12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20220909000.1

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

Change Notification / Sample Request

Date: September 12, 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

20220909000.1
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
TL432BIDBZRG4	null
TL431AIDBZR	null
TL431IDBZT	null
TL432AIDBZR	null
TL431AIDBZT	null
TL431BCDBZR	null
TL431BCDBZT	null
TL431BIDBZT	null
TL431CDBZR	null
TL431ACDBZR	null
TL431ACDBZTG4	null
TL431BIDBZR	null
TL431CDBZT	null
TL431BQDBZT	null
TL431IDBZR	null
TL432BIDBZR	null
TL432BIDBZT	null
TL432BIDBZTG4	null
TL431AQDBZR	null
TL431BIDBZTG4	null
TL431BQDBZR	null
TL431BQDBZRG4	null
TL431QDBZR	null
TL432AIDBZT	null
TL432AQDBZR	null
TL431AQDBZRG4	null
TL431AQDBZT	null
TL431AQDBZTG4	null
TL431QDBZT	null
TL431ACDBZT	null
TL432QDBZR	null
TL432AIDBZRG4	null

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

PCN Number:	20220909000.1	PCN Date:	September 12, 2022
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly sites & BOM options for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Dec 8, 2022	Sample Requests accepted until:	Oct 9, 2022*

***Sample requests received after Oct 9, 2022 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, TIB) die revision, and Assembly & BOM option for selected devices as listed below in the product affected section. Construction differences are noted below:

Current Fab Site			Additional Fab Site		
Current Fab Site	**Process**	**Wafer Diameter**	**Additional Fab Site**	**Process**	**Wafer Diameter**
SFAB	JI2	150 mm	RFAB	TIB	300 mm

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

Additionally, there will be Assembly site & BOM options introduced for these devices as follows:

	TFME	ASEWH	HNA	UTL2	TIPI	CDAT
Lead finish	Matte Sn**	NiPdAu	NiPdAu	NiPdAu	NiPdAu	Matte Sn**
Mount Compound	SID# A-03	SID#1120999A2	SID#400180	SID#PZ0001	8095733	4207123
Mold Compound	SID#R-27	SID#4020039A1	SID#450179	SID#CZ0096	4222198	4222198
Bond wire composition, diameter	Cu, 1.0 or 0.8 mil	Au, 1.0 mil	Au, 1.0 mil	Au, 1.0 mil	Cu, 0.8 mil	Cu, 0.8 mil

** G4 devices will not be built in TFME or CDAT

Devices in PDIP (P), SOP (PS), and TSSOP (PW) are included in EOL notice 20220909001.3.

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
SH-BIP-1	SHE	USA	Sherman
RFAB	**RFB**	**USA**	**Richardson**

Die Rev:

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

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TFME	NFM	CHN	Economic Development Zone
ASEWH	AWH	CHN	Weihai
HNA	HNT	THA	Ayutthaya
UTL2	NS2	THA	Bangpakong, Chachoengsao
TIPI	**PHI**	**PHL**	**Baguio City**
CDAT	**CDA**	**CHN**	**Chengdu**

Sample product shipping label (not actual product label)

Product Affected:

TL431ACDBZR	TL431BIDBZRG4	TL431QDBZRG4	TL432BCDBZT
TL431ACDBZRG4	TL431BIDBZT	TL431QDBZT	TL432BCDBZTG4
TL431ACDBZT	TL431BIDBZTG4	TL431QDBZTG4	TL432BIDBZR
TL431ACDBZTG4	TL431BQDBZR	TL432ACDBZR	TL432BIDBZR-P
TL431AIDBZR	TL431BQDBZRG4	TL432ACDBZRG4	TL432BIDBZRG4
TL431AIDBZR-P	TL431BQDBZT	TL432ACDBZT	TL432BIDBZT
TL431AIDBZRG4	TL431BQDBZTG4	TL432ACDBZTG4	TL432BIDBZTG4
TL431AIDBZT	TL431CDBZR	TL432AIDBZR	TL432BQDBZR
TL431AIDBZTG4	TL431CDBZRG4	TL432AIDBZRG4	TL432BQDBZRG4
TL431AQDBZR	TL431CDBZT	TL432AIDBZT	TL432CDBZR
TL431AQDBZRG4	TL431CDBZTG4	TL432AIDBZTG4	TL432CDBZRG4
TL431AQDBZT	TL431IDBZR	TL432AQDBZR	TL432IDBZR
TL431AQDBZTG4	TL431IDBZRG4	TL432AQDBZRG4	TL432IDBZRG4
TL431BCDBZR	TL431IDBZT	TL432AQDBZT	TL432IDBZT
TL431BCDBZRG4	TL431IDBZTG4	TL432AQDBZTG4	TL432IDBZTG4
TL431BCDBZT	TL431LACDBZR-ND	TL432BCDBZR	TL432QDBZR
TL431BCDBZTG4	TL431QDBZR	TL432BCDBZRG4	TL432QDBZRG4
TL431BIDBZR			

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

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TL431BQDBZR	QBS Process Reference: TIB 36V QEV
HAST	A2	Biased HAST	130C/85%RH	96 Hours	3/231/0	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	225C (Wafer Level)	168 Hours	-	1/45/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	3/231/0	-
HTOL	B1	Life Test	150C	300 Hours	3/231/0	-
HTOL	B1	Life Test	125C	1000 Hours	-	3/231/0
ELFR	B2	Early Life Failure Rate	150C	24 Hours	-	3/2400/0
ESD	E2	ESD HBM	-	1000 Volts	3/9/0	-
ESD	E2	ESD HBM	-	2000 Volts	3/9/0	-
ESD	E2	ESD HBM	-	4000 Volts	3/9/0	-
ESD	E3	ESD CDM	-	250 Volts	3/9/0	-
ESD	E3	ESD CDM	-	500 Volts	3/9/0	-
ESD	E3	ESD CDM	-	1500 Volts	3/9/0	-
LU	E4	Latch-Up	Per JESD78	-	1/6/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	3/90/0	1/30/0
MQ	-	MQ (Assembly)	Per Site Specification	-	3/3/0	-
MQ	-	MQ (Fab)	Per Site Specification	-	3/3/0	-
PCL	-	NVM Power Cycle	Room	10K Cycles	-	3/231/0

- QBS: Qual By Similarity
- Qual Device TL431BQDBZR is qualified at MSL1 260C. Concurrently qualifies TL43xyzDBZ Product Family, where x = 1/2 (Cat/Ref pin swap), y = {}/B/A (Accuracy grade), and z = C/I/Q (Temperature grade).

- 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

TI Qualification ID: R-NPD-2110-062

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TLV809EA46DBZR	QBS Product Reference: TLV809EA46DBZR	QBS Product Reference: TPS3840DBVRQ1	QBS Process Reference: TLV62568DBVR	QBS Package Reference: TL431LIBQDBZ
ACLV	Autoclave 121C	96 Hours	-	-	-	3/231/0	3/231/0
DPA	Destructive Physical Analysis	Post TMCL	-	-	-	-	3/90/0
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	3/90/0	3/90/0	3/90/0	3/90/0
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/3000/0	3/2400/0
HBM	ESD - HBM	2500 V	-	1/3/0	1/3/0	-	3/9/0
HBM	ESD - HBM	4000 V	-	1/3/0	1/3/0	-	-
CDM	ESD - CDM	1500 V	-	1/3/0	1/3/0	-	3/9/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0	3/231/0
HTOL	Life Test, 150C	300 Hours	-	-	-	3/231/0	3/231/0
HTOL	Life Test, 125C	1000 Hours	-	1/77/0	3/231/0	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	-	3/231/0	-
HTSL	High Temp. Storage Bake, 150C	1000 Hours	-	3/231/0	3/231/0	-	3/231/0
LU	Latch-up, 25C	(per JESD78)	-	1/6/0	1/6/0	2/12/0	3/18/0
LU	Latch-up, 125C	(per JESD78)	-	1/6/0	1/6/0	-	3/18/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0	3/231/0	-
TC	Temperature Cycle, -65/150C	1000 Cycles	-	3/231/0	-	-	3/231/0
SD	Solderability	Pb-Free	-	-	1/15/0	-	3/66/0
UHAST	UnBiased HAST, 130C/85%RH	96 Hours	-	3/231/0	2/231/0	-	-
WBP	Bond Pull	Wires	-	-	1/30/0	-	3/228/0
WBS	Bond Shear	Wires	-	-	1/30/0	-	3/228/0
MQ	Manufacturing (Assembly)	Per Mfg Site Specification	-	3/Pass	-	-	3/3/0
MSL	Moisture Sensitivity	MSL 1 @ 260C	-	-	-	-	3/36/0

- QBS: Qual By Similarity
- Qual Device TLV809EA46DBZR is qualified at LEVEL1-260C
- Products to be concurrently qualified using stamped leadframe are voltage options from 1.7 to 4.63V with 3 output configurations namely: TLV803EXYYDBZR,TLV809EXYYDBZR, TLV810EXYYDBZR.

Where: X = delay options from A thru F; YY = Vth options from 17 thru 46. If an additional R character is in front of the package designator, this represents reversed pinout for the package. (Ex. RDBZR)

- 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 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 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

TI Qualification ID: 20200604-134548

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

Type	Test Name / Condition	Duration	Qual Device: TLV803EA43VDBZR	QBS Package Reference: TLV9061IDBVR
AC	Autoclave 121C	96 Hours	3/231/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0
HTOL	Life Test, 150C	300 Hours	-	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0
LI	Lead Fatigue	Leads	-	3/54/0
LI	Lead Pull	Leads	-	3/66/0
MISC	Salt Atmosphere	-	-	3/66/0
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass
PD	Physical Dimensions	(per mechanical drawing)	3/15/0	3/15/0
PKG	Lead Finish Adhesion	Leads	-	3/54/0
SD	Solderability	Pb Free	-	3/66/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	3/231/0
VM	Visual / Mechanical	(per mfg. Site specification)	3/984/0	3/984/0
WBP	Bond Pull	Wires	3/228/0	3/228/0
WBS	Ball Bond Shear	Wires	3/228/0	3/228/0

- QBS: Qual By Similarity
- Qual Device TLV803EA43VDBZR is qualified at LEVEL1-260CG
- 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

TI Qualification ID: 20210519-140142

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

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