12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20230215001.1
Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, Datasheet and additional Assembly site/BOM options for select devices
Change Notification / Sample Request

Date: February 16, 2023
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

20230215001.1
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
SN65HVD485EDGKR	null
SN65HVD31DR	null
SN65HVD485EDR	null
SN65HVD32DR	null
SN65HVD35DR	null
SN65HVD33DR	null
SN65HVD485EP	null
SN65HVD30DR	null
SN65HVD34DR	null

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

PCN Number:	20230215001.1	PCN Date:	February 16, 2023
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, Datasheet and additional Assembly site/BOM options for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	May 17, 2023	Sample requests accepted until:	Mar 16, 2023*

***Sample requests received after March 16, 2023 will not be supported.**

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 for selected 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	LBC3S	150 mm	RFAB	LBC7	300 mm
DL-LIN	LBC3S	200 mm			

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

Construction differences are noted below for Group 3 (No BOM differences for Group 2):

Group 3 – HFTF as an additional Assembly site:

	HNA	ASESH	HFTF
Wire type	1mil Au	1mil Cu	1mil Cu
Mold compound	450179	EN2000515	R-30
Mount compound	400180	EY1000063	A-18
Lead finish	NiPdAu	NiPdAuAg	Matte Sn

Upon expiry of this PCN, there will be a transition period where TI will combine lead free solutions in a single ***standard part number*** For example; ***SN65HVD485EDGKR***– can ship with both Matte Sn and NiPdAu.

Example:

- Customer order for 7500 units of *SN65HVD485EDGKR* 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.

The datasheet 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 datasheets are available in the table below.

Changes from Revision E (November 2015) to Revision F (February 2023) **Page**

- Changed the values in the *Thermal Information* table 5

Changes from Revision L (January 2017) to Revision M (February 2023) **Page**

- Changed the D package values the *Thermal Information* 8

Product Folder	Current Datasheet Number	New Datasheet Number	Link to full datasheet
SN65HVD485E	SLLS612E	SLLS612F	http://www.ti.com/product/SN65HVD485E
SN65HVD3x	SLLS665L	SLLS665M	http://www.ti.com/product/SN65HVD30

Tube variants of the devices are included in EOL notice PDN# 20230215004.3.

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:

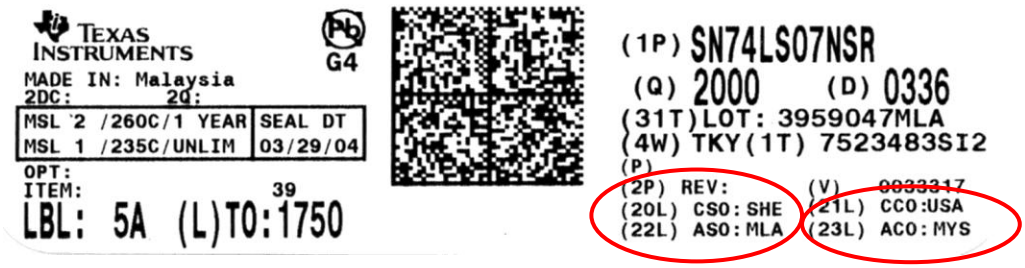
Current	New
Die Rev [2P]	**Die Rev [2P]**
A	**-**

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

Hana Semiconductor	HNT	THA	Ayutthaya
ASESH	ASH	CHN	Shanghai
TI Malaysia	**MLA**	**MYS**	**Kuala Lumpur**
HFTF	**HFT**	**CHN**	**Hefei**

Sample product shipping label (not actual product label)



Product Affected:

Group 1 device list - RFAB/Process migration

SN65HVD30DR	SN65HVD31DR	SN65HVD33DR	SN65HVD485EP
SN65HVD30DRG4	SN65HVD32DR	SN65HVD33DRG4	SN65HVD485EPE4

Group 2 device list - RFAB/Process migration and adding TI Malaysia Assembly site:

SN65HVD34DR	SN65HVD35DR	SN65HVD35DRG4	SN65HVD485EDR

Group 3 device list - RFAB/Process migration and adding HFTF Assembly site:

SN65HVD485EDGKR

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

Qualification Report
Approve Date 06-February-2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN65HVD30DR	Qual Device: SN65HVD33DR
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	1/76/0	1/76/0
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	1/76/0	1/76/0
ESD	E2	ESD CDM	-	250 Volts	1/3/0	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	1/3/0
ESD	E2	ESD HBM (Bus Pins)	-	16000 Volts	1/3/0	1/3/0
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0
FTY	E6	Final Test Yield	-	-	1/1/0	1/1/0

- QBS: Qual By Similarity
- Qual Device SN65HVD30DR is qualified at MSL1 260C
- Qual Device SN65HVD33DR 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Qualification Report
Approve Date 06-February-2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN65HVD485EDR	Qual Device: SN65HVD485EP	Qual Device: SN65HVD485EDGKR
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	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
ESD	E2	ESD CDM	-	250 Volts	1/3/0	1/3/0	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	-	-
ESD	E2	ESD HBM (Bus Pins)	-	15000 Volts	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-
FTY	E6	Final Test Yield	-	-	-	1/1/0	1/1/0

- QBS: Qual By Similarity
- Qual Device SN65HVD485EDR is qualified at MSL1 260C
- Qual Device SN65HVD485EP is qualified at NOT CLASSIFIED NOT CLASSIFIED
- Qual Device SN65HVD485EDGKR 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

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Qualified Pb-Free(SMT) and Green

Qualification Report
Approve Date 06-February-2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN65HVD31DR	Qual Device: SN65HVD32DR	Qual Device: SN65HVD34DR	Qual Device: SN65HVD35DR	QBS Reference: TCAN1044VDRQ1	QBS Reference: TCAN1044VDRQ1	QBS Reference: TPS51217DSCR	QBS Reference: TCAN1043DQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	1/77/0	2/154/0	3/231/0	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	1/77/0	2/154/0	3/231/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	1/77/0	2/154/0	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	-	-	3/231/0	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	1/45/0	2/90/0	-	1/45/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	1/77/0	2/154/0	-	1/77/0
HTOL	B1	Life Test	135C	635 Hours	-	-	-	-	-	-	3/231/0	-
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	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	-	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/15/0	-	1/15/0
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/15/0	-	1/15/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	-	1/10/0	2/20/0	-	3/30/0

ESD	E2	ESD CDM	-	250 Volts	1/3/0	1/3/0	1/3/0	1/3/0	-	-	3/9/0	-
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	1/3/0	1/3/0	1/3/0	-	-	3/9/0	-
ESD	E2	ESD HBM (Bus Pins)	-	16000 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	-	-	3/18/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	1/30/0	-	-	-	3/60/0	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	-	2/60/0	-	-	1/30/0
FTY	E6	Final Test Yield	-	-	1/1/0	1/1/0	1/1/0	1/1/0	-	-	-	-

- QBS: Qual By Similarity
- Qual Device SN65HVD31DR is qualified at MSL1 260C
- Qual Device SN65HVD32DR is qualified at MSL1 260C
- Qual Device SN65HVD34DR is qualified at MSL1 260C
- Qual Device SN65HVD35DR is qualified at MSL1 260C

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable
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- 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

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Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

For questions regarding this notice, e-mails can be sent to the contact 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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