12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20220615003.1
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: June 16, 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

20220615003.1
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
TL081ACDR	null
TL071ACDR	null
TL071IDR	null
TL072CPWR	null
TL072IDR	null
TL081IDR	null
TL082IDR	null
LF353DR	null
TL082ACDR	null
TL082CDR	null
TL082CPWR	null
TL082IPWR	null
TL072CDR	null
TL072ACDR	null
TL071CDR	null

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

PCN Number:	20220615003.1	**PCN Date:**	June 16, 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:	Sep 16, 2022	**Sample requests accepted until:**	July 16, 2022*

***Sample requests received after July 16, 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, 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
Bond wire Composition/diameter	Au/0.8, 0.96 mil or Cu, 0.96 mil	Cu, 0.8 mil

Group 2 – MLA as an additional Assembly site

	Current	Additional
Bond wire Composition/diameter	Au, 0.96 mil	Cu, 0.8 mil

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**

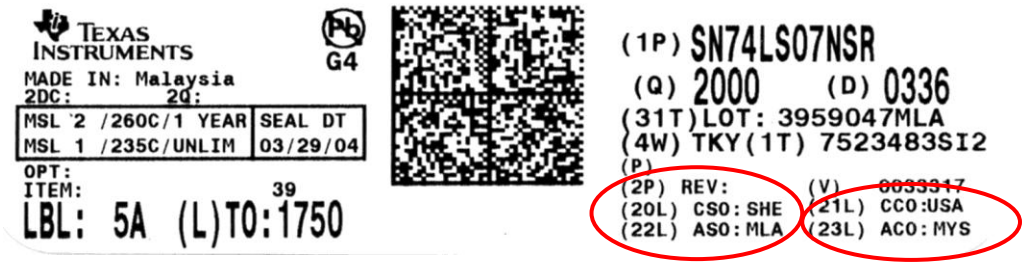
Die Rev:

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

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TI Mexico	MEX	MEX	Aguascalientes
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:

LF353DR	TL072CDRG4	TL082ACDR	TL082CPWR
LF353DRE4	TL072CPWR	TL082ACDRE4	TL082CPWRG4
TL071CDR	TL072CPWRE4	TL082ACDRG4	TL082IDR
TL071CDRE4	TL072CPWRG4	TL082CDR	TL082IDRE4
TL071CDRG4	TL072IDR	TL082CDRE4	TL082IDRG4
TL072CDR	TL072IDRE4	TL082CDRG4	TL082IPWR
TL072CDRE4	TL072IDRG4		

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

TL071ACDR	TL071IDRG4	TL072ACDRG4	TL081CDR
TL071BCDR	TL072ACDR	TL081ACDR	TL081IDR
TL071IDR	TL072ACDRE4	TL081BCDR	

Qualification Report

Approve Date 22-Jun-2021

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

Type	Test Name / Condition	Duration	Qual Device: TL072HIDR	QBS Process Reference: OPA4990IDR	QBS Package Reference: OPA2990IDR	QBS Package Reference: OPA2991IDR
PC	PreCon Level 1	Level 1-260C	-	-	-	1/160/0
PC	PreCon Level 2	Level 2-260C	-	3/1477/1 (1)	3/990/0	-
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	3/90/0	3/90/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	3/231/0	-
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	3/231/0	-
AC	Autoclave 121C	96 Hours	-	3/231/5 (3)	-	1/77/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0	3/231/0	1/77/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	-
HTSL	High Temp Storage Bake 175C	500 Hours	-	3/231/0	-	-
CDM	ESD - CDM	1500 V	1/3/0	2/6/0	3/9/0	-
HBM	ESD - HBM	2000 V	1/3/0	-	-	-
HBM	ESD - HBM	3000 V	-	3/9/0	3/9/0	-
LU	Latch-up	Per JESD78	1/6/0	3/18/0	6/36/0	-
HTOL	Life Test, 150C	300 Hours	-	3/231/10 (2)	3/231/0	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	1/800/0	-	-
MSL	Automotive Moist Sens. L2	Level 2-260C	-	3/36/0	-	-
WBP	Bond Pull	Wires	1/76/0	3/228/0	3/228/0	-
WBS	Ball Bond Shear	Wires	1/76/0	3/228/0	3/228/0	-

- QBS: Qual By Similarity
- Qual Device TL072HIDR is qualified at LEVEL1-260C
- 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

Note (1): T0 failing units got mixed back in with passing ones for the post-stress test resulting in false fails. See 8D attached to the eQDB

Note (2): Fails due to faulty BI sockets. See 8D attached to the eQDB.

Note (3): Fails were due to mechanical damage from mishandling at test. Discounted.

Qualification Report

Approve Date 13-Jul-2021

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

Type	Test Name / Condition	Duration	Qual Device: TL072HIPWR	QBS Product Reference: OPA2991IDR	QBS Process Reference: OPA4990IDR	QBS Package Reference: OPA2990IPWR
PC	PreCon Level 1	Level 1-260C	1/160/0	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	1/30/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	3/231/0
AC	Autoclave 121C	96 Hours	1/77/0	-	3/231/5 (1)	-
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	-	3/231/0	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	3/231/0
HTSL	High Temp Storage Bake 175C	500 Hours	-	-	3/231/0	-
HTOL	Life Test, 150C	300 Hours	-	-	3/231/10 (2)	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	1/800/0	-
HBM	ESD - HBM	2500 V	-	1/3/0	-	1/3/0
CDM	ESD - CDM	1500 V	-	1/3/0	2/6/0	1/3/0
LU	Latch-up	Per JESD78	-	1/6/0	3/18/0	1/6/0
MSL	Moisture Sensitivity, L1	Level 1-260C	1/12/0	-	-	-
WBP	Bond Pull	Wires	1/76/0	1/76/0	3/228/0	3/228/0
WBS	Ball Bond Shear	Wires	1/76/0	1/76/0	3/228/0	3/228/0

- QBS: Qual By Similarity
- Qual Device TL072HIPWR is qualified at LEVEL1-260C
- 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

Note (1): Fails were due to mechanical damage from mishandling at test. Discounted.

Note (2): Fails due to faulty BI sockets. See 8D attached to the eQDB.

Qualification Report

Approve Date 27-Jul-2021

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

Type	Test Name / Condition	Duration	Qual Device: TL071HIDR	QBS Product Reference: TL071HIDVBR	QBS Process Reference: OPA4990IDR	QBS Package Reference: OPA2990IDR	QBS Package Reference: OPA2991IDR
PC	PreCon Level 1	Level 1-260C	-	1/144/0	-	-	1/160/0
PC	PreCon Level 2	Level 2-260C	-	-	3/1477/0	3/990/0	-
ED	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	3/90/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	3/231/0	-
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	3/231/0	-
AC	Autoclave 121C	96 Hours	-	-	3/231/5 (1)	-	1/77/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	1/77/0	3/231/0	3/231/0	1/77/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	3/231/0	-
HTSL	High Temp Storage Bake 175C	500 Hours	-	-	3/231/0	-	-
HTOL	Life Test, 150C	300 Hours	-	-	3/231/10 (2)	3/231/0	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	1/800/0	-	-
HBM	ESD – HBM	2500 V	-	1/3/0	-	-	-
HBM	ESD – HBM	3000 V	-	-	3/9/0	3/9/0	-
HBM	ESD – HBM	1500 V	-	-	1/3/0	-	-
CDM	ESD – CDM	1500 V	-	1/3/0	2/6/0	3/9/0	-
LU	Latch-up	Per JESD78	-	1/6/0	3/18/0	6/36/0	-
MSL	Moisture Sensitivity	Level 2-260C	-	-	3/36/0	-	-
WBP	Bond Pull	Wires	1/76/0	1/76/0	3/228/0	3/228/0	-
WBS	Ball Bond Shear	Wires	1/76/0	1/76/0	3/228/0	3/228/0	-

- QBS: Qual By Similarity
- Qual Device TL071HIDR is qualified at LEVEL1-260C
- 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

NOTE (1): Fails were due to mechanical damage from mishandling at test. Discounted.
NOTE (2): Fails due to faulty BI sockets. See 8D attached to the eQDB.

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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