

PCN Number:	20221003000.2		PCN Date:	October 03, 2022			
Title:	Qualification of new Fab site (RFAB) and additional Assembly BOM options for select ABCD6 devices						
Customer Contact:	PCN Manager		Dept:	Quality Services			
Proposed 1st Ship Date:	Apr 3, 2023		Sample requests accepted until:	November 3, 2022*			
*Sample requests received after November 3, 2022 will not be supported.							
Change Type:							
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input checked="" type="checkbox"/>	Assembly Materials		
<input type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification		
<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process		
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>	Wafer Bump Process		
<input checked="" type="checkbox"/>	Wafer Fab Site	<input checked="" type="checkbox"/>	Wafer Fab Materials	<input checked="" type="checkbox"/>	Wafer Fab Process		
	<input type="checkbox"/>		Part number change				
PCN Details							
Description of Change:							
Texas Instruments is pleased to announce the qualification of its RFAB fabrication facility as an additional Wafer Fab source and Assembly BOM options for selected devices as listed below in the product affected section. Construction differences are noted below:							
Current Fab Site				Additional Fab Site			
Current Fab Site	Process	Passivation	Wafer Diameter	Additional Fab Site	Process	Passivation	Wafer Diameter
MAINEFAB	ABCD6	oxide/nitride	200 mm	RFAB	ABCD6	oxide/oxy-nitride	300 mm
Additionally, there will be Assembly BOM options introduced for these devices:							
Material Differences:							
	Current		Proposed				
Wire type	1.3mil Au		1.0mil Cu				
Mold compound	SID#EN2000784		SID#EN20000519				
Qual details are provided in the Qual Data Section.							
Reason for Change:							
Continuity of Supply							
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:							
Current:							
Current Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City				
MAINEFAB	CUA	USA	South Portland				
New Fab Site:							
New Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City				
RFAB	RFB	USA	Richardson				

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

(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:

LM5163QDDARQ1

**Automotive New Product Qualification Summary
(As per AEC-Q100, AEC-Q006, and JEDEC Guidelines)**

Approve Date 13-SEPTEMBER-2022

Qualification Results

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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: LM5164QDDARQ1
Test Group A - Accelerated Environment Stress Tests								
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	1 Step	3/0/0
PC	A1.1	-	3	11	SAM Precon Pre	Review for delamination	1 Step	3/33/0
PC	A1.2	-	3	11	SAM Precon Post	Review for delamination	1 Step	3/33/0
HAST	A2.1	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	3/231/0
HAST	A2.1.2	-	3	1	Cross Section, post bHAST, 1X	Post stress cross section	Completed	3/3/0
HAST	A2.1.3	-	3	30	Wire Bond Shear, post bHAST, 1X	Post stress	Wires	3/90/0
HAST	A2.1.4	-	3	30	Bond Pull over Stitch, post bHAST, 1X	Post stress	Wires	3/90/0

HAST	A2.1.5	-	3	30	Bond Pull over Ball, post bHAST, 1X	Post stress	Wires	3/90/0
HAST	A2.2	JEDEC JESD22-A110	3	70	Biased HAST	130C/85%RH	192 Hours	3/240/0
HAST	A2.2.1	-	3	11	SAM Analysis, post bHAST 2X	Review for delamination	Completed	3/33/0
HAST	A2.2.2	-	3	1	Cross Section, post bHAST, 2X	Post stress cross section	Completed	3/3/0
HAST	A2.2.3	-	3	20	Wire Bond Shear, post bHAST, 2X	Post stress	Wires	3/60/0
HAST	A2.2.4	-	3	20	Bond Pull over Stitch, post bHAST, 2X	Post stress	Wires	3/60/0
HAST	A2.2.5	-	3	20	Bond Pull over Ball, post bHAST, 2X	Post stress	Wires	3/60/0
TC	A4.1	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	3/210/0
TC	A4.1.1	-	3	11	SAM Analysis, post TC 1X	Review for delamination	Completed	3/33/0
TC	A4.1.2	-	3	1	Cross Section, post TC, 1X	Post stress cross section	Completed	3/3/0
TC	A4.1.3	-	3	30	Wire Bond Shear, post TC, 1X	Post stress	Wires	3/90/0
TC	A4.1.4	-	3	30	Bond Pull over Stitch, post TC, 1X	Post stress	Wires	3/90/0
TC	A4.1.5	-	3	30	Bond Pull over Ball, post TC, 1X	Post stress	Wires	3/9/0
TC	A4.2	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	1000 Cycles	3/210/0
TC	A4.2.1	-	3	11	SAM Analysis, post TC, 2X	Review for delamination	Completed	3/33/0
TC	A4.2.2	-	3	1	Cross Section, post TC, 2X	Post stress cross section	Completed	3/3/0
TC	A4.2.3	-	3	20	Wire Bond Shear, post TC, 2X	Post stress	Wires	3/60/0
TC	A4.2.4	-	3	20	Bond Pull over Stitch, post TC, 2X	Post stress	Wires	3/60/0
TC	A4.2.5	-	3	20	Bond Pull over Ball, post TC, 2X	Post stress	Wires	3/60/0
HTSL	A6.1	JEDEC JESD22-A103	3	45	High Temperature Storage Life	175C	500 Hours	3/133/0
HTSL	A6.1.1	-	3	1	Cross Section, post HTSL, 1X	Post stress cross section	Completed	3/3/0
HTSL	A6.2	JEDEC JESD22-A103	3	44	High Temperature Storage Life	175C	1000 Hours	3/132/0
HTSL	A6.2.1	-	3	1	Cross Section, post HTSL, 2X	Post stress cross section	Completed	3/3/0

- 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

Ambient Operating Temperature by Automotive Grade Level:

- Grade 0 (or E): -40C to +150C
- Grade 1 (or Q): -40C to +125C
- Grade 2 (or T): -40C to +105C
- Grade 3 (or I) : -40C to +85C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

- Room/Hot/Cold : HTOL, ED
- Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
- Room : AC/uHAST

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

Automotive Change Qualification Summary (As per AEC-Q100 and JEDEC Guidelines)

Approve Date 9-May-2022

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: <u>LM5163QDDARQ1</u>	QBS Reference: <u>LM5141QRGERQ1</u>	QBS Reference: <u>LM5169FQDDARQ1</u>
Test Group A - Accelerated Environment Stress Tests										
PC	A1	JEDEC J-STD-020 JESD22A113	3	77	Preconditioning	MSL2 260C	3 reflows	QBS	-	3/693/0
HAST	A2	JEDEC JESD22A110	3	77	Biased HAST	130C/85%RH	96 Hours	QBS	-	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	QBS	-	3/231/0
TC	A4	JEDEC JESD22A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	QBS	-	3/231/0

Qualification Results

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TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	-	-	1/5/0
HTSL	A6	JEDEC JESD22A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	1/45/0

Test Group B - Accelerated Lifetime Simulation Tests

HTOL	B1	JEDEC JESD22A108	1	77	Life Test	125C	1000 Hours	QBS	3/231/0	-
HTOL	B1	JEDEC JESD22A108	1	77	Life Test	150C	300 Hours	QBS	-	2/154/0
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	125C	48 Hours	QBS	3/2400/0	-

Test Group C - Package Assembly Integrity Tests

WBS	C1	AEC Q100-001	1	30	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	QBS	-	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	QBS	-	3/90/0
SD	C3	JEDEC JESD22B102	1	15	PB-Free Solderability	>95% Lead Coverage	-	QBS	-	1/15/0
PD	C4	JEDEC JESD22B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	QBS	-	3/30/0

Test Group D - Die Fabrication Reliability Tests

EM	D1	JESD61	-	-	Electromigration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDDDB	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
HCI	D3	JESD60 & 28	-	-	Hot Carrier Injection	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements

NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
SM	D5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
Test Group E - Electrical Verification Tests										
ESD	E2	AEC Q100-002	1	3	ESD HBM	-	2000 Volts	1/3/0	-	-
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	500 Volts	1/3/0	-	-
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100004	-	1/6/0	-	-
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	3/90/0	-	-

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Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

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

Location	E-Mail
WW Change Management Team	PCN_ww_admin_team@list.ti.com

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