12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20221219006.1
Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, Datasheet update and additional Assembly site/BOM options for select devices
Change Notification / Sample Request

Date: December 21, 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

20221219006.1
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
TL084CPWR	null
TL084CN	null
TL082CP	null
TL072IP	null
TL072CP	null
TL074IDR	null
TL082IP	null
TL074CN	null
TL081CP	null
TL074ACDR	null
TL074CDR	null
TL074IN	null
TL072CPE4	null
TL084IN	null
TL074ACN	null
LF347N	null
TL074CPWR	null
TL081IP	null
TL084ACDR	null
TL074CNE4	null
TL084CDR	null
TL071IP	null
TL084CNE4	null
LF347BDR	null
TL084IDR	null

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

PCN Number:	20221219006.1	PCN Date:	December 21, 2022
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, Datasheet update and additional Assembly site/BOM options for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Mar 20, 2023	Sample requests accepted until:	January 20, 2023*

***Sample requests received after January 20, 2023 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, LBC9) and assembly (MLA) site/BOM options for selected devices as listed below in the product affected section.

Current Fab Site			New Fab Site		
Fab Site	**Process**	**Wafer Diameter**	**Fab Site**	**Process**	**Wafer Diameter**
SFAB	JI1	150 mm	RFAB	LBC9	300 mm

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

Construction Differences are as follows:

Group 1 – BOM option at MLA

	Current	Additional
Wire type	0.8mil/0.96mil Au, 0.96mil Cu	0.8mil Cu

Group 2 – MLA as an additional Assembly site

	MEX	TAI	MLA
Mount Compound	4147858	4042500	4147858
Bond Wire Composition/diamater	Au/0.96 or 0.8 mil or Cu/0.96 or 0.8 mil	Au/0.96 mil	Cu/0.8 mil
Mold Compound	4205694	4205694	4211880

The associated datasheet changes were notified in a separate Datasheet change notification on 12/19/2022 (Notification# 20221219008.0) as shown below:

TEXAS INSTRUMENTS

TL071, TL071A, TL071B, TL071H
TL072, TL072A, TL072B, TL072H, TL072M
TL074, TL074A, TL074B, TL074H, TL074M
SLOS080U – SEPTEMBER 1978 – REVISED DECEMBER 2022

Changes from Revision T (December 2021) to Revision U (December 2022) **Page**

- Changed *Absolute Maximum Ratings, ESD Ratings, Recommended Operating Conditions, and Thermal Information* sections by merging TL07xH and TL07xx specifications..... 11
- Changed *Electrical Characteristics* tables by merging TL07xC, TL07xAC, TL07xBC, TL07xI, and TL07xM specifications..... 16

- Changed gain bandwidth value of all non-NS/non-PS packages and non-TL07xM devices from 3 MHz to 5.25 MHz..... 16
- Changed TL07xC, TL07xAC, TL07xBC, TL07xI, and TL07xM *Switching Characteristics* tables by renaming to *Electrical Characteristics (AC)* 18
- Changed input voltage noise density at 1 kHz for all non-PS/non-NS packages and all non-TL07xM devices to 37 nV/√Hz 18
- Changed THD+N for all non-PS/non-NS packages and all non-TL07xM devices to 0.00012%..... 18

These changes may be reviewed at: http://www.ti.com/product/TL071

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-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]**
C, F, G, -	**A, B**

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TI Mexico	MEX	MEX	Aguascalientes
TI Taiwan	TAI	TWN	Chung Ho, New Taipei City
MLA	**MLA**	**MYS**	**Kuala Lumpur**

Sample product shipping label (not actual product label):

Product Affected:

Group 1 device list - RFAB/Process migration and BOM Option in MLA:

LF353P	TL072CP	TL081ACP	TL082IPE4
LF353PE4	TL072CPE4	TL081BCP	TL084ACDR
TL071ACP	TL072IP	TL081CP	TL084ACDRE4
TL071BCP	TL072IPE4	TL081CPE4	TL084ACDRG4
TL071CP	TL074CN	TL081IP	TL084CDR
TL071CPE4	TL074CNE4	TL082ACP	TL084CDRG4
TL071IP	TL074CPWR	TL082CP	TL084CN
TL071IPE4	TL074CPWRE4	TL082CPE4	TL084CNE4
TL072ACP	TL074CPWRG4	TL082IP	TL084CPWR
TL072ACPE4			

Group 2 device list - RFAB/Process migration and adding MLA Assembly site:

LF347BDR	TL074ACNE4	TL074IDRE4	TL084BCNE4
LF347BN	TL074BCDR	TL074IDRG4	TL084IDR
LF347DR	TL074BCDRE4	TL074IN	TL084IDRE4
LF347DRG4	TL074BCDRG4	TL075IDR	TL084IDRG4
LF347N	TL074BCN	TL084ACN	TL084IN
LF347NE4	TL074BCNE4	TL084BCDR	TL084INE4
TL074ACDR	TL074CDR	TL084BCDRG4	TL084QDR
TL074ACDRE4	TL074CDRG4	TL084BCN	TL084QDRG4
TL074ACN	TL074IDR		

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

Qualification Report
Approve Date 19-MAY -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TL074HIPWR	QBS Package Reference: OPA4991QPWRQ1	QBS Product Reference: TL074HIPWR
HAST	A2	Biased HAST	110C/85%RH	264 Hours	-	1/77/0	-
HAST	A2	Biased HAST	110C/85%RH	264 Hours	-	2/154/0	-
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	1/77/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	1/77/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	2/154/0	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	2/90/0	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	1/77/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	1/10/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	1/3/0	-
ESD	E2	ESD HBM	-	4000 Volts	-	1/3/0	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	-

- QBS: Qual By Similarity
- Qual Device TL074HIPWR 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Qualification Report
Approve Date 26-OCTOBER -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TL071CP	QBS Reference: OPA4990IDR	QBS Reference: LM358BIDR	QBS Reference: NE5532P	QBS Reference: TLC339IN
HAST	A2	Biased HAST	130C	96 Hours	-	3/231/0	3/231/0	3/231/0	-
UHAST	A3	Autoclave	121C, 2 atm	96 Hours	-	3/231/5[1]	-	-	3/231/0
UHAST	A3	Unbiased HAST	130C	96 Hours	1/77/0	-	3/231/0	-	-
TC	A4	Temperature Cycle	-65/150C	500 Cycles	1/77/0	3/231/0	3/231/0	-	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	3/231/0	-	3/231/0
HTOL	B1	Life Test	150C	300 Hours	-	3/231/10[2,3]	3/231/0	3/231/0	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	1/800/0	-	-	-
SD	C3	PB-Free Solderability	8 Hours Steam Age	-	-	-	-	3/66/0	3/66/0
ESD	E2	ESD CDM	-	250 Volts	-	-	3/9/0	-	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	3/9/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	3/18/0	3/18/0	-	-
CHAR	E5	Electrical Characterization	Min, Typ, Max Temp	-	-	3/90/0	3/90/0	-	-

- QBS: Qual By Similarity
- Qual Device TL071CP is qualified at NOT CLASSIFIED NOT CLASSIFIED

- 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
- **Note: This qualification also covers the following devices TL071ACP TL071BCP TL071CP TL071IP TL081ACP TL081BCP TL081CP TL081IP**

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-2210-104

[1]-Discounted
[2]-Discounted
[3]-Discounted

Qualification Report
Approve Date 19-MAY -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TL074HIDR	Product QBS Reference: TL074HIDR	Package QBS Reference: OPA4991IDR
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	1/77/0
HTOL	B1	Life Test	150C	300 Hours	-	1/77/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	3/9/0	-
ESD	E2	ESD HBM	-	1500 Volts	-	3/9/0	-
LU	E4	Latch-Up	Per JESD78	-	-	3/9/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	3/90/0	-

- QBS: Qual By Similarity
- Qual Device TL074HIDR 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Qualification Report
Approve Date 17-OCTOBER -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TL072CP	QBS Reference: OPA4990IDR	QBS Reference: LM2904BQDRQ1	QBS Reference: NE5532P	QBS Reference: UCC37322P	QBS Reference: TL072HIDR
HAST	A2	Biased HAST	130C	96 Hours	-	3/231/0	3/231/0	3/231/0	-	-
UHAST	A3	Autoclave	121C, 2 atm	96 Hours	-	3/231/5[1]	-	-	3/231/0	-
UHAST	A3	Unbiased HAST	130C	192 Hours	-	-	3/231/0	-	-	-
TC	A4	Temperature Cycle	-65/150C	500 Cycles	-	3/231/0	3/231/0	-	3/231/0	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	3/135/0	-	3/231/0	-
HTOL	B1	Life Test	150C	300 Hours	-	3/231/10[2,3]	3/231/0	3/231/0	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	1/800/0	3/2400/4[4,5]	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/15/0	-	-	-
SD	C3	PB-Free Solderability	8 Hours Steam Age	-	-	-	-	3/66/0	3/66/0	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	-	-	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	-	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	-	3/9/0	-	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	3/18/0	-	-	-	1/3/0
CHAR	E5	Electrical Characterization	Min, Typ, Max Temp	-	1/30/0	3/90/0	-	-	-	1/30/0

- 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
- **Note: This qualification also covers the following devices TL082IP TL082CP TL082ACP TL072IP TL072CP TL072ACP LF353P**

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-CHG-2108-066

[1]-Mechanical damage from mis-handling @ test.
[2,3]-Faulty BI sockets.
[4,5]-Precon and ELFR fails due to a defect screenable at production test.

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

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

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