



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20240202011.1

**Qualification of FFAB using qualified Process Technology, Die Revision and Assembly site/BOM option qualification for select devices
Change Notification / Sample Request**

Date: February 02, 2024

To: MOUSER 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 and approval of this 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 Change Management team. For sample requests or sample related questions, contact your local Field Sales Representative. As always, we thank you for your continued business.

Change Management Team
SC Business Services

20240202011.1
Attachment: 1

Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, you have recently purchased these devices. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
OPA656NB/250	NULL

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

PCN Number:	20240202011.1	PCN Date:	February 02, 2024																					
Title:	Qualification of FFAB using qualified Process Technology, Die Revision and Assembly site/BOM option qualification for select devices																							
Customer Contact:	Change Management team	Dept:	Quality Services																					
Proposed 1st Ship Date:	May 02, 2024	Estimated Sample Availability:	March 03, 2024*																					
Sample requests received after March 03, 2024 will not be supported.																								
Change Type:																								
☒ Assembly Site	☒ Design	☐	Wafer Bump Material																					
☒ Assembly Process	☐ Data Sheet	☐	Wafer Bump Process																					
☒ Assembly Materials	☐ Part number change	☒	Wafer Fab Site																					
☐ Mechanical Specification	☐ Test Site	☒	Wafer Fab Materials																					
☒ Packing/Shipping/Labeling	☐ Test Process	☒	Wafer Fab Process																					
PCN Details																								
Description of Change:																								
Texas Instruments is pleased to announce the qualification of a new fab & process technology (FFAB, BICOMHD & BICOM3XHV) and Assembly site/BOM option qualification for selected devices as listed below in the product affected section.																								
<table border="1"> <thead> <tr> <th colspan="3">Current Fab Site</th> <th colspan="3">Additional Fab Site</th> </tr> <tr> <th>Current Fab Site</th> <th>Process</th> <th>Wafer Diameter</th> <th>Additional Fab Site</th> <th>Process</th> <th>Wafer Diameter</th> </tr> </thead> <tbody> <tr> <td>SFAB</td> <td>CBC10 JIBB</td> <td rowspan="2">150 mm</td> <td rowspan="2">FFAB</td> <td>BICOMHD</td> <td rowspan="2">200 mm</td> </tr> <tr> <td>DL-LIN-1</td> <td>BICOM</td> <td>BICOM3XHV</td> </tr> </tbody> </table>			Current Fab Site			Additional Fab Site			Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter	SFAB	CBC10 JIBB	150 mm	FFAB	BICOMHD	200 mm	DL-LIN-1	BICOM	BICOM3XHV	
Current Fab Site			Additional Fab Site																					
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SFAB	CBC10 JIBB	150 mm	FFAB	BICOMHD	200 mm																			
DL-LIN-1	BICOM			BICOM3XHV																				
The die was also changed as a result of the process change.																								
BOM option comparisons are as follows:																								
Group 1 BOM Table (FFAB/Process migration, Die Change & CDAT as additional Assembly site):																								
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Group 2 BOM Table (FFAB/Process migration, Die Change & MLA as additional Assembly site):																								
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Mount Compound	SID#400180	44223772																						

Group 3 BOM Table (FFAB/Process migration, Die Change & additional BOM options):

What	Current	Additional
Bond Wire composition, diameter	Au, 1.2 mil	Cu, 1.0 mil
Mold Compound	4209640	4211880 or 4226323
Mount Compound	4205846	4147858
Die Coat	PI or none	None
MSL	3	2

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
DL-LIN-1	DLN	USA	Dallas
FR-BIP-1	TID	DEU	Freising

Die Rev:**Current****New**

Die Rev [2P]	Die Rev [2P]
A,B	A,B

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
UTL2	NS2	THA	Bangpakong, Chachoengsao
HNA	HNT	THA	Ayutthaya
CDAT	CDA	CHN	Chengdu
MLA	MLA	MYS	Kuala Lumpur

Sample product shipping label (not actual product label)

TEXAS
INSTRUMENTS
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)T0:1750

(1P) SN74LS07NSR
(Q) 2000 (D) 0336
(31T) LOT: 3959047MLA
(4W) TKY (1T) 7523483SI2
(P)
(2P) REV: (V) 0033317
(20L) 830: SHE (21L) 660: USA
(22L) ASO: MLA (23L) ACO: MYS

Product Affected:

Group 1 Device list (FFAB/Process migration, Die Change & CDAT as additional Assembly site):

OPA656NB/250

Group 2 Device list (FFAB/Process migration, Die Change & MLA as additional Assembly site):

THS4022IDGNR

Group 3 Device list (FFAB/Process migration, Die Change & additional BOM options):

OPA656UB/2K5

For alternate parts with similar or improved performance, please visit the product page on [TI.com](https://www.ti.com)

TI Information
Selective Disclosure

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: OPA656DBV	QBS Product Reference: OPA656U	QBS Process Reference: OPA2810IDGKR	QBS Process Reference: OPA2863AIDSN	QBS Package Reference: TPS26610DDFR	QBS Package Reference: TPS26610DDFR	QBS Package Reference: OPA328DBV
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	3/231/0	-	3/231/0	3/231/0
UHA	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	3/231/0	-
UHA	A3	Unbiased HAST	130C/85%RH	96 Hours	1/77/0	-	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
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/231/0	-	-	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	1/77/0	1/77/0	3/231/0	-	-	3/231/0	3/231/0
HTOL	B1	Life Test	125C	1000 Hours	-	1/77/0	3/231/0	3/231/0	1/77/0	3/231/0	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	3/3000/0	-	-	-	-

Type	#	Test Name	Condition	Duration	Qual Device: OPA656DBV	QBS Product Reference: OPA656U	QBS Process Reference: OPA2810IDGKR	QBS Process Reference: OPA2863AIDSN	QBS Package Reference: TPS26610DDFR	QBS Package Reference: TPS26610DDFR	QBS Package Reference: OPA328DBV
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	-	3/66/0
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	-	3/66/0
PD	C4	Physical Dimensions	(per mechanical drawing)	-	-	-	-	-	-	-	3/15/0
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	-	1/3/0	-	-
ESD	E2	ESD CDM	-	250 Volts	-	1/3/0	-	3/9/0	-	-	1/3/0
ESD	E2	ESD CDM	-	500 Volts	1/3/0	1/3/0	3/9/0	-	-	-	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	3/9/0	3/9/0	-	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	-	-	-	-	-
ESD	E2	ESD HBM	-	4000 Volts	-	-	-	-	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	1/3/0	3/9/0	3/9/0	1/6/0	-	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	3/90/0	3/90/0	1/30/0	-	1/30/0

- QBS: Qual By Similarity
- Qual Device OPA656NB/250 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/>

TI Qualification ID: R-NPD-2202-076

TI Information
Selective Disclosure

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: OPA656U	QBS Process Reference: OPA2810IDGKR	QBS Package Reference: OPA2810IDR	QBS Package Reference: INA849DR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	-
HAST	A2	Temperature Humidity Bias	85C/85%RH	1000 Hours	-	-	-	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	1/77/0	3/231/0	3/231/0	3/231/0
HTOL	B1	Life Test	100C	300 Hours	-	-	-	1/77/0
HTOL	B1	Life Test	125C	1000 Hours	1/77/0	3/231/0	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/3000/0	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	3/9/0	1/3/0	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	-	3/9/0	1/3/0	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	1/3/0	-	-	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	3/9/0	1/6/0	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	1/30/0	1/30/0

- QBS: Qual By Similarity

- Qual Device OPA656U is qualified at MSL2 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

TI Qualification ID: R-NPD-2206-163

TI Information
Selective Disclosure

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: THS4022IDGNR	QBS Product Reference: THS4032IDR	QBS Process Reference: THS3491IDDAR	QBS Package Reference: OPA2828IDGNR	QBS Package Reference: THS3091IDGNR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	-	-
HAST	A2	Temperature Humidity Bias	85C/85%RH	1000 Hours	-	-	-	3/231/1 ¹	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	3/231/0	3/231/0	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	3/231/0	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/231/0	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	3/231/0	-	-
HTOL	B1	Life Test	115C	300 Hours	-	-	3/231/0	1/77/1 ¹	-
HTOL	B1	Life Test	70C ²	300 Hours	-	-	3/231/0	1/77/1 ¹	-
ELFR	B2	Early Life Failure Rate	70C ²	24 Hours	-	-	3/3000/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: THS4022IDGNR	QBS Product Reference: THS4032IDR	QBS Process Reference: THS3491IDDAR	QBS Package Reference: OPA2828IDGNR	QBS Package Reference: THS3091IDGNR
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	-	-	1/22/0	-
PD	C4	Physical Dimensions	(per mechanical drawing)	-	-	-	-	3/15/0	-
ESD	E2	ESD CDM	-	1000 Volts	1/3/0	1/3/0	-	-	-
ESD	E2	ESD CDM	-	250 Volts	-	-	3/9/0	1/3/0	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	-	1/3/0	3/9/0	1/3/0	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	1/3/0	3/18/0	1/3/0	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	3/90/0	1/30/0	1/30/0

- QBS: Qual By Similarity
- Qual Device THS4022IDGNR is qualified at MSL2 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/>

TI Qualification ID: R-NPD-2302-003

[1]-EOS
[2] Tj=150C

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

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