12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20240930009.1
Qualification of RFAB using qualified Process Technology, Die Revision, & Assembly (TI Mexico & TI Malaysia) & BOM options for select devices
Change Notification / Sample Request

Date: October 01, 2024
To: MOUSER 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

20240930009.1
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
LMC6034IMX/NOPB	NULL
LMC6081AIMX/NOPB	NULL
LMC6081IMX/NOPB	NULL
LMC6082AIMX/NOPB	NULL
LMC6084IMX/NOPB	NULL
LMC6482AIMX/NOPB	NULL
LMC6482AIN/NOPB	NULL
LMC6484AIMX/NOPB	NULL
LMC660AIMX/NOPB	NULL
LMC660CMX/NOPB	NULL

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

PCN Number:	20240930009.1	PCN Date:	October 01, 2024
Title:	Qualification of RFAB using qualified Process Technology, Die Revision, & Assembly (TI Mexico & TI Malaysia) & BOM options for select devices		
Customer Contact:	Change Management Team	Dept:	Quality Services
Proposed 1st Ship Date:	December 30, 2024	Sample requests accepted until:	October 31, 2024*

***Sample requests received after October 31, 2024 will not be supported.**

Change Type:

☒	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 addition of RFAB using the HPA9 qualified process technology and additional Assembly Site (TI Mexico & TI Malaysia) & BOM options for the devices listed below.

Current Fab Site			Additional Fab Site		
Current Fab Site	**Process**	**Wafer Diameter**	**Additional Fab Site**	**Process**	**Wafer Diameter**
DL-LIN GFAB8/6	P2CMOS	200 mm 150/200 mm	RFAB	HPA9	300 mm

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

Construction differences are as follows:

Group 1 BOM Table (RFAB/Process migration, die change plus TI Malaysia as new Assembly site & BOM update (SOIC Devices)):

	TI Melaka	AP1	TI Malaysia
Lead Finish	Matte Sn	Matte Sn	NiPdAu
Bond wire composition, diameter	Cu, 0.96	Au, 1.0 or 0.9 mil	Cu, 0.8 mil
Mount compound	8075531	SID#101375281	4147858
Mold compound	8095179 or 8096859	SID#101323397 or SID#101387190	4226323
Marking - Logo	NS Logo	NS Logo	TI letters
ECAT	G3	G3	G4

Group 2 BOM Table (RFAB/Process migration, die change plus TI Mexico as new Assembly site & BOM update (PDIP Device)):

	TI Malaysia	TI Mexico
Bond wire composition, diameter	Cu, 0.96 mil	Cu, 0.8 mil
Marking - Logo	NS Logo	TI Logo

Datasheet updates for 3 of the devices are are included in PCN #20240930007.1

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-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
☒ 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
GFAB8/6	GF8, GF6	GBR	Greenock
RFAB	**RFB**	**USA**	**Richardson**

Die Rev:

Current	New
Die Rev [2P]	**Die Rev [2P]**
B, C	**A**

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TI Melaka	CU6	MYS	Melaka
AP1	AKR	PHL	Cupang, Muntinlupa City
TI Mexico	**MEX**	**MEX**	**Aguascalientes**
TI Malaysia	**MLA**	**MYS**	**Kuala Lumpur**

Sample product shipping label (not actual product label):

Product Affected:

Group 1 Device List (RFAB/Process migration, die change plus TI Malaysia as new Assembly site & BOM update (SOIC Devices)):

LMC6034IMX/NOPB	LMC6082AIMX/NOPB	LMC6482AIMX/NOPB	LMC660AIMX/NOPB

LMC6081AIMX/NOPB	LMC6084AIMX/NOPB	LMC6484AIMX/NOPB	LMC660CMX/NOPB
LMC6081IMX/NOPB	LMC6084IMX/NOPB		

Group 2 Device list(RFAB/Process migration, die change plus TI Mexico as new Assembly site & BOM update (PDIP Device)):

LMC6482AINNOPB

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

TI Information
Selective Disclosure

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: LMC6082AIMX/NOPB	QBS Process Reference: OPA1671IDCKR	QBS Package Reference: INA849DR	QBS Package Reference: LMC6482IM/NOPB
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	-	1/77/0
HAST	A2	Temperature Humidity Bias	85C/85%RH	1000 Hours	-	-	3/231/0	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	3/231/0	-
HTOL	B1	Life Test	100C[1]	300 Hours	-	-	1/77/0	-
HTOL	B1	Life Test	150C	300 Hours	-	3/231/0	-	3/231/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2397/0	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	3/9/0	1/3/0	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	3/9/0	1/3/0	1/3/0
LU	E4	Latch-Up	Per JESD78	-	1/3/0	3/18/0	1/6/0	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	1/30/0	3/90/0

- QBS: Qual By Similarity
- Qual Device LMC6082AIMX/NOPB 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-2201-021

[1] Tj=150C

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: LMC6484AIMX/NOPB	QBS Process Reference: OPA1671IDCKR	QBS Reference: LMC6482IM/NOPB	QBS Reference: TCAN1043DQ1	QBS Reference: ULN2003ADR	QBS Reference: MAX232DR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	1/77/0	3/231/0	1/77/0	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0	3/231/0	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	-	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	-	-	-	3/231/0
HTSL	A6	High Temperature Storage Life	170C	600 Hours	-	-	-	-	3/231/0	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	1/45/0	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	1/77/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: LMC6484AIMX/NOPB	QBS Process Reference: OPA1671IDCKR	QBS Reference: LMC6482IM/NOPB	QBS Reference: TCAN1043DQ1	QBS Reference: ULN2003ADR	QBS Reference: MAX232DR
HTOL	B1	Life Test	150C	300 Hours	-	3/231/0	3/231/0	-	1/77/0	3/231/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2397/0	-	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	3/30/0	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	3/9/0	1/3/0	-	-	-
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	3/9/0	1/3/0	-	-	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	3/18/0	1/3/0	-	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	3/90/0	1/30/0	1/30/0	1/30/0

- QBS: Qual By Similarity, also known as Generic Data
- Qual Device LMC6484AIMX/NOPB 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-2311-029

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: LMC6081AIMX/NOPB	QBS Process Reference: OPA1671IDCKR	QBS Package Reference: LMC6482IM/NOPB	QBS Package Reference: OPA2991QDRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	1/77/0	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	-	-
HTOL	B1	Life Test	150C	300 Hours	-	3/231/0	3/231/0	-
HTOL	B1	Life Test	150C	408 Hours	-	-	-	1/76/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2397/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	3/30/0
ESD	E2	ESD CDM	-	250 Volts	1/3/0	3/9/0	1/3/0	-
ESD	E2	ESD CDM	-	500 Volts	-	-	-	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	3/9/0	1/3/0	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	1/3/0

Type	#	Test Name	Condition	Duration	Qual Device: LMC6081AIMX/NOPB	QBS Process Reference: OPA1671IDCKR	QBS Package Reference: LMC6482IM/NOPB	QBS Package Reference: OPA2991QDRQ1
LU	E4	Latch-Up	Per JESD78	-	1/3/0	3/18/0	1/3/0	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	3/90/0	3/90/0

- QBS: Qual By Similarity, also known as Generic Data
- Qual Device LMC6081AIMX/NOPB 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-2307-047

[1]-HTOL failed due to rejects mixed back in with tested good units. See attached 4C.
[2]-Lost 3 units.

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: LMC6084AIMX	QBS Process Reference: OPA1671IDCKR	QBS Package Reference: LMC6482IM/NOPB	QBS Package Reference: ULQ2003AQDRQ1	QBS Package Reference: OPA4991QDRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	1/77/0	3/231/0	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	-	-	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	1/45/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	3/231/0	-
HTOL	B1	Life Test	150C	300 Hours	-	3/231/0	3/231/0	-	-
HTOL	B1	Life Test	150C	408 Hours	-	-	-	-	1/77/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2397/0	-	-	-

Type	#	Test Name	Condition	Duration	Qual Device: LMC6084AIMX	QBS Process Reference: OPA1671IDCKR	QBS Package Reference: LMC6482IM/NOPB	QBS Package Reference: ULQ2003AQDRQ1	QBS Package Reference: OPA4991QDRQ1
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	-	1/3/0
ESD	E2	ESD CDM	-	250 Volts	1/3/0	3/9/0	1/3/0	-	-
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	3/9/0	1/3/0	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	1/3/0	3/18/0	1/3/0	-	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	3/90/0	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device LMC6084AIMX 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-2303-017

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: LMC6482AIMX/NOPB	QBS Process Reference: OPA1671IDCKR	QBS Package Reference: INA849DR	QBS Package Reference:: SN74HCS74QDRQ1	QBS Package Reference: LMC6482IM/NOPB
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	-	3/231/0	1/77/0
HAST	A2	Temperature Humidity Bias	85C/85%RH	1000 Hours	-	-	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	3/231/0	3/231/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	3/231/0	-	-
HTOL	B1	Life Test	100C[1]	300 Hours	-	-	1/77/0	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	1/77/0	-
HTOL	B1	Life Test	150C	300 Hours	-	3/231/0	-	-	3/231/0

Type	#	Test Name	Condition	Duration	Qual Device: LMC6482AIMX/NOPB	QBS Process Reference: OPA1671IDCKR	QBS Package Reference: INA849DR	QBS Package Reference:: SN74HCS74QDRQ1	QBS Package Reference: LMC6482IM/NOPB
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2397/0	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	3/45/0	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	3/45/0	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	3/30/0	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	3/9/0	1/3/0	-	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	-	-	1/3/0	-
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	3/9/0	1/3/0	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	3/18/0	1/6/0	1/6/0	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	1/30/0	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device LMC6482AIMX/NOPB 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-2205-034

[1]-Tj=150C

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

of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.