PCN Number:	20160629000	PCN Date:	06/30/2016
Title:	Qualification of AIZU as an additional Wafer Fab Site option and Die Revision change for select devices in HPA07 Technology		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	09/30/2016	Estimated Sample Availability:	Date provided at sample request.

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 its AIZU fabrication facility as an additional Wafer Fab source for the selected devices listed in "Product Affected" section.

Current Sites			Additional Sites		
Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter
DP1DM5	HPA07	200mm	AIZU	HPA07	200mm

In addition, HBM improvements were achieved for both DP1DM5 (DMOS5) and AIZU material on the revision B design by performing a one metal layer change that removed effect of parasitics around the ESD cell. The Die Revision and the datasheet will be changing:

Current		New	
Die Revision	Datasheet Number	**Die Revision**	**Datasheet Number**
A	SBOS469E	**B**	**SBOS469F**

The product datasheet(s) is updated as seen in the change revision history below:

INA199

SBOS469F – APRIL 2009 – REVISED JUNE 2016

INA199 26-V, Bidirectional, Zero-Drift, Low- or High-Side, Voltage-Output, Current-Shunt Monitor

4 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Revision E (December 2015) to Revision F — **Page**

- Changed *Package* Features bullet to include pin count for both packages 1
- Deleted last *Applications* bullet 1
- Changed *Description* section 1
- Changed *Analog inputs* parameter in *Absolute Maximum Ratings* table 5
- Changed *ESD Ratings* table: deleted both *Machine model* rows, changed INA199B HBM specification 5
- Changed *Electrical Characteristics* table: recombined the two *Electrical Characteristics* tables into one 7
- Added minimum specification to second row of Power Supply, V_S parameter in *Electrical Characteristics* table 7
- Added θ_{JA} parameter back to *Electrical Characteristics* table 7

These changes can be viewed at: http://www.ti.com/lit/ds/symlink/ina199.pdf

In addition, the product datasheet(s) is updated as seen in the change revision history below:

INA210, INA211, INA212, INA213, INA214, INA215
SBOS437H – MAY 2008 – REVISED JUNE 2016

INA21x Voltage Output, Low- or High-Side Measurement, Bidirectional, Zero-Drift Series, Current-Shunt Monitors

4 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Revision G (July 2014) to Revision H **Page**

- Changed Features section: deleted last bullet, changed packages bullet 1
- Deleted last *Applications* bullet 1
- Changed *Description* section 1
- Changed *Device Information* table 1
- Changed *Device Options* table: added INA211B and INA212B RSW rows, added INA215B rows, and added footnote 4
- Moved storage temperature to *Absolute Maximum Ratings* table 5
- Changed *ESD Ratings* table: changed title, changed format to current standards 5
- Changed HBM specification for version A and B devices in ESD Ratings table 5
- Deleted both *Machine Model* rows from *ESD Ratings* table 5
- Changed first sentence referencing Equation 1 in *Input Filtering* section: replaced *seen* with *measured* 14
- Changed second sentence referencing Equation 1 in *Input Filtering* section 15
- Corrected punctuation and added clarity to first and second paragraphs in *Shutting Down the INA210-INA215 Series* section 16
- Changed *impressed* to *present* in fourth paragraph of *Shutting Down the INA210-INA215 Series* section 16

Device Family	Change From	**Change To**
INA21x	SBOS437G	**SBOS437H**

These changes can be viewed at: http://www.ti.com/lit/gpn/ina213

Reason for Change:

Continuity of supply and improved product performance

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None

Changes to product identification resulting from this PCN:

Current

Chip Site	Chip Site Origin (20L)	Chip Site Country Code (21L)	Chip Site City
DP1DM5	DM5	USA	Richardson

New Fab Site

Chip Site	Chip Site Origin (20L)	Chip Site Country Code (21L)	Chip Site City
AIZU	CU2	JPN	Aizuwakamatsu-shi

Die Rev designator will change as shown in the table and sample label below:

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

MADE IN: Malaysia
2DC: 2Q:
MSL 2 /260C/1 YEAR | SEAL DT
MSL 1 /235C/UNLIM | 03/29/04
OPT:
ITEM: 39
LBL: 5A (L)TO:1750

G4

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

Product Affected Group:

INA199B1DCKR	INA199B2RSWT	INA210BIRSWR	INA213BIDCKT
INA199B1DCKT	INA199B3DCKR	INA210BIRSWT	INA213BIRSWR
INA199B1RSWR	INA199B3DCKT	INA211BIDCKR	INA213BIRSWT
INA199B1RSWT	INA199B3RSWR	INA211BIDCKT	INA214BIDCKR
INA199B2DCKR	INA199B3RSWT	INA212BIDCKR	INA214BIDCKT
INA199B2DCKT	INA210BIDCKR	INA212BIDCKT	INA214BIRSWR
INA199B2RSWR	INA210BIDCKT	INA213BIDCKR	INA214BIRSWT

Qualification Report

Die rev change from DANP to DBNP in DMOS5 for the INA199Bx/INA210B, INA211B, INA212B, INA213B, and INA214B families
Approve Date 02-Jun-2016

Product Attributes

Attributes	Qual Device: INA211BIDCK	Qual Device: INA212BIDCK	Qual Device: INA213BIDCK	QBS Product Reference: INA210BIDCK	QBS Process Reference: OPA300AID	QBS Package Reference: INA210AIDCKR	QBS Package Reference: INA213AIDCK	QBS Package Reference: INA214AIDCK	QBS Package Reference: INA215AIDCK	QBS Package Reference: OPA330AIDCK	QBS Package Reference: OPA333AIDCK	QBS Package Reference: TMP300AIDCK	QBS Package Reference: TPS71719DCK
Assembly Site	NFME	NFME	NFME	NFME	CRS	NFM-NANTONG FUJITSU	NFM-NANTONG FUJITSU	NFM-NANTONG FUJITSU	NFME	NFME	NFME	NFME	NFME
Package Family	SOT	SOT	SOT	SOT	SOIC	SOT	SOT	SOT	SOT	SOT	SOT	SOT	SOT
Wafer Fab Supplier	DMOS 5	DMOS 5	DMOS5	DMOS 5	DMOS5	DM5	DM5	DM5	AIZU	DMOS5	AIZU	DMOS5	MIHO8
Wafer Process	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	LBC7

- QBS: Qual by Similarity
- Qual Devices qualified at LEVEL2-260C: INA212BIDCK, INA211BIDCK, and INA213BIDCK

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

Type	Test Name / Condition	Duration	Qual Device: INA211BIDCK	Qual Device: INA212BIDCK	Qual Device: INA213BIDCK	QBS Product Reference: INA210BIDCK	QBS Process Reference: OPA300AID	QBS Package Reference: INA210AIDCKR	QBS Package Reference: INA213AIDCK	QBS Package Reference: INA214AIDCK	QBS Package Reference: INA215AIDCK	QBS Package Reference: OPA330AIDCK	QBS Package Reference: OPA333AIDCK	QBS Package Reference: TMP300AIDCK	QBS Package Reference: TPS71719DCK
AC	Autoclave 121C	96 Hours	-	-	-	-	3/231/0	-	-	-	-	-	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	-	Pass	-	-	-	-	-	-	-	Pass
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	-	-	-	-	-	-	3/3000/0	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	1/77/0	3/231/0	1/77/0	1/77/0	1/77/0	1/77/0	-	3/231/0	-	-
HBM	ESD - HBM	3500 V	1/3/0	1/3/0	1/3/0	-	-	-	-	-	-	-	-	-	-
CDM	ESD - CDM	1000 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	-	-	-	3/9/0	-	3/9/0	-	-
HTOL	Life Test, 150C	300 Hours	-	-	-	2/154/0	3/231/0	-	-	-	1/77/0	-	3/228/0	-	-
HTSL	High Temp. Storage Bake, 150C	1000 Hours	-	-	-	-	3/135/0	-	-	-	-	-	-	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	-	1/45/0	-	-	-	-	1/77/0	1/77/0	3/231/0	1/77/0	-
LI	Lead Fatigue	Leads	-	-	-	-	-	-	-	-	-	1/22/0	-	1/22/0	1/22/0
LI	Lead Pull to Destruction	Leads	-	-	-	-	-	-	-	-	-	1/22/0	-	1/22/0	1/22/0
LU	Latch-up	(per JESD78)	1/6/0	1/6/0	1/6/0	1/6/0	1/12/0	-	-	-	3/18/0	-	3/18/0	-	-
PKG	Lead Finish Adhesion	Leads	-	-	-	-	-	-	-	-	-	1/15/0	-	1/15/0	1/15/0
SD	Solderability	Pb-Free	-	-	-	1/6/0	-	-	-	-	-	1/22/0	3/99/0	1/22/0	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	-	1/77/0	3/307/0	-	-	-	2/154/0	1/77/0	3/231/0	1/77/0	1/76/0
UHAST	Unbiased HAST, 130C/85%RH	96 Hours	-	-	-	1/77/0	-	-	-	-	-	1/77/0	-	1/77/0	1/77/0
WBP	Bond Pull	Wires	-	-	-	-	3/228/0	-	-	-	-	-	-	-	-
WBS	Ball Bond Shear	Wires	-	-	-	-	1/50/0	-	-	-	-	-	-	-	-

- 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
Note: INA199B1/INA213B 50 Use the same die
INA199B2/INA214B 100 Use the same die - The INA214B will be QBS to the INA211B-INA213B.
INA199B3/INA210B 200 Use the same die - The INA210B will be QBS to the INA211B-INA213B.

Qualification Report

Die revision and adding AIZU as an additional wafer fabrication site for the INA199B1, INA199B2, INA199B3, INA210B, INA211B, INA212B, INA213B, INA214B, and INA215B family
Approve Date 13-May-2016

Product Attributes

Attributes	Qual Device: INA210BIDCK	Qual Device: INA210BIRSW	Qual Device: INA211BIDCK	Qual Device: INA212BIDCK	Qual Device: INA213BIDCK	Qual Device: INA213BIRSW	Qual Device: INA214BIDCK	Qual Device: INA214BIRSW	Qual Device: INA215BIDCK	QBS Process Reference: INA215AIDCK	QBS Process Reference: OPA2333AIDGK	QBS Process Reference: TMP431ADGK	QBS Package Reference: INA210AIDCKR	QBS Package Reference: INA213AIDCK	QBS Package Reference: INA214AIDCK	QBS Package Reference: INA214BIRSW	QBS Package Reference: OPA330AIDCK	QBS Package Reference: TMP300AIDCK	QBS Package Reference: TPS71719DCK
Assembly Site	NFME	UTAC	NFME	NFME	NFME	UTAC	NFME	UTAC	NFME	NFME	ASESH	HNT	NFME	NFME	NFME	UTAC	NFME	NFME	NFME
Package Family	SOT	uQFN	SC70	SC70	SC70	uQFN	SC70	uQFN	SC70	SC70	VSSOP	VSSOP	SC70	SC70	SC70	uQFN	SC70	SC70	SC70
Wafer Fab Supplier	AIZU	AIZU	AIZU	AIZU	AIZU	AIZU	AIZU	AIZU	AIZU	AIZU	AIZU	AIZU	DM5	DM5	DM5	DMOS 5	DMOS5	DMOS5	MIHO8
Wafer Process	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	50HPA07	LBC7

- QBS: Qual By Similarity
- Qual Devices qualified at LEVEL2-260C: INA210BIDCK, INA212BIDCK, INA211BIDCK, INA214BIDCK, INA213BIDCK, INA215BIDCK
- Qual Devices qualified at LEVEL1-260C: INA210BIRSW, INA213BIRSW, INA214BIRSW
- Note: INA199B1 and INA213B use the same die, INA199B2 and INA214B use the same die, and INA199B3 and INA210B use the same die.

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

Type	Test Name / Condition	Duration	Qual Device: INA210BIDCK	Qual Device: INA210BIRSW	Qual Device: INA211BIDCK	Qual Device: INA212BIDCK	Qual Device: INA213BIDCK	Qual Device: INA213BIRSW	Qual Device: INA214BIDCK	Qual Device: INA214BIRSW	Qual Device: INA215BIDCK	QBS Process Reference: INA215AIDCK	QBS Process Reference: OPA2333AIDGK	QBS Process Reference: TMP431ADGK	QBS Package Reference: INA210AIDCKR	QBS Package Reference: INA213AIDCK	QBS Package Reference: INA214AIDCK	QBS Package Reference: INA214BIRSW	QBS Package Reference: OPA330AIDCK	QBS Package Reference: TMP300AIDCK	QBS Package Reference: TPS71719DCK
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	Pass	Pass	-	Pass	-	Pass	-	Pass	Pass	-	-	-	-	-	-	Pass
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	-	-	-	-	-	1/77/0	1/77/0	2/154/0	1/77/0	1/77/0	1/77/0	1/77/0	-	-	-
HBM	ESD - HBM	3500 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	-	1/3/0	-	1/3/0	-	-	-	-	-	-	-	-	-	-
CDM	ESD - CDM	1000 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	-	-	-	-	-	-	-	-	-	-
HTOL	Life Test, 150C	300 Hours	-	-	-	-	-	-	-	-	-	1/77/0	1/77/0	2/154/0	-	-	-	1/77/0	-	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	-	-	-	-	-	-	-	1/77/0	-	-	-	-	-	1/77/0	1/77/0	1/77/0	-
LI	Lead Fatigue	Leads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/22/0	1/22/0	1/22/0
LI	Lead Pull to Destruction	Leads	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/22/0	1/22/0	1/22/0
LU	Latch-up	(per JESD78)	1/6/0	-	1/6/0	1/6/0	1/6/0	-	1/6/0	-	1/6/0	3/18/0	1/6/0	1/6/0	-	-	-	1/6/0	-	-	-
PD	Physical Dimensions	--	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/20/0	-	-	-
SD	Solderability	Pb Free, 8 Hours Steam Age	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1/22/0	1/22/0	1/22/0	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	-	-	-	-	-	-	-	2/154/0	1/80/0	2/154/0	-	-	-	1/77/0	1/77/0	1/77/0	1/76/0
UHAST	Unbiased HAST, 130C/85%RH	96 Hours	-	-	-	-	-	-	-	-	-	-	1/80/0	2/154/0	-	-	-	1/77/0	1/77/0	1/77/0	1/77/0

- 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

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

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