

PCN Number:	20240221007.1		PCN Date:	February 21, 2024																			
Title:	Qualification of RFAB using qualified Process Technology, Die Revision, and additional Assembly sites & BOM options for select devices																						
Customer Contact:	Change Management Team		Dept:	Quality Services																			
Proposed 1st Ship Date:	May 21, 2024		Sample requests accepted until:	March 22, 2024*																			
*Sample requests received after March 22, 2024 will not be supported.																							
Change Type:																							
<input checked="" 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 Material																		
<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 (RFAB, TIB) die revision, and Assembly & BOM option for selected devices as listed below in the product affected section. Construction differences are noted below:																							
<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>J12</td> <td>150 mm</td> <td>RFAB</td> <td>TIB</td> <td>300 mm</td> </tr> </tbody> </table>			Current Fab Site			Additional Fab Site			Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter	SFAB	J12	150 mm	RFAB	TIB	300 mm			
Current Fab Site			Additional Fab Site																				
Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter																		
SFAB	J12	150 mm	RFAB	TIB	300 mm																		
The die was also changed as a result of the process change.																							
Additionally, there will be Assembly site & BOM options introduced for these devices as follows:																							
	ASEWH	HNA	TIPI	CDAT																			
Lead finish	NiPdAu	NiPdAu	NiPdAu	Matte Sn																			
Mount Compound	SID#1120999A2	SID#400180	8095733	4207123																			
Mold Compound	SID#4020039A1	SID#450179	4222198	4222198																			
Bond wire composition, diameter	Au, 1.0 mil	Au, 1.0 mil	Cu, 0.8 mil	Cu, 0.8 mil																			
Die Thickness	7.5 mils	7.5 mils	5.9 mils	5.9 mils																			
Die Coat	none	none	PI	PI																			
ECAT	G4	G4	G4	G3																			
<p>Upon expiry of this PCN, there will be a transition period where TI will combine lead free solutions in a single <u>standard part number</u>. For example; <u>ATL431AIDBZR</u> – can ship with both Matte Sn and NiPdAu.</p> <p>Example:</p> <ul style="list-style-type: none"> – Customer order for 7500 units of ATL431AIDBZR with 2500 units SPQ (Standard Pack Quantity per Reel). – TI can satisfy the above order in one of the following ways. <ul style="list-style-type: none"> I. 3 Reels of NiPdAu finish. II. 3 Reels of Matte Sn finish III. 2 Reels of Matte Sn and 1 reel of NiPdAu finish. IV. 2 Reels of NiPdAu and 1 reel of Matte Sn finish. 																							

Reason for Change:			
These changes are part of our multiyear plan to transition products from our 150-milimeter 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
RFAB	RFB	USA	Richardson
Die Rev:			
Current	New		
Die Rev [2P]	Die Rev [2P]		
B	A		
Assembly Site Information:			
Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
ASEWH	AWH	CHN	Weihai
HNA	HNT	THA	Ayutthaya
TIPI	PHI	PHL	Baguio City
CDAT	CDA	CHN	Chengdu
Sample product shipping label (not actual product label)			
			
Product Affected:			
ATL432BQDBZR			

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: <u>ATL431BQDBZR</u>	Qual Device: <u>ATL432BQDBZR</u>	QBS Reference: <u>LM2902BQPWRQ1</u>	QBS Reference: <u>TL431BQDBZR</u>	QBS Reference: <u>TL431BQDBZRQ1</u>	QBS Reference: <u>TL432BQDBZRQ1</u>	QBS Reference: <u>OP07CP</u>
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	1/77/0	2/160/0	1/80/0	-
UHAST	A3	Unbiased HAST	110C/85%RH	264 Hours	-	-	3/231/0	-	-	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	1/77/0	2/154/0	1/77/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	-	3/231/0	1/77/0	2/154/0	1/77/0	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	3/231/0	1/77/0	2/158/0	1/80/0	-
HTOL	B1	Life Test	150C	300 Hours	1/77/0	-	-	-	-	-	-
HTOL	B1	Life Test	150C	408 Hours	-	-	3/231/0	-	-	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	3/2400/0	-	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	2/30/0	1/15/0	-

Type	#	Test Name	Condition	Duration	Qual Device: <u>ATL431BQDBZR</u>	Qual Device: <u>ATL432BQDBZR</u>	QBS Reference: <u>LM2902BQPWRQ1</u>	QBS Reference: <u>TL431BQDBZR</u>	QBS Reference: <u>TL431BQDBZRQ1</u>	QBS Reference: <u>TL432BQDBZRQ1</u>	QBS Reference: <u>OP07CP</u>
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	2/30/0	1/15/0	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	-	2/20/0	1/10/0	-
ESD	E2	ESD CDM	-	1000 Volts	-	-	-	-	-	-	1/3/0
ESD	E2	ESD CDM	-	1500 Volts	-	-	3/9/0	-	-	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	-	-	-	-	-
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	-	-	-	-	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	3/9/0	-	-	-	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	-	3/18/0	-	-	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-	-	-	-	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0	-	2/60/0	1/30/0	-
FTY	E6	Final Test Yield	-	-	-	-	-	-	-	-	1/1

- QBS: Qual By Similarity
- Qual Device ATL431BQDBZR is qualified at MSL1 260C
- Qual Device ATL432BQDBZR 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-2302-089

Qualification Results

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Type	#	Test Name	Condition	Duration	Qual Device: ATL431BQDBZR	Qual Device: ATL432BQDBZR	QBS Process Reference: LM2902BQPWRQ1	QBS Package/Process Reference: DRV5013ADQDBZRQ1	QBS Process Reference: QP07CP	QBS Process/Product Reference: ATL431BQDBZR	QBS Package Reference: TL431BQDBZRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	3/231/0	-	-	3/231/0
UHA	A3	Unbiased HAST	110C/85%RH	264 Hours	-	-	3/231/0	-	-	-	-
UHA	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	-	-	3/231/0
TC	A4	Temperature Cycle	-55C/150C	1000 Cycles	-	-	-	3/231/0	-	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	-	-	1/77/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	3/231/0	3/135/0	-	-	3/231/0
HTOL	B1	Life Test	150C	300 Hours	-	-	-	1/77/0	-	1/77/0	-
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ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	3/2400/0	-	-	-	-
SD	C3	PB Solderability	Precondition w/155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-	-

Type	#	Test Name	Condition	Duration	Qual Device: ATL431BQDBZR	Qual Device: ATL432BQDBZR	QBS Process Reference: LM2902BQPWRQ1	QBS Package/Process Reference: DRV5013ADQDBZRQ1	QBS Process Reference: QP07CP	QBS Process/Product Reference: ATL431BQDBZR	QBS Package Reference: TL431BQDBZRQ1
SD	C3	PB-Free Solderability	Precondition w/155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	3/30/0	-	-	3/30/0
ESD	E2	ESD CDM	-	1000 Volts	-	-	-	-	1/3/0	1/3/0	-
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ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	-	1/3/0	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	3/9/0	1/3/0	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	-	3/18/0	1/6/0	-	1/3/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-	-	-	1/30/0	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0	3/90/0	-	-	3/90/0
FTY	E6	Final Test Yield	-	-	-	-	-	-	1/1	-	1/1/0

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TI Qualification ID: R-NPD-2401-016

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