCN: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| None | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Affected: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tbody> <tr> <td>HVDA5405QDRQ1</td> <td>OPA2314AQDRQ1</td> <td>REF5050AQDRQ1</td> <td>TMP175AQDRQ1</td> </tr> <tr> <td>HVDA5415QDRQ1</td> <td>OPA2376AQDRQ1</td> <td>SN1808007QDRQ1</td> <td>TMP275AQDRQ1</td> </tr> <tr> <td>HVDA541QDRQ1</td> <td>OPA348AQDRQ1</td> <td>SN65HVD1040AQDRQ1</td> <td>TMP75AQDRQ1</td> </tr> <tr> <td>HVDA5425QDRQ1</td> <td>OPA4171AQDRQ1</td> <td>SN65HVD1780QDRQ1</td> <td>TMP75BQDRQ1</td> </tr> <tr> <td>HVDA542QDRQ1</td> <td>REF5020AQDRQ1</td> <td>SN65HVD1782QDRQ1</td> <td>TMP75CQDRQ1</td> </tr> <tr> <td>LM2904VZQDRQ1</td> <td>REF5025AQDRQ1</td> <td>SN65HVDA100QDRKN</td> <td>TPS5420QDRRB</td> </tr> <tr> <td>LM9061QDRQ1</td> <td>REF5030AQDRQ1</td> <td>SN65HVDA1040AQDRKN</td> <td>TPS7A6933QDRQ1</td> </tr> <tr> <td>MLA00149DR</td> <td>REF5040AQDRQ1</td> <td>SN65HVDA1040AQDRRB</td> <td>TPS7A6950QDRQ1</td> </tr> </tbody> </table> | | | | | | HVDA5405QDRQ1 | OPA2314AQDRQ1 | REF5050AQDRQ1 | TMP175AQDRQ1 | HVDA5415QDRQ1 | OPA2376AQDRQ1 | SN1808007QDRQ1 | TMP275AQDRQ1 | HVDA541QDRQ1 | OPA348AQDRQ1 | SN65HVD1040AQDRQ1 | TMP75AQDRQ1 | HVDA5425QDRQ1 | OPA4171AQDRQ1 | SN65HVD1780QDRQ1 | TMP75BQDRQ1 | HVDA542QDRQ1 | REF5020AQDRQ1 | SN65HVD1782QDRQ1 | TMP75CQDRQ1 | LM2904VZQDRQ1 | REF5025AQDRQ1 | SN65HVDA100QDRKN | TPS5420QDRRB | LM9061QDRQ1 | REF5030AQDRQ1 | SN65HVDA1040AQDRKN | TPS7A6933QDRQ1 | MLA00149DR | REF5040AQDRQ1 | SN65HVDA1040AQDRRB | TPS7A6950QDRQ1 |
| HVDA5405QDRQ1 | OPA2314AQDRQ1 | REF5050AQDRQ1 | TMP175AQDRQ1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HVDA5415QDRQ1 | OPA2376AQDRQ1 | SN1808007QDRQ1 | TMP275AQDRQ1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HVDA541QDRQ1 | OPA348AQDRQ1 | SN65HVD1040AQDRQ1 | TMP75AQDRQ1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HVDA5425QDRQ1 | OPA4171AQDRQ1 | SN65HVD1780QDRQ1 | TMP75BQDRQ1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HVDA542QDRQ1 | REF5020AQDRQ1 | SN65HVD1782QDRQ1 | TMP75CQDRQ1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LM2904VZQDRQ1 | REF5025AQDRQ1 | SN65HVDA100QDRKN | TPS5420QDRRB | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LM9061QDRQ1 | REF5030AQDRQ1 | SN65HVDA1040AQDRKN | TPS7A6933QDRQ1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MLA00149DR | REF5040AQDRQ1 | SN65HVDA1040AQDRRB | TPS7A6950QDRQ1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | |
|---------------|---------------|--------------|---------------|
| OPA1612AQDRQ1 | REF5045AQDRQ1 | TMP107BQDRQ1 | UCC27528QDRQ1 |
| OPA2171AQDRQ1 | | | |



TI Information
Selective Disclosure

Automotive Qualification Summary
(As per AEC-Q100 Rev. J and JEDEC Guidelines)

Approve Date 03-MARCH -2024

Product Attributes

| Attributes | Qual Device: SN65HVD1780QDRQ1 | QBS Process Reference: SN65HVDA1040AQDRQ1 | QBS Package Reference: SN65HVD1781AQDRQ1 |
|--------------------------|--|--|---|
| Automotive Grade Level | Grade 1 | Grade 1 | Grade 1 |
| Operating Temp Range (C) | -40 to 125 | -40 to 125 | -40 to 125 |
| Product Function | Interface | Interface | Interface |
| Wafer Fab Supplier | DP1DM5 | DL-LIN | DP1DM5 |
| Assembly Site | MLA | MLA | MLA |
| Package Group | SOIC | SOIC | SOIC |
| Package Designator | D | D | D |
| Pin Count | 8 | 8 | 8 |

- QBS: Qual By Similarity, also known as Generic Data
- Qual Device SN65HVD1780QDRQ1 is qualified at MSL1 260C

Qualification Results

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

| Type | # | Test Spec | Min Lot Qty | SS / Lot | Test Name | Condition | Duration | Qual Device: SN65HVD1780QDRQ1 | QBS Process Reference: SN65HVD1040AQDRQ1 | QBS Package Reference: SN65HVD1781AQDRQ1 |
|--|----|-------------------------------------|-------------|----------|-------------------------------|-------------|------------|--|---|---|
| Test Group A - Accelerated Environment Stress Tests | | | | | | | | | | |
| PC | A1 | JEDEC J-STD-020 JESD22-A113 | 3 | 77 | Preconditioning | MSL1 260C | - | 3/Pass | 3/Pass | 3/Pass |
| HAST | A2 | JEDEC JESD22-A110 | 3 | 77 | Biased HAST | 130C/85%RH | 96 Hours | - | 3/231/0 | 3/231/0 |
| AC/UHAST | A3 | JEDEC JESD22-A102/JEDEC JESD22-A118 | 3 | 77 | Autoclave | 121C/15psig | 96 Hours | - | 3/231/0 | 3/231/0 |
| AC/UHAST | A3 | JEDEC JESD22-A102/JEDEC JESD22-A118 | 3 | 77 | Unbiased HAST | 130C/85%RH | 96 Hours | 3/231/0 | - | - |
| TC | A4 | JEDEC JESD22-A104 and Appendix 3 | 3 | 77 | Temperature Cycle | -65C/150C | 500 Cycles | 3/231/0 | 3/231/0 | 3/231/0 |
| TC-BP | A4 | MIL-STD883 Method 2011 | 1 | 5 | Post Temp Cycle Bond Pull | - | - | 3/15/0 | - | 1/5/0 |
| HTSL | A6 | JEDEC JESD22-A103 | 1 | 45 | High Temperature Storage Life | 150C | 1000 Hours | - | 3/135/0 | - |
| HTSL | A6 | JEDEC JESD22-A103 | 1 | 45 | High Temperature Storage Life | 175C | 500 Hours | - | - | 1/45/0 |
| Test Group B - Accelerated Lifetime Simulation Tests | | | | | | | | | | |
| HTOL | B1 | JEDEC JESD22-A108 | 3 | 77 | Life Test | 125C | 1000 Hours | - | 3/231/0 | 2/154/0 |

| Type | # | Test Spec | Min Lot Qty | SS / Lot | Test Name | Condition | Duration | Qual Device: SN65HVD1780QDRQ1 | QBS Process Reference: SN65HVD1040AQDRQ1 | QBS Package Reference: SN65HVD1781AQDRQ1 |
|--|----|----------------------------|-------------|----------|--------------------------|--|-------------|--|---|---|
| HTOL | B1 | JEDEC JESD22-A108 | 3 | 77 | Life Test | 140C | 480 Hours | - | - | 1/77/0 |
| ELFR | B2 | AEC Q100-008 | 3 | 800 | Early Life Failure Rate | 125C | 48 Hours | - | 3/2400/0 | - |
| Test Group C - Package Assembly Integrity Tests | | | | | | | | | | |
| WBS | C1 | AEC Q100-001 | 1 | 30 | Wire Bond Shear | Minimum of 5 devices, 30 wires Cpk>1.67 | Wires | - | 3/90/0 | 3/90/0 |
| WBP | C2 | MIL-STD883 Method 2011 | 1 | 30 | Wire Bond Pull | Minimum of 5 devices, 30 wires Cpk>1.67 | Wires | - | 3/90/0 | 3/90/0 |
| SD | C3 | JEDEC J-STD-002 | 1 | 15 | PB Solderability | >95% Lead Coverage | - | - | 1/15/0 | - |
| SD | C3 | JEDEC J-STD-002 | 1 | 15 | PB-Free Solderability | >95% Lead Coverage | - | 3/45/0 | 1/15/0 | - |
| PD | C4 | JEDEC JESD22-B100 and B108 | 3 | 10 | Physical Dimensions | Cpk>1.67 | - | - | 3/30/0 | 3/30/0 |
| Test Group E - Electrical Verification Tests | | | | | | | | | | |
| ESD | E2 | AEC Q100-002 | 1 | 3 | ESD HBM | - | 16000 Volts | - | - | 1/3/0 |
| ESD | E2 | AEC Q100-002 | 1 | 3 | ESD HBM | - | 4000 Volts | - | - | 1/3/0 |
| ESD | E3 | AEC Q100-011 | 1 | 3 | ESD CDM | - | 1500 Volts | - | - | 1/3/0 |
| LU | E4 | AEC Q100-004 | 1 | 3 | Latch-Up | Per AEC Q100-004 | - | - | - | 1/6/0 |
| ED | E5 | AEC Q100-009 | 3 | 30 | Electrical Distributions | Cpk>1.67 Room, hot, and cold | - | - | 3/90/0 | 3/90/0 |
| Type | # | Test Spec | Min Lot Qty | SS / Lot | Test Name | Condition | Duration | Qual Device: SN65HVD1780QDRQ1 | QBS Process Reference: SN65HVD1040AQDRQ1 | QBS Package Reference: SN65HVD1781AQDRQ1 |
| Additional Tests | | | | | | | | | | |

- 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

Ambient Operating Temperature by Automotive Grade Level:

- Grade 0 (or E): -40C to +150C
- Grade 1 (or Q): -40C to +125C
- Grade 2 (or T): -40C to +105C
- Grade 3 (or I) : -40C to +85C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

- Room/Hot/Cold : HTOL, ED
- Room/Hot: THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
- Room : AC/uHAST

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

TI Qualification ID: R-CHG-2206-087

ZVEI IDs: SEM-PA-07, SEM-PA-11

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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