PCN Number:	20200324000.2	**PCN Date:**	Mar 26, 2020
Title:	Qualification of an additional Fab site (RFAB), Die Revision, additional AT site (TI Malaysia) and BOM change for Select Devices		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	Sept 26, 2020	**Estimated Sample Availability:**	Date provided at sample request.

Change Type:

☒	Assembly Site	☒	Design	☐	Wafer Bump Site
☐	Assembly Process	☐	Data Sheet	☐	Wafer Bump Material
☒	Assembly Materials	☐	Part number change	☐	Wafer Bump Process
☐	Mechanical Specification	☒	Test Site	☒	Wafer Fab Site
☒	Packing/Shipping/Labeling	☐	Test Process	☐	Wafer Fab Materials
				☐	Wafer Fab Process

PCN Details

Description of Change:

Texas Instruments is pleased to announce the qualification of an additional fab (RFAB), additional AT site (TI Malaysia) and BOM change for Select Devices.

Group 1 Device: Wafer Fab, Design, Additional A/T Site and BOM change

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.

Additional A/T Site Material differences:

	Current Site	**Additional Site**
Assembly Site	TI Mexico	TI Malaysia
Wire Type	Au	Cu
Lead Finish	NiPdAu	NiPdAu, Roughened

Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.

Group 2: Wafer Fab, Design, BOM change (Devices remains at current AT site)

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.

BOM change:

	From	**To**
Mount Compound	4042500	4147858
Mold compound	4206193	4211471
Wire Type	Au	Cu
Lead Finish	NiPdAu (Non-Roughened)	NiPdAu (Roughened)

Reason for Change:

Improve Capacity

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):			
☐	No Impact to the Material Declaration	☒	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 at the site link below http://www.ti.com/quality/docs/materialcontentsearch.tsp

Changes to product identification resulting from this PCN:

Fab Site:

Current Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City
SFAB	GMT	USA	Sherman
New Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City
RFAB	RFB	USA	Richardson

Die Rev:

Current Die Rev [2P]	New **Die Rev [2P]**
E, F, G or H	**B**

Assembly Site:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TI Mexico	MEX	MEX	Aguascalientes
TI Malaysia	MLA	MYS	Kuala Lumpur

Sample product shipping label (not actual product label)

TEXAS INSTRUMENTS
MADE IN: Malaysia
2DC: 2Q:
MSL 2 /260C/1 YEAR SEAL DT
MSL 1 /235C/UNLIM 03/29/04
OPT:
ITEM: 39
LBL: 5A (L)TO:1750
Pb 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

Product Affected: Group 1

CD74HC08QM96Q1	SN74HC02QDRQ1	SN74HC132QDRQ1	SN74HC74QDRQ1
CD74HC125QM96G4Q1	SN74HC08QDRG4Q1	SN74HC14QDRG4Q1	SN74HC86IDRG4Q1
SN74HC00QDRG4Q1	SN74HC08QDRQ1	SN74HC14QDRQ1	SN74HC86QDRG4Q1
SN74HC00QDRQ1	SN74HC132QDRG4Q1	SN74HC74QDRG4Q1	

Product Affected: Group 2

CD74HC125QPWRG4Q1	SN74HC04IPWRG4Q1	SN74HC125IPWRG4Q1	SN74HC74QPWRQ1
CD74HC125QPWRQ1	SN74HC08IPWRG4Q1	SN74HC132QPWRG4Q1	SN74HC86IPWRG4Q1
SN74HC00QPWRG4Q1	SN74HC08IPWRQ1	SN74HC132QPWRQ1	SN74HC86QPWRG4Q1
SN74HC00QPWRQ1	SN74HC08QPWRG4Q1	SN74HC14QPWRG4Q1	SN74HC86QPWRQ1
SN74HC02QPWRG4Q1	SN74HC08QPWRQ1	SN74HC14QPWRQ1	
SN74HC02QPWRQ1	SN74HC10QPWRG4Q1	SN74HC74QPWRG4Q1	

Qualification Data

Approved 14-Aug-2019

Product Attributes

Attributes	Qual Device: SN74HCS74QDRQ1	QBS Product Reference: SN74HCS74QPWRQ1
Automotive Grade Level	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C
Product Function	Logic	Logic
Wafer Fab Supplier	RFAB	RFAB
Die Revision	B1	B1
Assembly Site	MLA	MLA
Package Type	SOIC	TSSOP
Package Designator	D(SOIC)	PW
Ball/Lead Count	14	14

- QBS: Qual By Similarity
- Qual Device SN74HCS74QDRQ1 is qualified at LEVEL1-260C

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: SN74HCS74QDRQ1	QBS Product Reference: SN74HCS74QPWRQ1
	Test Group A – Accelerated Environment Stress Tests								
	PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	Sample Sizes as Required	Sample Sizes as Required
	HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0
	AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	3/231/0
	TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0
	PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	-
	HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	3/135/0	3/135/0
	Test Group B – Accelerated Lifetime Simulation Tests								
	HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	600 Hours	1/77/0	3/231/0
	ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	3/2400/0
	EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	-
	Test Group C – Package Assembly Integrity Tests								
	WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	Minimum of 5 devices, 30 wires Cpk>1.67	3/90/0	3/90/0

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: SN74HCS74QDRQ1	QBS Product Reference: SN74HCS74QPWRQ1
	WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	Minimum of 5 devices, 30 wires Cpk>1.67	3/90/0	3/90/0
	SD	C3	JEDEC JESD22-B102	1	15	Pb Free Surface Mount Solderability	8 Hours Steam Age	3/45/0	3/45/0
	PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	Cpk>1.67	3/90/0	3/90/0
	LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	-	-	-
Test Group D – Die Fabrication Reliability Tests									
	EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	-
	TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	-
	HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	-
	NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	-
	SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	-
Test Group E – Electrical Verification Tests									
	HBM	E2	AEC Q100-002	1	3	ESD - HBM - Q100	7000V	-	1/3/0
	HBM	E2	AEC Q100-002	1	3	ESD - HBM - Q100	8000 V	1/3/0	-
	CDM	E3	AEC Q100-011	1	3	ESD - CDM - Q100	1500V	-	1/3/0
	CDM	E3	AEC Q100-011	1	3	ESD - CDM - Q100	2000 V	1/3/0	-
	LU	E4	AEC Q100-004	1	6	Latch-up	Per AEC Q100-004	1/6/0	1/6/0
	ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0	3/90/0

A1 (PC): Preconditioning:
Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.
Ambient Operating Temperature by Automotive Grade Level:
Grade 0 (or E): -40°C to +150°C
Grade 1 (or Q): -40°C to +125°C
Grade 2 (or T): -40°C to +105°C
Grade 3 (or I) : -40°C to +85°C

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

Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

Qualification Data

Approved on 06/19/2019

Product Attributes

Attributes	Qual Device: SN74HCS74QPWRQ1
Automotive Grade Level	Grade 1
Operating Temp Range	-40 to +125 C
Product Function	Logic
Wafer Fab Supplier	RFAB
Die Revision	B1
Assembly Site	MLA
Package Type	TSSOP
Package Designator	PW
Ball/Lead Count	14

- QBS: Qual By Similarity
- Qual Device SN74HCS74QPWRQ1 is qualified at LEVEL1-260C

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: SN74HCS74QPWRQ1
Test Group A – Accelerated Environment Stress Tests							
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	3/828/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	3/135/0
Test Group B – Accelerated Lifetime Simulation Tests							
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	300 Hours	3/231/0
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	3/2400/0
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A
Test Group C – Package Assembly Integrity Tests							
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	-	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	-	3/90/0
SD	C3	JEDEC JESD22-B102	1	15	Pb Free Surface Mount Solderability	8 Hours Steam Age	3/45/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	-	3/45/0
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	3/90/0

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: SN74HCS74QPWRQ1
Test Group D – Die Fabrication Reliability Tests								
	EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements
	TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements
	HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements
	NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements
	SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements
Test Group E – Electrical Verification Tests								
	HBM	E2	AEC Q100-002	1	3	ESD - HBM - Q100	7000V	1/3/0
	CDM	E3	AEC Q100-011	1	3	ESD - CDM - Q100	1500V	1/3/0
	LU	E4	AEC Q100-004	1	6	Latch-up	Per AEC Q100-004	1/6/0
	ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0

A1 (PC): Preconditioning:
Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.
Ambient Operating Temperature by Automotive Grade Level:
Grade 0 (or E): -40°C to +150°C
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E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):
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Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
Room : AC/uHAST

Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

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