12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20210927002.1

Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional BOM option for select devices

Change Notification / Sample Request

Date: September 28, 2021
To: TOKYO ELECTRON DEVICE (DSTR) PCN

Dear Customer:

This is an announcement of a change to a device that is currently offered by Texas Instruments (TI). The details of this change are on the following pages, and are in alignment with our standard product change notification (PCN) process.

TI requires acknowledgement of receipt of this notification within 30 days of the date of this notice. Lack of acknowledgement of this notice within 30 days constitutes acceptance of the change. If samples or additional data are required, requests must be received within 30 days of this notification, given that samples are not built ahead of the change.

The Proposed First Ship date in this PCN letter is the earliest possible date that customers could receive the changed material. It is our commitment that the changed device will not ship before that date. If samples are requested within the 30 day sample request window, customers will still have 30-days to complete their evaluation regardless of the proposed 1st ship date.

This particular PCN is related to TI’s previous announcement to close our two remaining factories with 150-millimeter production (DFAB in Dallas, Texas, and SFAB in Sherman, Texas). As referenced in the “reason for change” below, these changes are part of our multiyear plan to transition these products to newer, more efficient manufacturing processes and technologies, underscoring our commitment to product longevity and supply continuity.

For questions regarding this notice or to provide acknowledgement of this PCN, you may contact your local Field Sales Representative or the PCN Team (PCN_ww_admin_team@list.ti.com). For sample requests or sample related questions, contact your local Field Sales Representative. As always, we thank you for your continued business.

PCN Team
SC Business Services

20210927002.1
Attachment: 1

Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
CD74HC238E	null
SN74HC166N	null
SN74HC139N	null
SN74HC151N	null
SN74HC273N	null
SN74HC540PWR	null
SN74HC240PWR	null
SN74HC541NSR	null
SN74HC540N	null
SN74HC240N	null
SN74HC240NSR	null
SN74HC541N	null
SN74HC273NSR	null
SN74HC574PWR	null
SN74HC273PWR	null
SN74HC241PWR	null
CD74HC138E	null
CD74HC259E	null
SN74HC367N	null
SN74HC541PWR	null
SN74HC541ANSR	null
SN74HC540NSR	null
SN74HC595N	null
SN74HC157N	null
SN74HC573NSR	null
SN74HC373N	null
SN74HC374NSR	null
SN74HC373NSR	null
SN74HC138N	null
SN74HC574NSR	null
SN74HC377NSR	null
SN74HC174N	null
SN74HC273DBR	null
SN74HC165N	null

Technical details of this Product Change follow on the next page(s).

PCN Number:	20210927002.1	**PCN Date:**	September 28, 2021

Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional BOM option for select devices

Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	Dec 26, 2021	**Estimated Sample Availability:**	Date provided at sample request.

Change Type:

☐	Assembly Site	☐	Assembly Process	☒	Assembly Materials
☒	Design	☐	Electrical Specification	☐	Mechanical Specification
☐	Test Site	☐	Packing/Shipping/Labeling	☐	Test Process
☐	Wafer Bump Site	☐	Wafer Bump Material	☐	Wafer Bump Process
☒	Wafer Fab Site	☒	Wafer Fab Materials	☒	Wafer Fab Process
		☐	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 BOM option 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.

Additionally, there will be a BOM option introduced for these devices:

	Current	Additional
Bond wire diameter (Cu)	0.96 mils	0.8 mils

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
☒ 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
RFAB	**RFB**	**USA**	**Richardson**

Die Rev:

Current **New**

Die Rev [2P]	**Die Rev [2P]**
A, E, F, G, H, J, -	**A**

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

(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:

CD74HC138E	SN74HC151N	SN74HC273NSR	SN74HC541ANSR
CD74HC138EE4	SN74HC157N	SN74HC273PWR	SN74HC541DBR
CD74HC237E	SN74HC157NE4	SN74HC273PWRG4	SN74HC541N
CD74HC237EE4	SN74HC165N	SN74HC367N	SN74HC541NE4
CD74HC238E	SN74HC165NE4	SN74HC373N	SN74HC541NSR
CD74HC238EE4	SN74HC166N	SN74HC373NE4	SN74HC541PWR
CD74HC259E	SN74HC174N	SN74HC373NSR	SN74HC573AN
CD74HC273E	SN74HC174NE4	SN74HC373NSRE4	SN74HC573ANE4
CD74HC373E	SN74HC240N	SN74HC373PWR	SN74HC573APWR
CD74HC373EE4	SN74HC240NE4	SN74HC373PWRE4	SN74HC573APWRG4
CD74HC374E	SN74HC240NSR	SN74HC374N	SN74HC573NSR
CD74HC377PWR	SN74HC240NSRE4	SN74HC374NE4	SN74HC574DBR
CD74HC377PWRG4	SN74HC240PWR	SN74HC374NSR	SN74HC574DBRG4
CD74HC541E	SN74HC240PWRG4	SN74HC374PWR	SN74HC574N
CD74HC541EE4	SN74HC241PWR	SN74HC377N	SN74HC574NE4
CD74HC541PWR	SN74HC241PWRE4	SN74HC377NE4	SN74HC574NSR
CD74HC573E	SN74HC251N	SN74HC377NSR	SN74HC574PWR
CD74HC573EE4	SN74HC259N	SN74HC540N	SN74HC574PWRE4
CD74HC574E	SN74HC259NE4	SN74HC540NE4	SN74HC574PWRG4
SN74HC138N	SN74HC273DBR	SN74HC540NSR	SN74HC595N
SN74HC138NE4	SN74HC273N	SN74HC540PWR	SN74HC595NE4
SN74HC139N	SN74HC273NE4	SN74HC540PWRE4	SN74HCT573PWR
SN74HC139NE4			

Qualification Report

Approve Date 14-Sep-2021

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

Type	Test Name / Condition	Duration	Qual Device: SN74HC273NSR	Qual Device: SN74HC374NSR	QBS Product Reference: CD74HC377PWR	QBS Product Reference: SN74HC240PWR	QBS Product Reference: SN74HC241PWR	QBS Product Reference: SN74HC273PWR	QBS Product Reference: SN74HC373PWR
CDM	ESD - CDM	1500 V	1/3/0	-	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
HBM	ESD - HBM	5000V	-	-	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0

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

Type	Test Name / Condition	Duration	QBS Product Reference: SN74HC374PWR	QBS Product Reference: SN74HC540PWR	QBS Product Reference: SN74HC541PWR	QBS Product Reference: SN74HC573APWR	QBS Product Reference: SN74HC574PWR	QBS Product Reference: SN74HCT573PWR	QBS Process Reference: SN74HCS245QPWRQ1
AC	Autoclave 121C	96 Hours	-	-	-	-	-	-	1/77/0
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
EC	Electrical Characterization	Per Datasheet Parameters	-	-	-	-	-	-	3/90/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	-	-	1/77/0
HBM	ESD - HBM	5000V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
HTOL	Life Test, 150C	300 Hours	-	-	-	-	-	-	1/77/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	-	-	-	-	1/45/0
LU	Latch-up	(Per JESD78)	1/6/0	1/6/0	1/6/0	1/3/0	1/6/0	1/6/0	1/3/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	-	-	-	-	1/77/0
WBP	Wire Bond Pull	Wires	-	-	-	-	-	-	1/30/0

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

Type	Test Name / Condition	Duration	QBS Process Reference: SN74HCS273QPWRQ1	QBS Package Reference: 1P8T245NSR	QBS Package Reference: SN74HC253NSR	QBS Package Reference: SN74HC257NSR	QBS Package Reference: ULQ2003AQDRQ1_RLF	QBS Package Reference: ULQ2003AQDRQ1_STDLF
AC	Autoclave 121C	96 Hours	1/77/0	3/231/0	-	-	3/231/0	3/231/0
CDM	ESD - CDM	1500 V	1/3/0	-	1/3/0	-	-	-
EC	Electrical Characterization	Per Datasheet Parameters	No Fails	-	-	-	No Fails	-
HAST	Biased HAST, 130C/85%RH	96 Hours	1/77/0	-	-	-	-	3/231/0
HTOL	Life Test, 150C	300 Hours	1/77/0	-	-	-	-	-
HTOL	Life Test, 150C	408 Hours	-	-	-	-	-	3/231/0
HTSL	High Temp Storage Bake 150C	1000 Hours	1/45/0	-	-	-	1/45/0	1/45/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0	-	-	-	-
LU	Latch-up	(Per JEDC78)	1/6/0	-	-	-	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0	-	-	3/231/0	3/231/0
WBP	Wire Bond Pull	Wires	1/30/0	-	-	-	-	-
WBS	Wire Bond Shear	Wires	1/30/0	-	-	-	-	-

- QBS: Qual By Similarity
- Qual Device SN74HC374NSR is qualified at LEVEL1-260C
- Qual Device SN74HC273NSR is qualified at LEVEL1-260C
- 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Qualification Report

Approve Date 14-Sep-2021

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

Type	Test Name / Condition	Duration	Qual Device: SN74HC273DBR	QBS Product Reference: SN74HC273PWR	QBS Product Reference: SN74HC541PWR	QBS Product Reference: SN74HC574PWR	QBS Process Reference: SN74HCS273QPWRQ1	QBS Package Reference: 1M16374QDLREP	QBS Package Reference: 1R16214CDL
AC	Autoclave 121C	96 Hours	-	-	-	-	1/77/0	3/231/0	3/231/0
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	-	-
ED	Electrical Characterization	Per Datasheet Parameters	-	-	-	-	Pass	Pass	Pass
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	1/77/0	-	-
HBM	ESD - HBM	5000V	-	1/3/0	1/3/0	1/3/0	-	-	-
HTOL	Life Test, 150C	300 Hours	-	-	-	-	1/77/0	-	-
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	-	-	1/45/0	-	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	-	-	3/231/0	-
LU	Latch-up	(JESD78)	-	1/6/0	1/6/0	1/6/0	1/6/0	-	-
PC	Automotive Preconditioning Level 1	(Level 1-260C)	-	-	-	-	No Fails	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	-	-	1/77/0	3/231/0	4/308/0
WBP	Bond Pull	Wires	1/76/0	-	-	-	-	-	-
WBS	Ball Bond Shear	Wires	1/76/0	-	-	-	-	-	-

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

Type	Test Name / Condition	Duration	QBS Package Reference: BQ77PL900DL	QBS Package Reference: SN75976A1DL	QBS Package Reference: TLC5920DLR
AC	Autoclave 121C	96 Hours	-	3/231/0	-
ED	Electrical Characterization	Per Data	-	1/Pass	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	4/308/0

- QBS: Qual By Similarity
- Qual Device SN74HC273DBR is qualified at LEVEL1-260C
- 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Qualification Report

Approve Date 14-Sep-2021

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

Type	Test Name / Condition	Duration	Qual Device: CD74HC377PWR	Qual Device: SN74HC240PWR	Qual Device: SN74HC241PWR	Qual Device: SN74HC273PWR	Qual Device: SN74HC373PWR	Qual Device: SN74HC374PWR	Qual Device: SN74HC540PWR
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
HBM	ESD - HBM	5000V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
LU	Latch-up	(per JESD78)	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0

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

Type	Test Name / Condition	Duration	Qual Device: SN74HC541PWR	Qual Device: SN74HC573APWR	Qual Device: SN74HC574PWR	Qual Device: SN74HCT573PWR	QBS Process Reference: SN74HCS273QPWRQ1	QBS Package Reference: SN74HCS244QPWRQ1
AC	Autoclave 121C	96 Hours	-	-	-	-	1/77/0	1/77/0
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
EC	Electrical Characterization	Cpk>1.67 Room, hot, and cold test	-	-	-	-	3/90/0	3/90/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	1/77/0	1/77/0
HBM	ESD - HBM	5000V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
HTOL	Life Test, 150C	300 Hours	-	-	-	-	1/77/0	1/77/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	-	-	1/45/0	1/45/0
LU	Latch-up	(per JESD78)	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0
PC	Automotive Preconditioning Level 1	(Level 1-260C)	-	-	-	-	No Fails	No Fails
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	-	-	1/77/0	1/77/0

Type	Test Name / Condition	Duration	Qual Device: SN74HC541PWR	Qual Device: SN74HC573APWR	Qual Device: SN74HC574PWR	Qual Device: SN74HCT573PWR	QBS Process Reference: SN74HCS273QPWRQ1	QBS Package Reference: SN74HCS244QPWRQ1
WBP	Wire Bond Pull	Wires	-	-	-	-	1/30/0	1/30/0
WBS	Wire Bond Shear	Wires	-	-	-	-	1/30/0	1/30/0

- QBS: Qual By Similarity
- Qual Device SN74HC241PWR is qualified at LEVEL1-260C
- Qual Device SN74HC574PWR is qualified at LEVEL1-260C
- Qual Device CD74HC377PWR is qualified at LEVEL1-260C
- Qual Device SN74HC373PWR is qualified at LEVEL1-260C
- Qual Device SN74HC240PWR is qualified at LEVEL1-260C
- Qual Device SN74HC540PWR is qualified at LEVEL1-260C
- Qual Device SN74HCT573PWR is qualified at LEVEL1-260CG
- Qual Device SN74HC273PWR is qualified at LEVEL1-260C
- Qual Device SN74HC374PWR is qualified at LEVEL1-260C
- Qual Device SN74HC541PWR is qualified at LEVEL1-260C
- Qual Device SN74HC573APWR is qualified at LEVEL1-260C
- 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/

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

Qualification Report

Approve Date 14-Sep-2021

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

Type	Test Name / Condition	Duration	Qual Device: SN74HC273N	QBS Product Reference: CD74HC377PWR	QBS Product Reference: SN74HC240PWR	QBS Product Reference: SN74HC241PWR	QBS Product Reference: SN74HC273PWR	QBS Product Reference: SN74HC373PWR	QBS Product Reference: SN74HC374PWR
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
HBM	ESD - HBM	5000V	-	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
LU	Latch-up	(Per JED78)	-	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	-	-	-	-	-	-

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

Type	Test Name / Condition	Duration	QBS Product Reference: SN74HC540PWR	QBS Product Reference: SN74HC541PWR	QBS Product Reference: SN74HC573APWR	QBS Product Reference: SN74HC574PWR	QBS Product Reference: SN74HCT573PWR	QBS Process Reference: SN74HCS273QPWRQ1	QBS Package Reference: SN74HCT540N
AC	Autoclave 121C	96 Hours	-	-	-	-	-	1/77/0	3/231/0
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	-
EC	Electrical Characterization	Per Datasheet Parameters	-	-	-	-	-	Pass	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	-	1/77/0	-
HBM	ESD - HBM	5000V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	-
HTOL	Life Test, 150C	300 Hours	-	-	-	-	-	1/77/0	-
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	-	-	-	1/45/0	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	-	-	-	3/231/0
LU	Latch-up	(Per JESD78)	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0	-
PC	Preconditioning Level 1	(Level 1-260C)	-	-	-	-	-	No Fails	No Fails
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	-	-	-	1/77/0	3/231/0

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

	Type	Test Name / Condition	Duration	QBS Package Reference: TPA3122D2N	QBS Package Reference: UC3875N
	AC	Autoclave 121C	96 Hours	3/231/0	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

- QBS: Qual By Similarity
- Qual Device SN74HC273N is qualified at LEVEL1-260C
- 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Qualification Report
Gatorade Expansion 16 pin PDIP
SN74HC138, CD74HC138
SN74HC595, SN74HC139, SN74HC151, SN74HC157
SN74HC165, SN74HC166, SN74HC174, CD74HC237
CD74HC238, SN74HC251, CD74HC259, SN74HC259, SN74HC367

Approve Date 09-Jul-2021

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

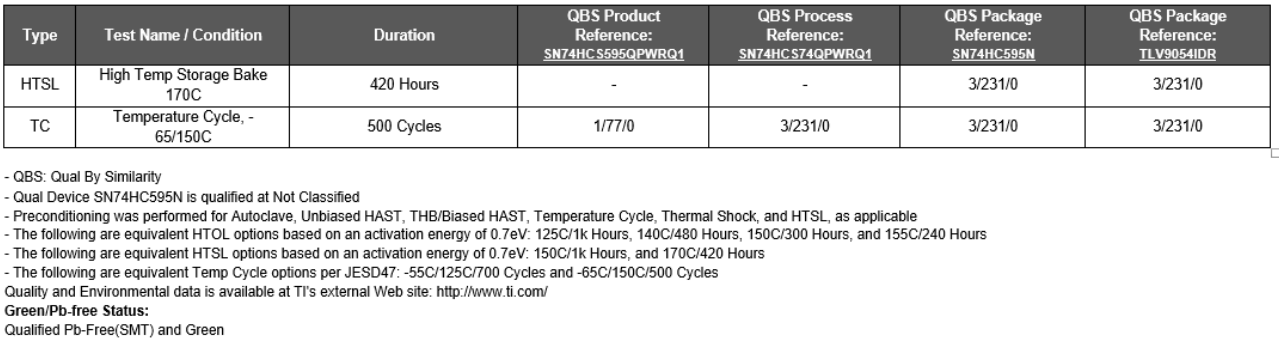
Type	Test Name / Condition	Duration	Qual Device: SN74HC595N	QBS Product Reference: SN74HCS137QPWRQ1	QBS Product Reference: SN74HCS138QPWRQ1	QBS Product Reference: SN74HCS139QPWRQ1	QBS Product Reference: SN74HCS151QPWRQ1	QBS Product Reference: SN74HCS157QPWRQ1	QBS Product Reference: SN74HCS165QDRQ1
ED	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	-	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0
CDM	ESD - CDM	1500V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
HBM	ESD - HBM	7000V	-	1/3/0	1/3/0	1/3/0	1/3/0	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	1/6/0	1/6/0

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

Type	Test Name / Condition	Duration	QBS Product Reference: SN74HCS166QDRQ1	QBS Product Reference: SN74HCS174QPWRQ1	QBS Product Reference: SN74HCS237QPWRQ1	QBS Product Reference: SN74HCS238QPWRQ1	QBS Product Reference: SN74HCS251QPWRQ1	QBS Product Reference: SN74HCS259QPWRQ1	QBS Product Reference: SN74HCS367QPWRQ1
ED	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0
CDM	ESD - CDM	1500V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
HBM	ESD - HBM	7000V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	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	1/6/0	1/6/0	1/6/0

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

Type	Test Name / Condition	Duration	QBS Product Reference: SN74HCS595QPWRQ1	QBS Process Reference: SN74HCS74QPWRQ1	QBS Package Reference: SN74HC595N	QBS Package Reference: TLV9054IDR
ED	Electrical Characterization	Per Datasheet Parameters	-	-	Pass	1/30/0
ED	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0	3/90/0	-	-
CDM	ESD - CDM	1500V	-	1/3/0	-	1/3/0
CDM	ESD - CDM	2000V	1/3/0	-	-	-
HBM	ESD - HBM	4000V	-	-	-	1/3/0
HBM	ESD - HBM	9000V	1/3/0	-	-	-
HBM	ESD - HBM	7000V	-	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	-	1/77/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	3/231/0
AC	Autoclave 121C	96 Hours	1/77/0	3/231/0	3/225/0	-
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	-	-



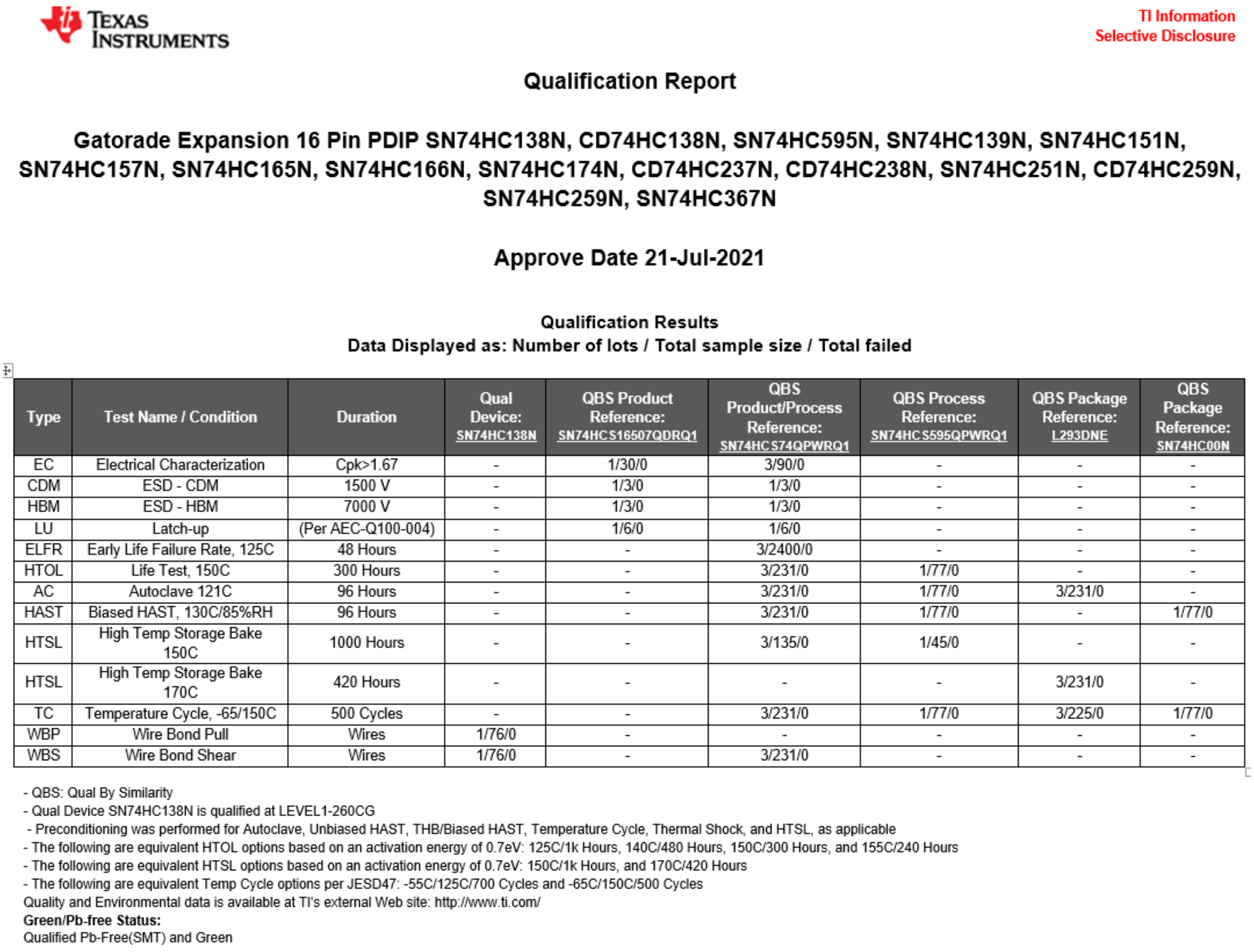
Type	Test Name / Condition	Duration	QBS Product Reference: SN74HCS595QPWRQ1	QBS Process Reference: SN74HCS74QPWRQ1	QBS Package Reference: SN74HC595N	QBS Package Reference: TLV9054IDR
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0	3/231/0	3/231/0

- QBS: Qual By Similarity
- Qual Device SN74HC595N is qualified at Not Classified
- 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



TI Information
Selective Disclosure

Qualification Report

Gatorade Expansion 16 Pin PDIP SN74HC138N, CD74HC138N, SN74HC595N, SN74HC139N, SN74HC151N, SN74HC157N, SN74HC165N, SN74HC166N, SN74HC174N, CD74HC237N, CD74HC238N, SN74HC251N, CD74HC259N, SN74HC259N, SN74HC367N

Approve Date 21-Jul-2021

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

Type	Test Name / Condition	Duration	Qual Device: SN74HC138N	QBS Product Reference: SN74HCS16507QDRQ1	QBS Product/Process Reference: SN74HCS74QPWRQ1	QBS Process Reference: SN74HCS595QPWRQ1	QBS Package Reference: L293DNE	QBS Package Reference: SN74HC00N
EC	Electrical Characterization	Cpk>1.67	-	1/30/0	3/90/0	-	-	-
CDM	ESD - CDM	1500 V	-	1/3/0	1/3/0	-	-	-
HBM	ESD - HBM	7000 V	-	1/3/0	1/3/0	-	-	-
LU	Latch-up	(Per AEC-Q100-004)	-	1/6/0	1/6/0	-	-	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	3/2400/0	-	-	-
HTOL	Life Test, 150C	300 Hours	-	-	3/231/0	1/77/0	-	-
AC	Autoclave 121C	96 Hours	-	-	3/231/0	1/77/0	3/231/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	1/77/0	-	1/77/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	3/135/0	1/45/0	-	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	-	3/231/0	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0	1/77/0	3/225/0	1/77/0
WBP	Wire Bond Pull	Wires	1/76/0	-	-	-	-	-
WBS	Wire Bond Shear	Wires	1/76/0	-	3/231/0	-	-	-

- QBS: Qual By Similarity
- Qual Device SN74HC138N is 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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