

PCN Number:	20210315003.1	PCN Date:	Mar 16, 2021
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly site/BOM options for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Jun 13, 2021	Estimated Sample Availability:	Date provided at sample request.
Change Type:			
<input checked="" type="checkbox"/>	Assembly Site	<input checked="" type="checkbox"/>	Assembly Process
<input checked="" type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification
<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material
<input checked="" type="checkbox"/>	Wafer Fab Site	<input checked="" type="checkbox"/>	Wafer Fab Materials
		<input type="checkbox"/>	Part number change

PCN Details

Description of Change:

Texas Instruments is pleased to announce the qualification of a new fab & process technology (RFAB, LBC9) and assembly (NFME or HFTAT) site/BOM (MLA) 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	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter
SFAB	HCMOS	150 mm	RFAB	LBC9	300 mm

The die was also changed as a result of the process change.

Construction differences are noted below:

Group 1 RFAB/Process migration & AT/BOM Updates for D Devices:

	ASESH	FMX	MLA Current	MLA New	HFTF
Mount Compound	SID#EY1000063	4147858	4147858	same	SID# A-03
Mold Compound	SID#EN2000506	4211880	4211880	same	SID#R-30
Lead finish	NiPdAu, non RLF	NiPdAu, non RLF	NiPdAu, non RLF	NiPdAu, RLF	Matte Sn, non RLF
Bond wire diameter (Cu)	1.0 mils	0.96	0.96 mils	0.8 mils	0.8 mils

Note: D Devices are currently built at one or more of the following AT sites: ASESH, FMX, MLA.

Group 2 RFAB/Process migration & AT/BOM Compare for PW devices:

	MLA Current	ASESH	MLA New	NFME
Mount Compound	4147858	SID#EY1000063	same	SID# A-03
Mold Compound	4211471	SID#EN2000508	same	SID# R-31
Lead finish	NiPdAu, non RLF	Matte Sn, non RLF	NiPdAu, RLF	Matte Sn, non RLF
Bond wire diameter (Cu)	0.96 mils	1.0 mils	0.8 mils	0.8 mils

Note: PW Devices are currently built at either ASESH, MLA or both.

Group 3 BOM Compare (RFAB/Process migration/NS devices BOM Update at MLA):

	MLA Current	MLA New
Bond wire diameter (Cu)	0.96 mils	0.8 mils
Lead finish	NiPdAu, non RLF	NiPdAu, RLF

Upon expiry of this PCN TI will combine lead free solutions in a single **standard part number**, for the devices in groups 1 & 2. For example; **CD74HC08PWR**– can ship with both Matte Sn and NiPdAu/Ag.

Example:

- Customer order for 7500 units of CD74HC08PWR with 2500 units SPQ (Standard Pack Quantity per Reel).
- TI can satisfy the above order in one of the following ways.
 - 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-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

Anticipated impact on Material Declaration

<input type="checkbox"/>	No Impact to the Material Declaration	<input checked="" type="checkbox"/>	Material Declarations or Product Content reports are driven from production data and will be available following the production release. Upon production release the revised reports can be obtained from the TI ECO website .
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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]
E, F, G, H, J, K, or T	A

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
MLA	MLA	MYS	Kuala Lumpur
FMX	MEX	MEX	Aguascalientes
ASESH	ASH	CHN	Shanghai
HFTFAT	HFT	CHN	Hefei
NFME	NFM	CHN	Economic Development Zone

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



SN74HC00/NSR
 (Q) 2000 (D) 0336
 (31T) LOT: 3959047MLA
 (4W) TKY (1T) 7523483SI2
 (P)
 (2P) REV: (V) 0033317
 (20) CSO: SHE (21) C68:USA
 (22L) ASO: MLA (23L) ACO: MYS

G3 = Matte Sn
G4 = NiPdAu

Product Affected:

Group 1 Device list (RFAB/Process migration & AT/BOM Updates for D Devices):

SN74HC138DR	SN74HC174DR	SN74HC594DR	CD74HC238M96
SN74HC139DR	SN74HC251DR	SN74HC595DR	CD74HC259M96
SN74HC151DR	SN74HC253DR	CD74HC138M96	CD74HC367M96
SN74HC153DR	SN74HC257DR	CD74HC151M96	CD74HC595M96
SN74HC157DR	SN74HC259DR	CD74HC165M96	CD74HC4002M96
SN74HC164DR	SN74HC365DR	CD74HC166M96	SN74HC595DRG3
SN74HC165DR	SN74HC367DR	CD74HC237M96	SN74HC595DRG4
SN74HC166DR			

Group 2 Device list (RFAB/Process migration & AT/BOM Updates for PW devices):

CD74HC237PWR	SN74HC151PWR	SN74HC174PWR	SN74HC367PWR
CD74HC238PWR	SN74HC153PWR	SN74HC251PWR	SN74HC595PWR
SN74HC00APWR	SN74HC157PWR	SN74HC257PWR	CD74HC4002PWR
SN74HC138PWR	SN74HC164PWR	SN74HC259PWR	SN74HC165PWRG4
SN74HC139PWR	SN74HC165PWR	SN74HC365PWR	SN74HC595PWRG4
SN74HC14APWR	SN74HC166PWR		

Group 3 Device list (RFAB/Process migration/NS devices BOM Update at MLA):

SN74HC00ANSR	SN74HC05NSRE4	SN74HC125NSRG4	SN74HC164NSR
SN74HC02ANSR	SN74HC08ANSR	SN74HC132NSRG4	SN74HC86NSRE4
SN74HC02NSRG4	SN74HC08NSRG4	SN74HC14ANSR	SN74HC86NSRG4
SN74HC04NSRG4	SN74HC125NSRE4	SN74HC14NSRE4	

Group 1 (D Devices) Qual Memo:



TI Information
Selective Disclosure

Qualification Results

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

Type	Test Name / Condition	Duration	QBS Product Reference: SN74HCS595QDRQ1	QBS Package Reference: SN74HCS74QDRQ1	QBS Package Reference: SN74HCS74DR	QBS Process Reference: SN74HCS595QPWRQ1	QBS Process Reference: SN74HCS74QPWRQ1
PC	Preconditioning	Level 1-260C	1/77/0	3/828/0	3/828/0	3/276/0	3/828/0
ED	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0	3/90/0	-	3/90/0	3/90/0
ED	Electrical Characterization	Per Datasheet Parameters	-	-	Pass	-	-
CDM	ESD - CDM	2000V	1/3/0	1/3/0	3/9/0	1/3/0	-
CDM	ESD - CDM	1500V	-	-	-	-	1/3/0
HBM	ESD - HBM	7000V	-	1/3/0	-	-	1/3/0
HBM	ESD - HBM	8000V	-	1/3/0	-	-	-
HBM	ESD - HBM	9000V	1/3/0	-	-	1/3/0	-
LU	Latch-up	Per AEC Q100-004	1/6/0	1/6/0	-	1/6/0	1/6/0
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	3/2400/0
HTOL	Life Test, 150C	300 Hours	-	1/77/0	3/231/0	1/77/0	3/231/0
AC	Autoclave 121C	96 Hours	-	3/231/0	-	1/77/0	3/231/0
UHASt	Unbiased HAST 130C/85%RH	96 Hours	-	-	3/231/0	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	3/231/0	1/77/0	3/231/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	3/135/0	-	1/45/0	3/135/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0	3/231/0	1/77/0	3/231/0

Qualification Results

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

Type:	ED	CDM	HBM	LU	
Test Name / Condition:	Electrical Characterization	ESD - CDM	ESD - HBM	Latch-up	
Duration:	Per Datasheet Parameters)	1000V	2000V	(Per AEC Q100-004)	
Qual Device:	CD74HC138M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC151M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC165M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC166M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC237M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC238M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC259M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC367M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC595M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC138DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC139DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC151DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC153DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC157DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC164DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC165DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC166DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC174DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC251DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC259DR	Pass	1/3/0	1/3/0	1/6/0

Qual Device:	SN74HC365DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC367DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC594DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC595DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC595DRG3	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC595DRG4	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC4002M96	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC253DR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC257DR	Pass	1/3/0	1/3/0	1/6/0

- QBS: Qual by Similarity

- Qual Devices are qualified at LEVEL1-260CG

- 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

Group 2 (PW Devices) Qual Memo:



Information
Selective Disclosure

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

Type	Test Name / Condition	Duration	QBS Product Reference: SN74HCS595QPWRQ1	QBS Product Reference: SN74HCS595PWR	QBS Product Reference: SN74HCS74PWR	QBS Product, Package, and Process Reference: SN74HCS74QPWRQ1
PC	Preconditioning	Level 1-260C	3/276/0	1/77/0	3/1200/0	3/828/0
ED	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0	-	-	3/90/0
ED	Electrical Characterization	Per Datasheet Parameters	-	Pass	Pass	-
CDM	ESD - CDM	1500V	1/3/0	1/3/0	3/9/0	1/3/0
HBM	ESD - HBM	7000V	-	-	-	1/3/0
HBM	ESD - HBM	9000V	1/3/0	-	1/3/0	-
LU	Latch-up	Per AEC Q100-004	1/6/0	-	1/6/0	1/6/0
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/2400/0
HTOL	Life Test, 150C	300 Hours	1/77/0	-	3/231/0	3/231/0
AC	Autoclave 121C	96 Hours	1/77/0	-	-	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	3/231/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	1/77/0	-	3/231/0	3/231/0
HTSL	High Temp Storage Bake 150C	1000 Hours	1/45/0	-	-	3/135/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	-
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	1/77/0	3/231/0	3/231/0

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

Type:	ED	CDM	HBM	LU	
Test Name / Condition:	Electrical Characterization	ESD - CDM	ESD - HBM	Latch-up	
Duration:	(Per Datasheet Parameters)	1000V	2000V	(Per AEC Q100-004)	
Qual Device:	CD74HC237PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC238PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC138PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC139PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC151PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC153PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC157PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC164PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC165PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC165PWRG4	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC166PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC174PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC251PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC259PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC365PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC367PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC595PWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC595PWRG4	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC14APWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	SN74HC00APWR	Pass	1/3/0	1/3/0	1/6/0
Qual Device:	CD74HC4002PWR	Pass	1/3/0	1/3/0	1/6/0

Qual Device:	SN74HC257PWR	Pass	1/3/0	1/3/0	1/6/0
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- QBS: Qual By Similarity

- Qual Devices are qualified at LEVEL1-260CG

- 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

Group 3 (NS Devices) Qual Memo:



TI Information
Selective Disclosure

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

Type	Test Name / Condition	Duration	Qual Device: SN74HC74NSR	QBS Product and Process Reference: SN74HC74QPWRQ1	QBS Package Reference: 1P8T245NSR	QBS Package Reference: PCM1801U	QBS Package Reference: TLC6946DBQR
PC	Preconditioning	Level 1-260C	-	3/828/0	3/693/0	3/693/0	-
PC	Preconditioning	Level 3-260C	-	-	-	-	3/924/0
ED	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	-	3/90/0	-	-	-
CDM	ESD - CDM	1500V	1/3/0	1/3/0	-	-	1/3/0
HBM	ESD - HBM	7000V	-	1/3/0	-	-	1/3/0
LU	Latch-up	(Per AEC-Q100-004)	-	1/6/0	-	-	-
LU	Latch-up	(Per JESD78)	-	-	-	-	1/6/0
ELFR	Early Life Failure Rate, 125C	48 Hours	-	3/2400/0	-	-	-
HTOL	Life Test, 125C	1000 Hours	-	-	-	-	3/231/0
HTOL	Life Test, 150C	300 Hours	-	3/231/0	-	-	-
HTOL	Life Test, 150C	408 Hours	-	-	-	-	-
UHASt	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	-	3/231/0
AC	Autoclave 121C	96 Hours	-	3/231/0	3/231/0	3/231/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	-	-	3/231/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	3/135/0	-	-	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	3/231/0	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0	3/231/0

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

Type:	ED	CDM	HBM	LU
Test Name / Condition:	Electrical Characterization	ESD - CDM	ESD - HBM	Latch-up
Duration:	(Per Datasheet Parameters)	1000V	2000V	(Per AEC.Q100-004)
Qual Device:	SN74HC164NSR	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC14ANSR	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC08ANSR	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC00ANSR	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC02ANSR	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC125NSRE4	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC02NSRG4	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC05NSRE4	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC86NSRG4	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC04NSRG4	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC08NSRG4	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC132NSRG4	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC14NSRE4	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC86NSRE4	Pass	1/3/0	1/3/0*
Qual Device:	SN74HC125NSRG4	Pass	1/3/0	1/3/0*

Test results from die ran in PW and D packages - *

- QBS: Qual By Similarity
 - Qual Devices are qualified at LEVEL1-260CG
 - 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

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