12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20230522015.1
Qualification of new Fab site (FFAB) using qualified Process Technology, Die Revision, Datasheet and additional Assembly BOM options for select devices
Change Notification / Sample Request

Date: May 24, 2023
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

20230522015.1
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
INA2128U	null
INA2128UA	null

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

PCN Number:	20230522015.1	PCN Date:	May 24, 2023
Title:	Qualification of new Fab site (FFAB) using qualified Process Technology, Die Revision, Datasheet and additional Assembly BOM options for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Aug 24, 2023	Sample requests accepted until:	Jun 24, 2023*

***Sample requests received after June 24, 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 (FFAB, BICOM3XHV) and assembly BOM options for selected devices as listed below in the product affected section.

Current Fab Site			Additional Fab Site		
Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter
SFAB	JIBB	150 mm	FFAB	BICOM3XHV	200 mm

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

Additionally, there will be a BOM/Assembly options introduced for these devices:

	Current	Proposed
Wire type	1.2mil Au	0.8mil Cu
Die Coat	4221706	None
Mount compound	4205846	4147858
Mold compound	4209640	4211880

The datasheets will be changing as a result of the above mentioned changes. The datasheet change details can be reviewed in the datasheet revision history. The links to the revised datasheets are available in the table below.

Changes from Revision A (April 2007) to Revision B (May 2023) **Page**

- Updated the numbering format for tables, figures, and cross-references throughout the document. 1
- Added the *Package Information* table, and the *Pin Configuration and Functions*, *Specifications*, *Detailed Description*, *Application and Implementation*, *Device and Documentation Support*, and *Mechanical, Packaging, and Orderable Information* sections. 1
- Added input voltage noise, high bandwidth, and temperature range bullets to *Features* 1
- Changed *Features* bullet to show correct package name. 1
- Changed *Applications* bullets to show updated links. 1
- Changed Package Information table column name from BODY SIZE (NOM) to PACKAGE SIZE and added note regarding the package size. 1
- Added single supply specification to *Absolute Maximum Ratings* 5
- Added note clarifying output short-circuit to ground in *Absolute Maximum Ratings* refers to short-circuit to VS / 2. 5
- Added single supply specification to *Recommended Operating Conditions* 5
- Changed input common-mode voltage range specification from V – 2 to (V–) + 2 in *Recommended Operating Conditions* 5
- Deleted INA128-HT and INA129-HT operating temperature specifications from *Recommended Operating Conditions* 5
- Added specified temperature range to *Recommended Operating Conditions* 5
- Added test conditions below *Electrical Characterstics* title. 6
- Changed test condition for offset voltage drift specification in *Electrical Characteristics* from "TA = TMIN to TMAX" to " TA = –40°C to +85°C" for clarity. 6
- Changed "±0.5±0/G" to "±0.5±20/G" in MAX column of Offset voltage RTI vs temperature row of *Electrical Characteristics*. 6
- Changed typical long-term stability specification from ±0.1±3/GµV/mo to ±0.2±3/GµV/mo in *Electrical Characteristics* 6
- Deleted typical specification and changed common-mode voltage specification from (V–) + 2 V minimum and (V+) – 2 V maximum across one row in Electrical Characteristics. 6
- Deleted typical VCM specifications in *Electrical Characteristics* 6
- Added test condition of "RS = 0 Ω" to safe input voltage specification in *Electrical Characteristics* for clarity. 6
- Changed parameter name to Input bias current and added test condition "TA = –40°C to +85°C" to input bias current drift specification in *Electrical Characteristics* for clarity. 6
- Changed parameter name to Input offset current drift and added test condition "TA = –40°C to +85°C" to input offset current drift specification in *Electrical Characteristics* for clarity. 6
- Changed maximum gain error specification for INA128PA/UA and INA129PA/UA with G = 1 from ±0.01% to ±0.1% in *Electrical Characteristics* 6
- Changed parameter name to Gain drift and added test condition "TA = –40°C to +85°C" for gain drift in *Electrical Characteristics* for clarity. 6
- Changed parameter names from "Voltage - Positive" to "Positive output voltage swing" and from "Voltage - Negative" to "Negative output voltage swing" in *Electrical Characteristics* 6
- Deleted typical positive and negative output voltage swing specifications in *Electrical Characteristics* 6
- Added test condition "Continuous to VS / 2" short-circuit current specification in *Electrical Characteristics* for clarity. 6
- Changed typical bandwidth specification for G = 10 from 700 kHz to 600 kHz in *Electrical Characteristics* 6
- Changed typical slew rate specification from 4 V/µs to 1.2 V/µs in *Electrical Characteristics* 6
- Changed typical settling time specification for G = 1, G = 10, from 7 µs to 9 µs in *Electrical Characteristics* 6
- Deleted parameter "Temperature Range" as made redundant by *"Recommended Operating Conditions"* and *"Absolute Maximum Ratings"* 6
- Changed parameter name to "Total quiescent current" and deleted redundant voltage range, operating temperature range, and specification temperature range specifications from *Electrical Characteristics* 6
- Added test conditions below the *Typical Characteristics* title. 8
- Changed Figure 6-1, *Gain vs Frequency* 8
- Changed Figure 6-3, *Positive Power Supply Rejection vs Frequency* 8
- Changed Figure 6-4, *Negative Power Supply Rejection vs Frequency* 8
- Changed Figure 6-7, *Crosstalk vs Frequency* 8
- Changed Figure 6-8, *Input-Referred Voltage Noise vs Frequency* 8
- Changed Figure 6-9, *Settling Time vs Gain* 8
- Changed Figure 6-11, *Input Overvoltage V/I Characteristics* 8
- Changed Figure 6-12, *Offset Voltage Warm-Up* 8
- Changed *Output Voltage Swing vs Output Current*, into two separate plots, one for positive (Figure 6-14) and one for negative (Figure 6-15). 8
- Changed Figure 6-22 to Figure 6-24, *Large-Signal Step Response* 8

Product Folder	Current Datasheet Number	New Datasheet Number	Link to full datasheet
INA2128	SBOS035A	SBOS035B	http://www.ti.com/product/INA2128

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
SH-BIP-1	SHE	USA	Sherman
FR-BIP-1	**TID**	**DEU**	**Freising**

Die Rev:

Current	New
Die Rev [2P]	**Die Rev [2P]**
A	**A**

Sample product shipping label (not actual product label)

Product Affected:

INA2128U	INA2128UA	INA2128UA/1K	INA2128UG4
INA2128U/1K			

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

Qualification Report
Approve Date 21-MARCH -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: INA2128U/1K	QBS Process Reference: OPA202ID	QBS Process Reference: INA828ID	QBS Process Reference: INA821ID	QBS Process Reference: OPA207ID	QBS Package Reference: MUX36S16IDW	QBS Package Reference: MUX506IDW
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0	3/231/0	2/153/0	1/77/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	1/77/0	3/231/0	3/231/0	3/231/0	3/231/0	2/154/0	1/77/0
TC	A4	Temperature Cycle	-65/150C	500 Cycles	1/77/0	3/231/0	3/231/0	3/231/0	3/231/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	3/231/0	3/231/0	3/231/0	3/231/0	2/154/0	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	3/231/0	3/231/0	-	-	-	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	3/231/0	3/231/0	2/154/0	1/77/0
HTOL	B1	Life Test	125C	1000 Hours	-	3/231/0	3/231/0	-	-	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	3/231/0	3/231/0	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	-	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
LU	E4	Latch-Up	Per JESD78	-	1/6/0	2/12/0	1/6/0	1/6/0	1/3/0	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	3/90/0	3/90/0	1/30/0	1/30/0	1/30/0

- QBS: Qual By Similarity
- Qual Device INA2128U/1K 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

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

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

Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale (www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.