12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20230629003.1

Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly & BOM option for select devices

Change Notification / Sample Request

Date: June 30, 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 and approval of this 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 Change Management team. For sample requests or sample related questions, contact your local Field Sales Representative. As always, we thank you for your continued business.

Change Management Team
SC Business Services

20230629003.1
Attachment: 1

Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, you have recently purchased these devices. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
TLV70433DBVT	null
TLV70433DBVR	null
TLV70450DBVR	null
TLV70450DBVT	null

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

PCN Number:	20230629003.1	**PCN Date:**	June 30, 2023
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly & BOM options for select devices		
Customer Contact:	Change Management Team	**Dept:**	Quality Services
Proposed 1st Ship Date:	Sept 27, 2023	**Sample requests accepted until:**	July 29, 2023*

***Sample requests received after Jul 29, 2023 will not be supported.**

☒	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 Material
☐	Packing/Shipping/Labeling	☐	Test Process	☒	Wafer Fab Process

PCN Details

Description of Change:

Texas Instruments is pleased to announce the qualification of a new fab & process technology (RFAB, LBC9) and Assembly & BOM option for selected devices as 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	LBC4	150 mm	RFAB	LBC9	300 mm

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

Additionally, there will be a BOM/Assembly options introduced for these devices:

	TFME	PHI	HFTF
Bond wire composition, diameter	Au, 1.0 mil	Cu, 1.0 mil	Cu, 1.0 mil
Mount Compound	SID# A-03	4225839	SID#A-21
Mold Compound	SID# R-13	4222198	SID#R-34

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	**A**

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TFME	NFM	CHN	Economic Development Zone
PHI	**PHI**	**PHL**	**Baguio City**
HFTF	**HFT**	**CHN**	**Hefei**

Sample product shipping label (not actual product label)

Product Affected:

TLV70133DBVR	TLV70433DBVR	TLV704345DBVR	TLV70450DBVR
TLV70430DBVR	TLV70433DBVT	TLV70436DBVR	TLV70450DBVT

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

Qualification Report

TLV704XXDBV Family (AT Second Sourcing)
Approve Date 30-May-2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV70450DBVRM3	QBS Process Reference: TLV62568DBVR	QBS Package Reference: OPA392DBVR	QBS Process/Product Reference: TLV70450DBVRM3	QBS Package/Process/Product Reference: TPS71550DCKRM3
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0	3/240/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	3/231/0	-	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	3/231/0	3/231/0	3/240/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0	3/240/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/231/0	3/240/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	3/231/0	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	3/231/0	-	3/240/2[1,2]
HTOL	B1	Life Test	150C	300 Hours	0/0/0	3/231/0	0/0/0	1/77/0	0/0/0

Type	#	Test Name	Condition	Duration	Qual Device: TLV70450DBVRM3	QBS Process Reference: TLV62568DBVR	QBS Package Reference: OPA392DBVR	QBS Process/Product Reference: TLV70450DBVRM3	QBS Package/Process/Product Reference: TPS71550DCKRM3
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/3000/0	-	-	-
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	-	-	-	3/228/0	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	-	-	-	3/228/0	-
PD	C4	Physical Dimensions	(per mechanical drawing)	-	-	-	-	3/15/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	1/3/0	3/9/0	1/3/0	1/3/0
ESD	E2	ESD CDM	-	250 Volts	-	1/3/0	3/9/0	1/3/0	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	-	-	3/9/0	1/3/0	1/3/0
ESD	E2	ESD HBM	-	3500 Volts	-	1/3/0	-	-	-
LU	E4	Latch-Up	Per JESD78	-	-	1/6/0	3/9/0	1/3/0	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	3/90/0	1/30/0	-

- QBS: Qual By Similarity
- Qual Device TLV70450DBVRM3 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-NPD-2211-074

[1]-Unit 23 lost during testing
[2]-Unit 79 melted to the top of the socket

Qualification Report

REDBULL TLV701XXDBV / TLV704XXDBV Family 300mm Re-design
Approve Date 03-NOVEMBER -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV70450DBVRM3	QBS Reference: TLV62568DBVR
HAST	A2	Biased HAST	130C	96 Hours	3/231/0	3/231/0
HAST	A2	Biased HAST	130C/85%RH	96 Hours	3/231/0	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	3/231/0	-
TC	A4	Temperature Cycle	-65/150C	500 Cycles	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	3/231/0	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0
HTOL	B1	Life Test	150C	300 Hours	1/77/0	3/231/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/3000/0
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	3/228/0	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	3/228/0	-
PD	C4	Physical Dimensions	(per mechanical drawing)	-	3/15/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	1/3/0
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	-
ESD	E2	ESD HBM	-	3500 Volts	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/6/0
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
- Qual Device TLV70450DBVRM3 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-NPD-2203-075

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

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