

PCN Number:	20220802000.1	PCN Date:	August 03, 2022		
Title:	Qualification of new Fab site (FFAB) using qualified Process Technology, Die Revision, and additional Assembly, Datasheet & BOM options for select devices				
Customer Contact:	PCN Manager	Dept:	Quality Services		
Proposed 1st Ship Date:	Oct 31, 2022	Sample Requests accepted until:	Sept 3, 2022*		
*Sample requests received after Sept 3, 2022 will not be supported.					
Change Type:					
<input type="checkbox"/>	Assembly Site	<input checked="" type="checkbox"/>	Assembly Process	<input checked="" type="checkbox"/>	Assembly Materials
<input checked="" type="checkbox"/>	Design	<input checked="" type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification
<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>	Wafer Bump Process
<input checked="" type="checkbox"/>	Wafer Fab Site	<input checked="" type="checkbox"/>	Wafer Fab Materials	<input checked="" type="checkbox"/>	Wafer Fab Process
		<input type="checkbox"/>	Part number change		
PCN Details					
Description of Change:					
Texas Instruments is pleased to announce the qualification of a new fab & process technology (FFAB, BICOM3XHV) die revision, and Assembly & BOM option for selected devices as listed below in the product affected section. Construction differences are noted below:					
Current Fab Site			Additional Fab Site		
Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter
SFAB	J11	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 in Group 1 below:					
		MLA Current	MLA Alternate		
Bond wire composition, diameter		Au, 1.2 mils	Cu, 1.0 mil		
Mold Compound		4209640	4226323		
Mount Compound		4205846	4147858		
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 link to the revised datasheet is available in the table below.					

Changes from Revision E (April 2019) to Revision F (May 2022) **Page**

- Updated the numbering format for tables, figures, and cross-references throughout the document..... 1
- Added bandwidth and noise specifications in *Features* 1
- Changed *Applications* to link to latest end-equipment solutions on ti.com..... 1
- Changed reference from INA819 to INA818 in *Device Comparison Table* 4
- 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 $V_S / 2$ 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 $V_{REF} = 0\text{ V}$, $V_{CM} = V_S / 2$, and $G = 1$ to "unless otherwise noted" conditions in *Electrical Characteristics* and *Typical Characteristics* for clarity..... 6
- Changed test condition for offset voltage drift specification in *Electrical Characteristics* from " $T_A = T_{MIN}$ to T_{MAX} " to " $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$ " for clarity..... 6
- Changed typical long-term stability specification from $\pm 0.1 \pm 3/G\ \mu\text{V}/\text{mo}$ to $\pm 0.2 \pm 3/G\ \mu\text{V}/\text{mo}$ in *Electrical Characteristics* 6
- Changed common-mode voltage specification from $(V-) + 2\text{ V}$ minimum and $(V+) - 2\text{ V}$ minimum across two rows to $(V-) + 2\text{ V}$ minimum and $(V+) - 2\text{ V}$ maximum across one row in *Electrical Characteristics* 6
- Deleted typical common-mode voltage specifications in *Electrical Characteristics* 6
- Added test condition of " $R_S = 0\ \Omega$ " to safe input voltage specification in *Electrical Characteristics* for clarity.... 6
- Added test condition of " $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$ " to input bias current drift specification in *Electrical Characteristics* for clarity..... 6
- Added test condition of " $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$ " 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 $\pm 0.01\%$ to $\pm 0.1\%$ in *Electrical Characteristics* 6
- Added test condition of " $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$ " 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 of "Continuous to $V_S / 2$ " to short-circuit current specification in *Electrical Characteristics* for clarity..... 6
- Changed typical bandwidth specification for $G = 10$ from 700 kHz to 640 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 $G = 1$, $G = 10$, and $G = 100$ from 7 μs , 7 μs , and 9 μs respectively to 12 μs , 12 μs , and 12 μs , in *Electrical Characteristics* 6
- Deleted redundant voltage range, operating temperature range, and specification temperature range specifications from *Electrical Characteristics* 6
- Changed Figures 7-1, 7-3, 7-4, 7-9, 7-10, 7-11, 7-16, 7-17, 7-20, 7-21..... 8
- Changed values discussed in *Input Common-Mode Range* from typical input common-mode voltage range values to maximum and minimum values..... 14
- Changed Figure 9-1 to fix missing text and include reference voltage..... 15
- Added more detailed guidance concerning REF pin in *Design Requirements* 15
- Changed Figures 9-6, 9-7..... 18
- Changed Figures 9-10 and 9-11 to fix missing text..... 19
- Added *Related Documentation* links to *Device and Documentation Support* 22

Products	Current Datasheet Number	New Datasheet Number	Link to full datasheet
INA128/9	SBOS051E	SBOS051F	https://www.ti.com/lit/ds/symlink/ina129.pdf?ts=1659050265615&ref_url=https%253A%252F%252Fwww.ti.com%252Fproduct%252FINA129%253FkeyMatch%253DINA129%2526tsearch%253Dsearch-everything%2526usecase%253DGPN

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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
<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<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
SH-BIP-1	SHE	USA	Sherman
FFAB	FRE	DEU	Freising

Die Rev:

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



Sample product shipping label (not actual product label)



MADE IN: Malaysia
2DC: 20:

MSL 2 /260C/1 YEAR	SEAL DT
MSL 1 /235C/UNLIM	03/29/04

OPT:
ITEM: 39
LBL: 5A (L)T0:1750

(1P) SN74LS07NSR
 (Q) 2000 (D) 0336
 (31T) LOT: 3959047MLA
 (4W) TKY (1T) 7523483SI2
 (P)
 (2P) REV: (V) 0033317
 (20L) ~~000: SHE~~ (21L) ~~CCO: USA~~
 (22L) ASO: MLA (23L) ACO: MYS

Product Affected:**Group 1 Device list (Wafer fab, die revision, BOM and Datasheet changes)**

INA128U	INA128UAE4	INA129U/2K5	INA128U/2K5G4
INA129U	INA128UAG4	INA128UA/2K5	INA128UA/2K5E4
INA128UA	INA129UAE4	INA129UA/2K5	INA128UA/2K5G4
INA129UA	INA128U/2K5	INA128U-2/2K5	INA129UA/2K5G4
INA128UG4			

Group 2 Device list (Datasheet changes only)

INA128P	INA128PA	INA128PG4	INA129PG4
INA129P	INA129PA		

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



TI Information
Selective Disclosure

Qualification Report

Approve Date 01-Apr-2022

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: INA128U	QBS Process Reference: INA828ID	QBS Package Reference: INA849D
HTOL	Life Test, 100C ^A	300 Hours	-	-	1/77/0
HTOL	Life Test, 150C	300 Hours	-	3/231/0	-
HBM	ESD - HBM	2000 V	1/3/0	1/3/0	1/3/0
CDM	ESD - CDM	1000 V	1/3/0	1/3/0	1/3/0
LU	Latch-up	JEDEC78	1/6/0	1/6/0	1/6/0
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	-
HBM	ESD - HBM	2000 V	1/3/0	1/3/0	1/3/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0	3/231/0
THB	Biased Temperature and Humidity, 85C/85%RH	1000 Hours	-	-	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	3/231/0	3/231/0

- 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
 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
^A Tj of device at 150C

Change Number: C2011216
 TI Qualification ID: 20201124-137263
 - QBS: Qual By Similarity
 - Qual Device INA128U is qualified at LEVEL2-260C

- 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
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Green/Pb-free Status:
 Qualified Pb-Free(SMT) and Green



TI Information
 Selective Disclosure

Qualification Report

Approve Date 01-Apr-2022

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: INA129U	QBS Product Reference: INA128U	QBS Process Reference: INA828ID	QBS Package Reference: INA849D
HTOL	Life Test, 100C ^A	300 Hours	-	-	-	1/77/0
HTOL	Life Test, 150C	300 Hours	-	-	3/231/0	-
HBM	ESD - HBM	2000 V	-	1/3/0	1/3/0	1/3/0
CDM	ESD - CDM	1000 V	-	1/3/0	1/3/0	1/3/0
LU	Latch-up	JEDEC78	-	1/6/0	1/6/0	1/6/0
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	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0	3/231/0
THB	Biased Temperature and Humidity, 85C/85%RH	1000 Hours	-	-	-	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	3/231/0	3/231/0
YLD	FTY and Bin Summary	-	1/Pass	-	-	-

- 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
^A Tj of device at 150C

TI Qualification ID: 20210624-140661

For questions regarding this notice, e-mails can be sent to the contacts 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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