



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20240502002.2

**Qualification of RFAB as an additional Fab site option, Die revision and
TIPI as an additional Assembly & Test Site option for select devices
Change Notification / Sample Request**

Date: May 02, 2024
To: Mouser PCN

Dear Customer:

This is an announcement of a change to a device that is currently offered by Texas Instruments. The details of this change are on the following pages.

Texas Instruments 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.

The changes discussed within this PCN will not take effect any earlier than the proposed first ship date on Page 3 of this notification, unless customer agreement has been reached on an earlier implementation of the change.

This notice does not change the end-of-life status of any product. Should product affected be on a previously issued product withdrawal/discontinuance notice, this notification does not extend the life of that product or change the life time buy offering/discontinuance plan.

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.

Sincerely,

Change Management Team
SC Business Services

20240502002.2
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
LMV331QDBVRQ1	NULL

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

PCN Number:	20240502002.2	PCN Date:	May 02, 2024
Title:	Qualification of RFAB as an additional Fab site option, Die revision and TIPI as an additional Assembly & Test Site options for select devices		
Customer Contact:	Change Management Team	Dept:	Quality Services
Proposed 1st Ship Date:	October 29, 2024	Sample requests accepted until:	June 01, 2024*
*Sample requests received after June 01, 2024 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 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 checked="" 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 in addition to TIPI as an additional Assembly & Test Site options for the devices listed below.

Current Fab Site			Additional Fab site		
Current Fab Site	Process	Wafer Diameter	Additional Fab site	Process	Wafer Diameter
FR-BIP-1	BCB8	200mm	RFAB	LBC9	300mm

The die was also changed as a result of the process change to accommodate the change in Assembly technology

Construction differences are as follows:

	UTL	TIPI
Bond wire composition, diam.	Au, 1.0 mil	Cu, 0.8 mil
Mount Compound	PZ0001	4222198
Mold Compound	CZ0096	8095733
Wafer thickness	8.0 mil	6.0 mil
Marking appearance	 * * * * = BINARY DATECODE Pin 1 Stripe	 * * * * = BINARY DATECODE * * * * = SECONDARY CODE * * * * = BINARY DATECODE Pin 1 dot

Reason for Change:

Supply Continuity

- 1) To align with world technology trends and use wiring with enhanced mechanical and electrical properties
- 2) Maximize flexibility within our Assembly/Test production sites.
- 3) Cu is easier to obtain and stock

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
FR-BIP-1	TID	DEU	Freising
RFAB	RFB	USA	Richardson

Die Rev:

Current **New**

Die Rev [2P]	Die Rev [2P]
-	A

Assembly Site Information:

Assembly Site	Assembly Site Origin Code (22L)	Assembly Country Code (23L)	Assembly City
UTL	NSE	THA	Bangkok
TIPI	PHI	PHL	Baguio City

Sample product shipping label (not actual product label):



Product Affected:

LMV331QDBVRQ1	LMV331QDBVRSV
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Qualification Report

Automotive New Product Qualification Summary (As per AEC-Q100 Rev. H and JEDEC Guidelines)

Approve Date 23-OCTOBER -2023

Qualification Results

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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: LMOV331QDBVRQ1	OBS Reference: TLV9021QDBVRQ1	OBS Reference: TLV9030QDBVRQ1	OBS Reference: TLV9031QDBVRQ1	OBS Reference: TLV1805QDBVRQ1	OBS Reference: TLV9032QPWRQ1	OBS Reference: TLV9022QPWRQ1	OBS Reference: TLV9029DQ1
Test Group A - Accelerated Environment Stress Tests															
PC	A1	JEDEC J-STD-020 JE5022-A113	3	77	Preconditioning	MSL1 260C	-	-	-	-	-	1/30/0	3/83/0	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	1/77/0	3/231/0	-	-
AC/HAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	1/77/0	3/231/0	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	1/77/0	3/231/0	-	-
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	-	-	-	-	1/5/0	1/5/0	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	-	-	-	-	1/77/0	3/135/0	-	-
Test Group B - Accelerated Lifetime Simulation Tests															
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	125C	1000 Hours	-	-	-	-	-	3/231/0	1/77/0	-
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	150C	300 Hours	-	-	-	-	1/77/0	-	-	1/77/0
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	-	3/240/0
Test Group C - Package Assembly Integrity Tests															
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	1/30/0	1/30/0	1/30/0	1/30/0	3/90/0	-	-	-
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	1/30/0	1/30/0	1/30/0	1/30/0	3/90/0	-	-	-
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	-	-	-	1/15/0	1/15/0	-	-
SD	C3	JEDEC J-STD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	-	-	-	1/15/0	1/15/0	-	-
PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	1/10/0	1/10/0	1/10/0	1/10/0	3/30/0	-	-	-
Test Group D - Die Fabrication Reliability Tests															
EM	D1	JESD61	-	-	Electromigration	-	-	Completed Per Process Technology Requirements	-	-	-	-	-	-	-
TDDB	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	-	Completed Per Process Technology Requirements	-	-	-	-	-	-	-
HCI	D3	JESD60 & 28	-	-	Hot Carrier Injection	-	-	Completed Per Process Technology Requirements	-	-	-	-	-	-	-
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	-	Completed Per Process Technology Requirements	-	-	-	-	-	-	-
SM	D5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements	-	-	-	-	-	-	-
Test Group E - Electrical Verification Tests															
ESD	E2	AEC Q100-002	1	3	ESD HBM	-	2000 Volts	-	1/3/0	-	1/3/0	-	-	-	-
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	1000 Volts	1/3/0	1/3/0	1/3/0	1/3/0	-	-	-	-
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	-	1/6/0	-	1/6/0	-	-	-	-
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	1/30/0	-	1/30/0	-	-	-	3/90/0

QBS: Qual By Similarity

Qual Device LMOV331QDBVRQ1 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

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40C to +150C

Grade 1 (or Q): -40C to +125C

Grade 2 (or T): -40C to +105C

Grade 3 (or I) : -40C to +85C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/> the following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Qualification Report

Automotive New Product Qualification Summary
(As per AEC-Q100 / Q006 and JEDEC Guidelines)

Approved 01-Oct-2021

Qualification Results

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

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>TLV1805QDBVRQ1</u>
Test Group A – Accelerated Environment Stress Tests								
			AEC-Q006	3	11	SAM Analysis, Pre Stress	-	3/33/0
	PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 1-260C	No Fails
			AEC-Q006	3	11	SAM Analysis, Post Stress	-	3/33/0
	HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0
		A2	AEC-Q006	3	1	Cross Section, Post bHAST 96 Hours	-	3/3/0
		A2	AEC-Q006	3	3	Wire Bond Shear, Post bHast, 96 Hours	-	3/9/0
		A2	AEC-Q006	3	3	Bond Pull over Stitch, post bHAST, 96 Hours	-	3/9/0
		A2	AEC-Q006	3	3	Bond Pull over Ball, Post bHAST, 96 Hours	-	3/9/0
		A2	JEDEC JESD22-A110	3	70	Biased HAST, 130C/85%RH	192 Hours	3/210/0
		A2	AEC-Q006	3	1	Cross Section, Post bHAST 192 Hours	-	3/3/0
		A2	AEC-Q006	3	22	SAM Analysis, Post bHAST, 192 Hours	Completed	3/66/0
		A2	AEC-Q006	3	3	Wire Bond Shear, Post bHast, 192 Hours	-	3/9/0
		A2	AEC-Q006	3	3	Bond Pull over Stitch, post bHAST, 192 Hours	-	3/9/0
		A2	- AEC-Q006	3	3	Bond Pull over Ball, Post bHAST, 192 Hours	-	3/9/0
	TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0
	TC	A4	-	3	1	Cross Section, Post T/C 500 Cycles	-	3/3/0
	TC	A4	-	3	22	SAM Analysis, Post T/C, 500 Cycles	-	3/66/0

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>TLV1805QDBVRQ1</u>
	TC	A4	-	3	3	Wire Bond Shear, Post T/C 500 Cycles	-	3/9/0
	TC	A4	-	3	3	Bond Pull over Stitch Post T/C 500 Cycles	-	3/9/0
	TC	A4	-	3	3	Bond Pull over Ball Post T/C 500 Cycles	-	3/9/0
	TC	A4	JEDEC JESD22-A104 and Appendix 3	3	70	Temperature Cycle, -65/150C	1000 Cycles	3/210/0
	TC	A4	-	3	1	Cross Section, Post T/C 1000 Cycles	-	3/3/0
	TC	A4	-	3	22	SAM Analysis, Post T/C, 1000 Cycles	-	3/66/0
	TC	A4	-	3	30	Wire Bond Shear, Post T/C 1000 Cycles	-	3/9/0
	TC	A4	-	3	30	Bond Pull over Stitch, Post T/C, 1000 Cycles	-	3/9/0
	TC	A4	-	3	30	Bond Pull over Ball, Post T/C, 1000 Cycles	-	3/9/0
	PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	1000 Cycles	N/A
	PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	2000 Cycles	N/A
	HTSL	A6	JEDEC JESD22-A103	3	77	High Temp Storage Bake 175C	500 Hours	3/231/0
	HTSL	A6	-	3	1	Cross Section, Post HTSL 500 Hours	-	3/3/0
	HTSL	A6	JEDEC JESD22-A103	3	77	High Temp Storage Bake 150C	1000 Hours	3/231/0
	HTSL	A6	-	3	1	Cross Section, Post HTSL 1000 Hours	-	3/3/0
Test Group C – Package Assembly Integrity Tests								
	WBS	C1	AEC Q100-001	3	30	Wire Bond Shear, Cpk>1.67	Wires	3/90/0
	WBP	C2	MIL-STD883 Method 2011	3	30	Bond Pull over Ball, Cpk >1.67	Wires	3/90/0

- QBS: Qual By Similarity

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST & TC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40C to +150C

Grade 1 (or Q): -40C to +125C

Grade 2 (or T): -40C to +105C

Grade 3 (or I) : -40C to +85C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

ZVEI ID reference: SEM-PA-18, SEM-PA-08, SEM-PA-07, SEM-PA-11, SEM-PA-13, SEM-DE-01, SEM-DE-02, SEM-DE-03, SEM-TF-01, SEM-PW-13, SEM-PW-02, SEM-PW-03

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