

PCN Number:	20231219008.1	PCN Date:	December 22, 2023																		
Title:	Qualification of FFAB using qualified Process Technology, Die Revision and additional Assembly BOM options for select devices																				
Customer Contact:	Change Management team	Dept:	Quality Services																		
Proposed 1st Ship Date:	Mar 20, 2024	Estimated Sample Availability:	Jan 20, 2024*																		
*Sample requests received after January 20, 2024 will not be supported.																					
Change Type:																					
<input type="checkbox"/> Assembly Site	<input checked="" type="checkbox"/> Design	<input type="checkbox"/> Wafer Bump Material																			
<input checked="" type="checkbox"/> Assembly Process	<input type="checkbox"/> Data Sheet	<input type="checkbox"/> Wafer Bump Process																			
<input checked="" type="checkbox"/> Assembly Materials	<input type="checkbox"/> Part number change	<input checked="" type="checkbox"/> Wafer Fab Site																			
<input type="checkbox"/> Mechanical Specification	<input type="checkbox"/> Test Site	<input checked="" type="checkbox"/> Wafer Fab Materials																			
<input checked="" type="checkbox"/> Packing/Shipping/Labeling	<input type="checkbox"/> Test Process	<input checked="" type="checkbox"/> Wafer Fab Process																			
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.																					
<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>JIBB</td> <td>150 mm</td> <td>FFAB</td> <td>BICOM3XHV</td> <td>200 mm</td> </tr> </tbody> </table>			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	
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.																					
Assembly BOM options are noted below:																					
		Current	Additional																		
Die Coat		PI	none																		
Bond wire composition, diameter		Au, 1.2 mils	Au, 0.96 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-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
FR-BIP-1	TID	DEU	Freising

Die Rev:

Current

New

Die Rev [2P]	Die Rev [2P]
C, B	D, G

Sample product shipping label (not actual product label)



Product Affected:

OPA132U	OPA132UA	OPA2132U	OPA2132UA
OPA132U/2K5	OPA132UA/2K5	OPA2132U/2K5	OPA2132UA/2K5

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

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: OPA132U	QBS Reference: OPA140AIDGKR	QBS Reference: OPA140AIDR	QBS Reference: OPA1637DGKT	QBS Reference: OPA2810IDR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	3/231/0
TC	A4	Temperature Cycle	-65/150C	500 Cycles	-	-	-	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	3/231/0	3/231/0
HTOL	B1	Life Test	150C	300 Hours	-	-	-	3/231/0	-
ELFR	B2	Early Life Failure Rate	150C	24 Hours	-	-	-	3/2399/0	-
ESD	E2	ESD CDM	-	500 Volts	1/3/0	1/3/0	1/3/0	3/9/0	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	3/9/0	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	-	-	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/6/0	-	3/18/0	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	1/30/0	1/30/0	3/90/0	1/30/0

- QBS: Qual By Similarity
- Qual Device OPA132U 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-CHG-2212-029

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: OPA2132U	QBS Product Reference: OPA2140AID	QBS Product Reference: OPA2140AIDGKR	QBS Process Reference: OPA1637DGKT	QBS Process Reference: THP210DR	QBS Package Reference: ULQ2003AQDRQ1	QBS Package Reference: OPA4202ID	QBS Package Reference: BUF634AIDR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	1/77/0	3/231/0	3/231/0	3/231/0	-	-
UHA	A3	Autoclave	121C/15psig	96 Hours	-	-	1/77/0	-	-	3/231/0	-	-
UHA	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	3/231/0	-	1/77/0	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	1/77/0	3/231/0	3/231/0	3/231/0	1/77/0	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	3/135/0	-	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	3/231/0	3/231/0	-	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	1/77/0	-	-	3/231/0	-	-
HTOL	B1	Life Test	140C ¹	300 Hours	-	-	-	-	-	-	1/77/0	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	3/231/0	-	-	-	1/77/0
ELFR	B2	Early Life Failure Rate	150C	24 Hours	-	-	-	3/2399/0	-	-	-	-

Type	#	Test Name	Condition	Duration	Qual Device: OPA2132U	QBS Product Reference: OPA2140AID	QBS Product Reference: OPA2140AIDGKR	QBS Process Reference: OPA1637DGKT	QBS Process Reference: THP210DR	QBS Package Reference: ULQ2003AQDRQ1	QBS Package Reference: OPA4202ID	QBS Package Reference: BUF634AIDR
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/15/0	-	-
ESD	E2	ESD CDM	-	250 Volts	-	-	-	3/9/0	-	-	1/3/0	1/3/0
ESD	E2	ESD CDM	-	500 Volts	1/3/0	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	-	1/6/0	3/18/0	-	-	1/6/0	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	1/30/0	3/90/0	-	3/90/0	1/30/0	1/30/0

- QBS: Qual By Similarity
- Qual Device OPA2132U 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-CHG-2212-031

¹ T_J-150C

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

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. 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 disdaims 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.