

PCN Number:	20231219018.1	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:																					
☐ 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, 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>BIPOLAR</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	BIPOLAR	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	BIPOLAR	150 mm	FFAB	BICOM3XHV	200 mm																
The die was also changed as a result of the process change.																					
Assembly BOM options are noted below:																					
Group 1 Device:																					
	Current	Proposed																			
Wire composition, diam	Au, 1.15mil	Cu, 0.96mil																			
Die Coat	4221706	None																			
Group 2 Device:																					
	Current	Proposed																			
Wire composition, diam	Au, 1.15mil	Au, 0.96mil																			
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	B

Sample product shipping label (not actual product label)

 **TEXAS INSTRUMENTS**
 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


 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

Group 1 Product Affected:

OPA2134UA	OPA2134UA/2K5E4	OPA2134UAG4
OPA2134UA/2K5	OPA2134UAE4	

Group 2 Product Affected:

OPA134UA	OPA4134UA	OPA4134UAE4
OPA134UA/2K5	OPA4134UA/2K5	
OPA134UAE4	OPA4134UA/2K5E4	

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: OPA134UA	QBS Process Reference: OPA202ID	QBS Process Reference: OPA1662AIDGKRQ1	QBS Package Reference: OPA2810IDR	QBS Package Reference: THP210DR	QBS Package Reference: OPA4991QDRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	-	3/231/0	3/231/0	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	-	3/231/0	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	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	3/231/0	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	-	1/45/0
HTOL	B1	Life Test	150C	300 Hours	-	3/231/0	-	-	-	-
HTOL	B1	Life Test	150C	408 Hours	-	-	-	-	-	1/77/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	3/2400/0	-	-	-
ESD	E2	ESD CDM	-	500 Volts	1/3/0	3/9/0	-	1/3/0	-	1/3/0

Type	#	Test Name	Condition	Duration	Qual Device: OPA134UA	QBS Process Reference: OPA202ID	QBS Process Reference: OPA1662AIDGKRQ1	QBS Package Reference: OPA2810IDR	QBS Package Process Reference: THP210DR	QBS Package Reference: OPA4991QDRQ1
ESD	E2	ESD HBM	-	2000 Volts	1/3/0	3/9/0	-	1/3/0	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/3/0	-	1/6/0	-	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	1/30/0	-	-	-

- QBS: Qual By Similarity
- Qual Device OPA134UA 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-CHG-2107-013

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: OPA4134UA	QBS Product Reference: OPA134UA	QBS Process Reference: INA828ID	QBS Process Reference: OPA1662AIDGKRQ1	QBS Package Reference: OPA4187ID	QBS Package Reference: OPA4202ID	QBS Package Reference: OPA1644AID
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	-	3/231/0	-	-
UHA	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	-	1/77/0
UHA	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	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	125C	1000 Hours	-	-	3/231/0	-	-	-	-
HTOL	B1	Life Test	140C	300 Hours	-	-	-	-	-	1/77/0	-

Type	#	Test Name	Condition	Duration	Qual Device: OPA4134UA	QBS Product Reference: OPA134UA	QBS Process Reference: INA828ID	QBS Process Reference: OPA1662AIDGKRQ1	QBS Package Reference: OPA4187ID	QBS Package Reference: OPA4202ID	QBS Package Reference: OPA1644AID
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	3/2400/0	-	-	-
ESD	E2	ESD CDM	-	1000 Volts	-	-	-	-	-	-	1/3/0
ESD	E2	ESD CDM	-	250 Volts	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	-
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	1/3/0	-	-	1/3/0	1/3/0
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/3/0	1/6/0	-	1/6/0	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	1/30/0
FTY	E6	Final Test Yield	-	-	1/Pass	-	-	-	-	-	-

- QBS: Qual By Similarity
- Qual Device OPA4134UA 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-2107-019

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: OPA2134UA	QBS Product Reference: OPA1642AID	QBS Process Reference: OPA202ID	QBS Package Reference: OPA2810IDR	QBS Package Reference: OPA862IDR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	3/231/0	1/77/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	1/77/0	3/231/0	3/231/0	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	1/77/0	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	1/77/0
HTOL	B1	Life Test	150C	300 Hours	-	-	3/231/0	-	3/231/0
ESD	E2	ESD CDM	-	250 Volts	-	1/3/0	3/9/0	1/3/0	1/3/0
ESD	E2	ESD CDM	-	500 Volts	1/3/0				
ESD	E2	ESD HBM	-	1000 Volts	-	1/3/0	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	1/3/0	1/3/0	1/6/0	1/3/0

Type	#	Test Name	Condition	Duration	Qual Device: OPA2134UA	QBS Product Reference: OPA1642AID	QBS Process Reference: OPA202ID	QBS Package Reference: OPA2810IDR	QBS Package Reference: OPA862IDR
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	1/30/0	3/90/0	1/30/0	3/90/0
FTY	E6	Final Test Yield	-	-	1/Pass	-	-	-	-

- QBS: Qual By Similarity
- Qual Device OPA2134UA 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-2107-018

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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