

<b>PCN Number:</b>	20241217004.1	<b>PCN Date:</b>	December 18, 2024
<b>Title:</b>	Qualification of RFAB using qualified Process Technology, Die Revision, Assembly site (CDAT & PHI), alternate BOM qualification & Datasheet updates for select devices		
<b>Customer Contact:</b>	Change Management Team	<b>Dept:</b>	Quality Services
<b>Proposed 1<sup>st</sup> Ship Date:</b>	March 18, 2025	<b>Sample requests accepted until:</b>	January 17, 2025*

**\*Sample requests received after January 17, 2025 will not be supported.**

**Change Type:**

<input checked="" type="checkbox"/>	Assembly Site	<input checked="" type="checkbox"/>	Design	<input type="checkbox"/>	Wafer Bump Material
<input checked="" type="checkbox"/>	Assembly Process	<input checked="" type="checkbox"/>	Data Sheet	<input type="checkbox"/>	Wafer Bump Process
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change	<input checked="" type="checkbox"/>	Wafer Fab Site
<input type="checkbox"/>	Mechanical Specification	<input type="checkbox"/>	Test Site	<input checked="" type="checkbox"/>	Wafer Fab Material
<input checked="" type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process	<input checked="" type="checkbox"/>	Wafer Fab Process

**PCN Details**

**Description of Change:**

Texas Instruments is pleased to announce the qualification of its RFAB fabrication facility as an additional Wafer Fab option for the devices listed below as well as new assembly site (CDAT & PHI) and BOM options:

Current Fab Site			Additional Fab Site		
Fab Site	Process	Wafer Diameter	Fab Site	Process	Wafer Diameter
SFAB	J12	150 mm	RFAB	TIB	300 mm

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

Construction differences are as follows:

**Current Sites:**

	UTL2	TFME	HFTF	HNA
Lead Finish	NiPdAu	Matte Sn	Matte Sn	NiPdAu
Bond wire composition, diameter	Au, 1.0 mil	Cu, 0.8 mil	Cu, 1.0 mil	Au, 1.0 mil
Mold Compound	SID#CZ0096	SID#R-17	SID#R-27	SID#450207
Mount Compound	SID#PZ0001	SID#A-03	SID#A-03	SID#400180
Pin one marking	Stripe	Dot	Dot	Dot

**New sites:**

	CDAT	PHI
Lead Finish	Matte Sn	Matte Sn
Bond wire composition, diameter	Cu, 0.8 mil	Cu, 0.8 mil
Mold Compound	4222198	4222198
Mount Compound	4207123	4207123
Pin one marking	Dot	Dot

Upon expiry of this PCN, TI will combine lead finish solutions in a single standard part number. For example, a customer order for 7500 units of a specific TI part number with 2500 units SPQ (Standard Pack Quantity per reel) may be fulfilled in the following ways:

- 3 reels of NiPdAu finish.
- 3 reels of Matte Sn finish
- 2 reels of Matte Sn and 1 reel of NiPdAu finish

- 2 reels of NiPdAu and 1 reel of Matte Sn finish

Qual details are provided in the Qual Data Section.

Datasheet changes are for the TLV\* devices and are shown below. For the TLVH\* devices, there are no datasheet changes to accompany the changes in this notification.



**Changes from Revision Y (March 2024) to Revision Z (June 2024)** **Page**

- Updated pinout diagrams..... 3

**Changes from Revision X (May 2018) to Revision Y (March 2024)** **Page**

- Updated the numbering format for tables, figures, and cross-references throughout the document..... 1
- Moved *Simplified Schematic* from *Description* to *Applications* ..... 1
- Updated pinout diagrams..... 3
- Updated *Typical Applications Design Requirements* ..... 23

Product Folder	Current Datasheet Number	New Datasheet Number	Link to full datasheet
TLV431x	SLVS139X	<b>SLVS139Z</b>	<a href="http://www.ti.com/product/TLV431">http://www.ti.com/product/TLV431</a>

**Reason for Change:**

These changes are part of our multiyear plan to transition products from our 150-millimeter 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
<input checked="" type="checkbox"/> 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
<b>RFAB</b>	<b>RFB</b>	<b>USA</b>	<b>Richardson</b>

**Die Rev:**

Current	New
Die Rev [2P]	<b>Die Rev [2P]</b>
-, A	<b>A</b>

**Assembly Site Information:**

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TFME	NFM	CHN	Economic Development Zone
HFTF	HFT	CHN	Hefei
HNA	HNT	THA	Ayutthaya
UTL2	NS2	THA	Bangpakong, Chachoengsao
<b>CDAT</b>	<b>CDA</b>	<b>CHN</b>	<b>Chengdu</b>
<b>PHI</b>	<b>PHI</b>	<b>PHL</b>	<b>Baguio City</b>

Sample product shipping label (not actual product label):

**Product Affected:**

TLV431ACDBVR*	TLV431BQDBVR*	TLVH431AIDBVR	TLVH431BQDBVR
TLV431ACDBVT	TLV431BQDBVT	TLVH431AIDBVT	TLVH431BQDBVT
TLV431AIDBVR*	TLV431CDBVR	TLVH431AQDBVR	TLVH431CDBVR
TLV431AIDBVT	TLV431CDBVT	TLVH431AQDBVT	TLVH431CDBVT
TLV431BCDBVR	TLV431IDBVR*	TLVH431BCDBVR	TLVH431IDBVR
TLV431BCDBVT	TLV431IDBVT	TLVH431BCDBVT	TLVH431IDBVT
TLV431BIDBVR	TLVH431ACDBVR	TLVH431BIDBVR	TLVH431QDBVR
TLV431BIDBVT	TLVH431ACDBVT	TLVH431BIDBVT	

\* G4 part numbers are available and will remain on NiPdAu flows. This PCN does not apply to existing G4 materials. Please visit TI's [labeling and symbolization](#) page for more information on material designators.

For alternate parts with similar or improved performance, please visit the product page on [TI.com](http://TI.com)

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

Type	#	Test Name	Condition	Duration	Qual Device: TLVH431BQDBVR	QBS Reference: TLV1805QDBVRQ1	QBS Reference: TL331QDBVRQ1	QBS Reference: TLVH431BQDBZRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	1/77/0	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	3/231/0	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	1/77/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	1/85/1 <sup>1</sup>	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	3/135/0	1/77/0	-
HTOL	B1	Life Test	125C	1000 Hours	-	3/231/0	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	1/77/0	-
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	-	-	3/30/0	1/10/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	1/3/0

  

Type	#	Test Name	Condition	Duration	Qual Device: TLVH431BQDBVR	QBS Reference: TLV1805QDBVRQ1	QBS Reference: TL331QDBVRQ1	QBS Reference: TLVH431BQDBZRQ1
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	-	-	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	1/30/0	1/30/0

- QBS: Qual By Similarity
- Qual Device TLVH431BQDBVR 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-CHG-2407-020

## Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV431BQDBVR	QBS Reference: LM2902BQPWRQ1	QBS Reference: TL431BQDBZRQ1	QBS Reference: TLVH431BQDBZRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	-
UHAST	A3	Unbiased HAST	110C/85%RH	264 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	150C	1000 Hours	-	3/231/0	3/231/0	-
HTOL	B1	Life Test	150C	408 Hours	-	3/231/0	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2400/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	3/30/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	3/9/0
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	3/9/0
LU	E4	Latch-Up	Per JESD78	-	-	-	-	3/18/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	3/90/0	1/30/0
FTY	E6	Final Test Yield	-	-	-	-	1/1/0	-

- QBS: Qual By Similarity
- Qual Device TLV431BQDBVR 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-CHG-2405-002

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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