12500 TI Boulevard, MS 8640, Dallas, Texas 75243

**PCN# 20220324002.1**
**Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, Datasheet update and additional Assembly site/BOM options for select devices**
**Change Notification / Sample Request**

**Date:** March 30, 2022
**To:** TOKYO ELECTRON DEVICE (DSTR) PCN

Dear Customer:

This is an announcement of a change to a device that is currently offered by Texas Instruments (TI). The details of this change are on the following pages, and are in alignment with our standard product change notification (PCN) process.

TI requires acknowledgement of receipt of this notification within 30 days of the date of this notice. Lack of acknowledgement of this notice within 30 days constitutes acceptance of the change. If samples or additional data are required, requests must be received within 30 days of this notification, given that samples are not built ahead of the change.

The Proposed First Ship date in this PCN letter is the earliest possible date that customers could receive the changed material. It is our commitment that the changed device will not ship before that date. If samples are requested within the 30 day sample request window, customers will still have 30-days to complete their evaluation regardless of the proposed 1st ship date.

This particular PCN is related to TI's multiyear transition plan for our two remaining factories with 150-millimeter production (DFAB in Dallas, Texas, and SFAB in Sherman, Texas). DFAB will remain open, but will focus on 200-mm production, with a smaller set of technologies. SFAB will close no earlier than 2024 and no later than 2025. As referenced in the "reason for change" below, these changes are part of our multiyear plan to transition these products to newer, more efficient manufacturing processes and technologies, underscoring our commitment to product longevity and supply continuity.

For questions regarding this notice or to provide acknowledgement of this PCN, you may contact your local Field Sales Representative or the PCN Team (PCN_ww_admin_team@list.ti.com). For sample requests or sample related questions, contact your local Field Sales Representative. As always, we thank you for your continued business.

PCN Team
SC Business Services

**20220324002.1**
**Attachment: 1**

## Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

| DEVICE | CUSTOMER PART NUMBER |
|---|---|
| SN65HVD10DR | null |
| SN65HVD3088EDR | null |
| SN65HVD11DR | null |
| SN65HVD12DR | null |
| SN65HVD3088EDRG4 | null |
| SN65HVD3088EDGKR | null |
| SN65HVD10DRG4 | null |

Technical details of this Product Change follow on the next page(s).

| | | | |
|---|---|---|---|
| **PCN Number:** | 20220324002.1 | **PCN Date:** | March 30, 2022 |
| **Title:** | Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, Datasheet update and additional Assembly site/BOM options for select devices | | |
| **Customer Contact:** | PCN Manager | **Dept:** | Quality Services |
| **Proposed 1st Ship Date:** | Jun 30, 2022 | **Estimated Sample Availability:** | Date provided at sample request. |

**Change Type:**

| | | | | | |
|---|---|---|---|---|---|
| ☒ | Assembly Site | ☐ | Assembly Process | ☒ | Assembly Materials |
| ☒ | Design | ☒ | Electrical Specification | ☐ | Mechanical Specification |
| ☐ | Test Site | ☐ | Packing/Shipping/Labeling | ☐ | Test Process |
| ☐ | Wafer Bump Site | ☐ | Wafer Bump Material | ☐ | Wafer Bump Process |
| ☒ | Wafer Fab Site | ☒ | Wafer Fab Materials | ☒ | Wafer Fab Process |
| | | ☐ | Part number change | | |

## PCN Details

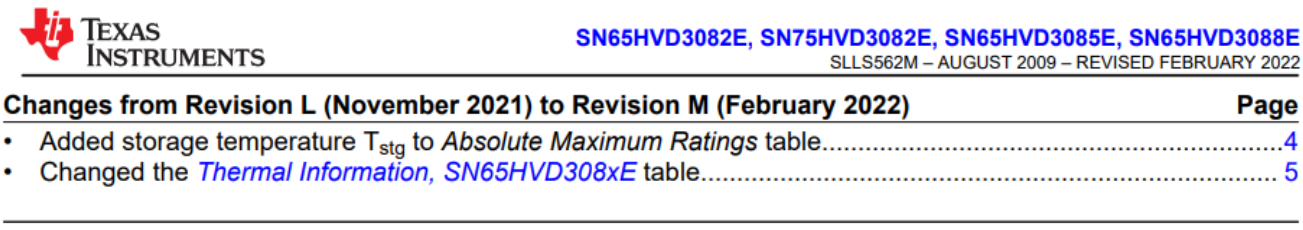
**Description of Change:**

Texas Instruments is pleased to announce the qualification of a new fab & process technology (RFAB, LBC7) and assembly (MLA, HFTF) site/BOM options for selected devices as listed below in the product affected section.

| Current Fab Site | | | New Fab Site | | |
|---|---|---|---|---|---|
| **Fab Site** | **Process** | **Wafer Diameter** | **Fab Site** | **Process** | **Wafer Diameter** |
| DL-LIN | LBC3S | 150 mm | RFAB | LBC7 | 300 mm |
| DL-LIN | LBC3S | 200 mm | | | |

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

The datasheets will be changing as a result of the above mentioned changes. The datasheet change details can be reviewed in the datasheet revision history. The link to the revised datasheet is available in the table below.

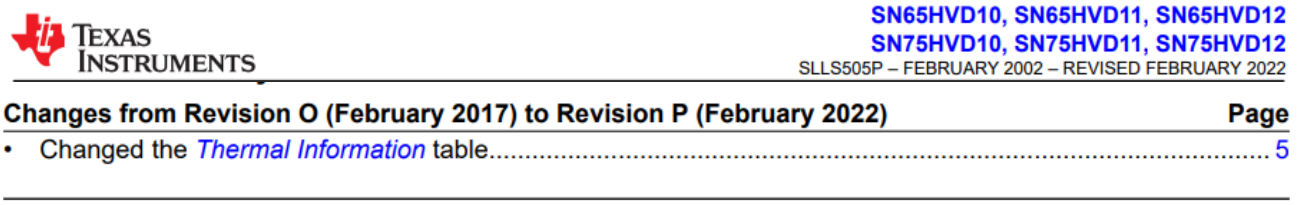


TEXAS INSTRUMENTS

**SN65HVD3082E, SN75HVD3082E, SN65HVD3085E, SN65HVD3088E**
SLLS562M – AUGUST 2009 – REVISED FEBRUARY 2022

**Changes from Revision L (November 2021) to Revision M (February 2022)** **Page**

- Added storage temperature $T_{stg}$ to *Absolute Maximum Ratings* table....4
- Changed the *Thermal Information, SN65HVD308xE* table....5



TEXAS INSTRUMENTS

**SN65HVD10, SN65HVD11, SN65HVD12**
**SN75HVD10, SN75HVD11, SN75HVD12**
SLLS505P – FEBRUARY 2002 – REVISED FEBRUARY 2022

**Changes from Revision O (February 2017) to Revision P (February 2022)** **Page**

- Changed the *Thermal Information* table....5

| Product Folder | Current Datasheet Number | New Datasheet Number | Link to full datasheet |
|---|---|---|---|
| SN65HVD3082E | SLLS562L | SLLS562M | http://www.ti.com/product/SN65HVD3088E |
| SN65HVD10 | SLLS505O | SLLS505P | http://www.ti.com/product/SN65HVD10 |

Construction differences are noted below:

**Group 1 device (FMX to MLA)**
No material differences between sites

**Group 2 device (ASESH, HNA to HFTFAT)**

| | ASESH | HNA | HFTFAT |
|---|---|---|---|
| Lead finish | NiPdAuAg | NiPdAu | Matte Sn |
| Bond wire/diameter | Au, Cu | Au | Cu |
| Mount Compound | EY1000063 | 400180 | A-18 |
| Mold Compound | EN2000515 | 450179 | R-30 |

Upon expiry of this PCN TI will combine lead free solutions in a single ***standard part number***, for example; ***SN65HVD3085EDGKR*** – can ship with both Matte Sn and NiPdAu.

Example:

- Customer order for 7500units of SN65HVD3085EDGKR with 2500 units SPQ (Standard Pack Quantity per Reel).

- TI can satisfy the above order in one of the following ways.
  I. 3 Reels of NiPdAu finish.
  II. 3 Reels of Matte Sn finish
  III. 2 Reels of Matte Sn and 1 reel of NiPdAu finish.
  IV. 2 Reels of NiPdAu and 1 reel of Matte Sn finish.

Tube versions of the devices are included in EOL notice PDN# 20220324003.3

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-milimeter 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

**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 | IEC 62474 |
|---|---|---|---|
| ☒ No Change | ☒ No Change | ☒ No Change | ☒ No Change |

**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** |

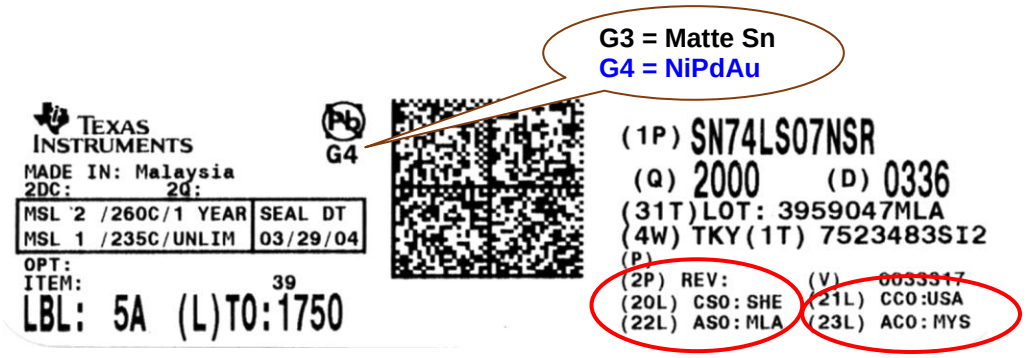
**Die Rev:**

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

**Assembly Site Information:**

| Assembly Site | Assembly Site Origin (22L) | Assembly Country Code (23L) | Assembly City |
|---|---|---|---|
| FMX | MEX | MEX | Aguascalientes |
| ASESH | ASH | CHN | Shanghai |
| HNA | HNT | THA | Ayutthaya |
| **HFTFAT** | **HFT** | **CHN** | **Hefei** |
| **MLA** | **MLA** | **MYS** | **Kuala Lumpur** |

Sample product shipping label (not actual product label)




**Product Affected:**

**Group 1 Device List (RFAB/Process migration + FMX to MLA Assembly Site):**

| | | | |
|---|---|---|---|
| SN65HVD10DR | SN65HVD11DR | SN65HVD12DR | SN65HVD3088EDR |
| SN65HVD10DRG4 | SN65HVD11DRG4 | SN65HVD12DRG4 | SN65HVD3088EDRG4 |
| SN65HVD10QDR | SN65HVD11QDR | SN65HVD3085EDR | |

**Group 2 Device List (RFAB/Process migration + ASESH/HNA to HFTF Assembly Site):**

| | |
|---|---|
| SN65HVD3085EDGKR | SN65HVD3088EDGKR |

# Qualification Report

## Approve Date 01-Dec-2021

### Qualification Results

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

| Type | Test Name / Condition | Duration | Qual Device: SN65HVD11QDR | Qual Device: SN65HVD12DR | QBS Process Reference: TPS51217DSC | QBS Package Reference: TCAN1044VDQ1 (PG2.0) | QBS Package Reference: TCAN1044VD_Q1 (PG1.1/PG1.0) |
|---|---|---|---|---|---|---|---|
| AC | Autoclave 121C | 96 Hours | - | - | 3/231/0 | 1/77/0 | 2/154/0 |
| CDM | ESD - CDM | 1500 V | 1/3/0 | 1/3/0 | - | - | - |
| ED | Electrical Characterization | Per Datasheet Parameters | Pass | Pass | - | - | - |
| HAST | Biased HAST, 130C/85%RH | 96 Hours | - | - | 3/231/0 | 1/77/0 | 2/154/0 |
| HBM | ESD - HBM (All Pins) | 4000 V | 1/3/0 | 1/3/0 | - | - | - |
| HBM | ESD - HBM (Bus Pins Only) | 16000 V | 1/3/0 | 1/3/0 | - | - | - |
| HTOL | Life Test, 125C | 1000 Hours | - | - | - | 1/77/0 | 2/154/0 |
| HTOL | Life Test, 135C | 635 Hours | - | - | 3/231/0 | - | - |
| HTSL | High Temp Storage Bake 175C | 500 Hours | - | - | - | 1/45/0 | 2/90/0 |
| HTSL | High Temp Storage Bake, 170C | 420 Hours | - | - | 3/231/0 | - | - |
| LU | Latch-up | ( Per JESD78 ) | 1/6/0 | 1/6/0 | - | - | - |
| TC | Temperature Cycle, -65/150C | 500 Cycles | - | - | 3/231/0 | 1/77/0 | 2/154/0 |
| WBP | Bond Pull | Wires | 1/76/0 | 1/76/0 | - | 1/30/0 | 2/60/0 |
| WBS | Ball Bond Shear | Wires | 1/76/0 | 1/76/0 | - | 1/30/0 | 2/60/0 |

- QBS: Qual By Similarity
- Qual Device SN65HVD11QDR is qualified at LEVEL1-260C
- Qual Device SN65HVD12DR is qualified at LEVEL1-260C
- 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/

**Green/Pb-free Status:**

Qualified Pb-Free (SMT) and Green

## Qualification Report

## Approve Date 09-Mar-2022

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

| Type | Test Name / Condition | Duration | Qual Device: BOND6-SN65HVD3085EDR | Qual Device: BOND6-SN65HVD3085EDGKR | Qual Device: BOND8-SN65HVD3088EDR | Qual Device: BOND8-SN65HVD3088EDGKR | QBS Process Reference: TPS51217DSC | QBS Package Reference: TCAN1044VDQ1(PG2.0) | QBS Package Reference: TCAN1044VD_Q1(PG1.1/PG1.0) |
|---|---|---|---|---|---|---|---|---|---|
| AC | Autoclave 121C | 96 Hours | - | - | - | - | 6/462/0 | 1/77/0 | 2/154/0 |
| CDM | ESD - CDM | 1500 V | 1/3/0 | 1/3/0 | 1/3/0 | 1/3/0 | 3/9/0 | - | - |
| ED | Electrical Characterization | Per Datasheet Parameters | 1/30/0 | - | 1/30/0 | - | 3/60/0 | 2/60/0 | - |
| HAST | Biased HAST 130C/85%RH | 96 Hours | - | - | - | - | 3/231/0 | 1/77/0 | 2/154/0 |
| HBM | ESD - HBM | 4000 V | 1/3/0 | - | 1/3/0 | - | - | - | - |
| HTOL | Life Test, 135C | 635 Hours | - | - | - | - | 3/231/0 | - | - |
| HTSL | High Temp Storage Bake 175C | 500 Hours | - | - | - | - | - | 1/45/0 | 2/90/0 |
| LI | Lead Pull to Destruction | Leads | - | - | - | - | - | - | 1/24/0 |
| LU | Latch-up | (per JESD78) | 1/6/0 | - | 1/6/0 | - | 3/18/0 | - | - |
| PD | Physical Dimensions | Cpk>1.67 | - | - | - | - | - | 1/10/0 | 2/20/0 |
| SD | Surface Mount Solderability | Pb Free Solder | - | - | - | - | - | - | 1/15/0 |
| SD | Surface Mount Solderability | Pb Solder | - | - | - | - | - | - | 1/15/0 |
| TC | Temperature Cycle -65/150C | 500 Cycles | - | - | - | - | 3/231/0 | 1/77/0 | 2/154/0 |
| WBP | Bond Pull | Wires | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | - | 1/30/0 | 2/60/0 |
| WBS | Ball Bond Shear | Wires | 1/76/0 | 1/76/0 | 1/76/0 | 1/76/0 | - | 1/30/0 | 2/60/0 |

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

| Type | Test Name / Condition | Duration | QBS Package Reference: TPS62842DGR |
|---|---|---|---|
| AC | Autoclave 121C | 96 Hours | 3/231/0 |
| CDM | ESD - CDM | 1500 V | 1/3/0 |
| ED | Electrical Characterization | Per Datasheet Parameters | - |
| HAST | Biased HAST, 130C/85%RH | 96 Hours | 3/231/0 |
| HBM | ESD - HBM | 4000 V | 1/3/0 |
| HTOL | Life Test, 135C | 635 Hours | - |
| HTSL | High Temp Storage Bake 175C | 500 Hours | - |
| LI | Lead Pull to Destruction | Leads | - |
| LU | Latch-up | (per JESD78) | 1/3/0 |
| PD | Physical Dimensions | Cpk>1.67 | - |
| PKG | Lead Finish Adhesion | 0 Hr | 3/45/0 |
| SD | Solderability test | 4 | 3/66/0 |
| SD | Surface Mount Solderability | Pb Free Solder | - |
| SD | Surface Mount Solderability | Pb Solder | - |
| TC | Temperature Cycle, -65/150C | 500 Cycles | 3/231/0 |
| WBP | Bond Pull | Wires | - |
| WBS | Ball Bond Shear | Wires | - |

- QBS: Qual By Similarity
- Qual Device BOND6-SN65HVD3085EDGKR is qualified at LEVEL1-260C
- Qual Device BOND8-SN65HVD3088EDGKR is qualified at LEVEL1-260C
- Qual Device BOND6- SN65HVD3085EDR is qualified at LEVEL1-260C
- Qual Device BOND8- SN65HVD3088EDR is qualified at LEVEL1-260C

- 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/

**Green/Pb-free Status:**

Qualified Pb-Free (SMT) and Green

**Qualification Report**

**Approve Date 22-Feb-2022**

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

| Type | Test Name / Condition | Duration | Qual Device: SN65HVD10QDR | QBS Process Reference: TPS51217DSC | QBS Package Reference: TCAN1044VDQ1(PG2.0) | QBS Package Reference: TCAN1044VD_Q1(PG1.1/PG1.0) |
|---|---|---|---|---|---|---|
| AC | Autoclave 121C | 96 Hours | - | 6/462/0 | 1/77/0 | 2/154/0 |
| CDM | ESD - CDM | 1500 V | 1/3/0 | 3/9/0 | - | - |
| ED | Electrical Characterization | Per Datasheet Parameters | Pass | Pass | - | - |
| HAST | Biased HAST, 130C/85%RH | 96 Hours | - | 3/231/0 | 1/77/0 | 2/154/0 |
| HBM | ESD – HBM (Bus Pins) | 16000 V | 1/3/0 | - | - | - |
| HBM | ESD – HBM (All Pins) | 4000 V | 1/3/0 | - | - | - |
| HTOL | Life Test, 135C | 635 Hours | - | 3/231/0 | - | - |
| HTSL | High Temp Storage Bake 175C | 500 Hours | - | - | 1/45/0 | 2/90/0 |
| LI | Lead Pull to Destruction | Leads | - | - | - | 1/24/0 |
| LU | Latch-up | (per JESD78) | 1/6/0 | 3/18/0 | - | - |
| MSL | Moisture Sensitivity, L1 | L1-260C | 1/12/0 | - | - | - |
| SD | Surface Mount Solderability | Pb Free Solder | - | - | - | 1/15/0 |
| SD | Surface Mount Solderability | Pb Solder | - | - | - | 1/15/0 |
| TC | Temperature Cycle -65/150C | 500 Cycles | - | 3/231/0 | 1/77/0 | 2/154/0 |
| WBP | Bond Pull | Wires | 1/76/0 | - | - | - |
| WBS | Ball Bond Shear | Wires | 1/76/0 | - | - | - |

- QBS: Qual By Similarity
- Qual Device SN65HVD10QDR is qualified at LEVEL1-260C

- 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/

**Green/Pb-free Status:**

Qualified Pb-Free (SMT) and Green

For questions regarding this notice, e-mails can be sent to the contact shown below or your local Field Sales Representative.

| Location | E-Mail |
|---|---|
| WW Change Management Team | PCN_ww_admin_team@list.ti.com |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