12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20220328001.1
Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly & BOM option for select devices

Change Notification / Sample Request

Date: March 30, 2022
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 multiyear transition plan for our two remaining factories with 150-millimeter production (DFAB in Dallas, Texas, and SFAB in Sherman, Texas). DFAB will remain open, but will focus on 200-mm production, with a smaller set of technologies. SFAB will close no earlier than 2024 and no later than 2025. 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

20220328001.1
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
SN74HC393PWR	null
SN74HCT14DR	null
SN74HCT138DR	null
CD74HC85NSR	null
SN74HC393NSR	null
SN74HCT273NSR	null
CD74HC85M96	null
SN74HCT14PWR	null
SN74HCT273DBR	null
SN74HCT138PWR	null
SN74HCT273N	null
SN74HCT273PWR	null
CD74HC4024PWR	null
CD74HC85PWR	null

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

PCN Number:	20220328001.1	**PCN Date:**	March 30, 2022
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly & BOM options for select devices		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	Jun 30, 2022	**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 Assembly & 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/Assembly options introduced for these devices:

Group 1 Device list (RFAB/Process migration & BOM Update select devices in the SOIC, NS, TSSOP, & PDIP packages)

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

Group 2 - Group 2 Device list (RFAB/Process migration BOM update & TFME as alternate Assembly site for select devices in the TSSOP package)

	MLA Current	MLA New	ASESH	TFME
Bond wire diameter (Cu)	0.96 mil	0.8 mil	1.0 mil	0.8 mil
Mold Compound	4211471	4211471	SID#EN2000508	SID#R-31
Mount Compound	4147858	4147858	SID#EY1000063	SID# A-03
Lead Finish	NiPdAu	NiPdAu	Matte Sn	Matte Sn

Group 3 Device list (RFAB/Process migration BOM Update & HFTF as alternate Assembly site for select devices in the SOIC package)

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

Upon expiry of this PCN TI will combine lead free solutions in a single ***standard part number***, for the devices in group 3. For example; ***SN74HCT04PWR*** – can ship with both Matte Sn and NiPdAu/Ag.

Example:

- Customer order for 7500 units of SN74HCT04PWR 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.

The following table provides the updated thermal characteristics to all devices contained within this PCN. All thermal values can be compared to the existing devices by reviewing the datasheets currently on TI.com. The impact to the customer system is anticipated to be negligible, however the customer must review their system design to assess any risk due to the change in thermal characteristics. Please see the table below which provides a summary of thermal values that the devices will be updated to based on each pin/pkg combination.

THERMAL METRIC		D (SOIC) 14 PINS	N (PDIP) 14 PINS	NS (SO) 14 PINS	PW (TSSOP) 14 PINS	D (SOIC) 16 PINS	NS (SO) 16 PINS	PW (TSSOP) 16 PINS	DB (SSOP) 20 PINS	DW (SOIC) 20 PINS	N (PDIP) 20 PINS	NS (SO) 20 PINS	PW (TSSOP) 20 PINS	UNIT
RθJA	Junction-to-ambient thermal resistance	138.7	91	111	142.5	117.2	115.5	139.9	122.7	109.1	84.6	113.4	131.8	°C/W
RθJC(top)	Junction-to-case (top) thermal resistance	93.8	78.9	68	75.9	77.2	76.1	75.3	81.6	76	72.5	78.6	72.2	°C/W
RθJB	Junction-to-board thermal resistance	94.7	70.7	71.6	84.8	75.6	77.4	84.8	77.5	77.6	65.3	78.4	82.8	°C/W
ΨJT	Junction-to-top characterization parameter	49.1	58.6	32.2	26.6	38.1	42.3	25.1	46.1	51.5	55.3	47.1	21.5	°C/W
ΨJB	Junction-to-board characterization parameter	94.3	70.5	71.1	84.3	75.3	77	84.3	77.1	77.1	65.2	78.1	82.4	°C/W
RθJC(bot)	Junction-to-case (bottom) thermal resistance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	°C/W

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, I, J,-	**A, B**

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

Sample product shipping label (not actual product label)

Product Affected:

Group 1 Device list (RFAB/Process migration & BOM Update select devices in the SOIC, NS, TSSOP, & PDIP packages)

CD74HC73E	CD74HCT273EE4	SN74HC682N	SN74HCT273DWRG4
CD74HC73EE4	CD74HCT273M96	SN74HCT14DRG4	SN74HCT273N
CD74HC85NSR	CD74HCT688E	SN74HCT14N	SN74HCT273NSR
CD74HCT14E	CD74HCT688EE4	SN74HCT273DBR	SN74HCT273PWR
CD74HCT273E	SN74HC393NSR	SN74HCT273DWR	SN74HCT14NE4

Group 2 Device list (RFAB/Process migration BOM update & TFME as alternate Assembly site for select devices in the TSSOP package)

CD74HC85PWR	CD74HCT14PWR	CD74HC4024PWR	SN74HCT138PWR
SN74HCT14PWR	SN74HC393PWR	CD74HCT238PWR	

Group 3 Device list (RFAB/Process migration BOM Update & HFTF as alternate Assembly site for select devices in the SOIC package)

CD74HC393M96	CD74HC93M96	CD74HCT164M96	SN74HCT138DR
CD74HC4024M96	CD74HCT138M96	CD74HCT238M96	SN74HCT14DR
CD74HC85M96	CD74HCT14M96	SN74HC393DR	

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

Type	Test Name / Condition	Duration	Qual Device: CD74HC73M96_HFTF	Qual Device: CD74HC73M96_MLA	Qual Device: CD74HCT21M96_MLA	Qual Device: SN74HC109DR_MLA	Qual Device: SN74HC112DR_HFTF	Qual Device: SN74HC112DR_MLA	Qual Device: SN74HC175DR_HFTF
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	-	-	-
HBM	ESD - HBM	5000V	-	1/3/0	1/3/0	1/3/0	-	-	-
LU	Latch-up	(Per JESD78)	-	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: SN74HC175DR_MLA	Qual Device: SN74HC368DR_HFTF	Qual Device: SN74HC368DR_MLA	QBS Process Reference: SN74HCS74QPWRQ1	QBS Package Reference: SN74HCS74DR	QBS Package Reference: SN74HCS74QDRQ1
-	Wire Bond Pull (Cpk>1.67)	Wires	-	-	-	3/90/0	-	3/90/0
AC	Autoclave 121C	96 Hours	-	-	-	3/231/0	-	3/231/0
CDM	ESD - CDM	1500 V	-	-	-	-	3/9/0	-
CDM	ESD - CDM - Q100	1500V	-	-	-	1/3/0	-	-
CDM	ESD - CDM - Q100	2000V	-	-	-	-	-	1/3/0
ED	Electrical Distributions	Per Datasheet Parameters	-	-	-	Pass	Pass	Pass
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/2400/0	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	3/231/0	3/231/0	3/231/0
HBM	ESD - HBM	7000V	-	-	-	1/3/0	-	-
HBM	ESD - HBM	8000V	-	-	-	-	-	1/3/0
HTOL	Life Test, 150C	300 Hours	-	-	-	3/231/0	3/231/0	1/77/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	-	3/135/0	-	3/135/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	-	3/231/0	-
LU	Latch-up	(Per JESD78)	-	-	-	1/6/0	-	1/6/0
PC	Preconditioning	Level 1-260C	-	-	-	9/828/0	4/1300/0	12/1038/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	-	3/231/0	3/231/0	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	-	3/231/0	-
WBS	Wire Bond Shear (Cpk>1.67)	Wires	-	-	-	3/90/0	-	3/90/0

- QBS: Qual By Similarity
- Qual Device CD74HCT21M96_MLA is qualified at LEVEL1-260C
- Qual Device SN74HC112DR_MLA is qualified at LEVEL1-260C
- Qual Device SN74HC175DR_HFTF is qualified at LEVEL1-260C
- Qual Device SN74HC368DR_MLA is qualified at LEVEL1-260C
- Qual Device CD74HC73M96_HFTF is qualified at LEVEL1-260CG
- Qual Device SN74HC175DR_MLA is qualified at LEVEL1-260C
- Qual Device SN74HC112DR_HFTF is qualified at LEVEL1-260C
- Qual Device CD74HC73M96_MLA is qualified at LEVEL1-260C
- Qual Device SN74HC109DR_MLA is qualified at LEVEL1-260C
- Qual Device SN74HC368DR_HFTF 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

TI Qualification ID: 20210124-138251

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

TI Qualification ID: 20210125-138295

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

Type	Test Name / Condition	Duration	Qual Device: CD74HC564M96	Qual Device: SN74HC273DWR	Qual Device: SN74HC563DWR	QBS Process Reference: SN74HCS74QPWRQ1	QBS Package Reference: SN65LBC170DW_QMI505MT_CU_STD	QBS Package Reference: SN74AC240QPWRSV	QBS Package Reference: SN74HCS273QPWRQ1
AC	Autoclave 121C	96 Hours	-	-	-	3/231/0	3/231/0	3/231/0	1/77/0
CDM	ESD - CDM	1500V	1/3/0	-	1/3/0	1/3/0	-	-	1/3/0
ED	Electrical Characterization	Per datasheet parameters	Pass	-	Pass	Pass	Pass	Pass	Pass
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/2400/0	-	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	3/231/0	-	3/231/0	1/77/0
HBM	ESD - HBM	4000V	1/3/0	-	1/3/0	1/3/0	-	-	1/3/0
HTOL	Life Test, 150C	300 Hours	-	-	-	3/231/0	-	-	1/77/0
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
PC	Preconditioning	Level 1-260C	-	-	-	No Fails	No Fails	No Fails	No Fails
TC	Temperature Cycle, -65/150C	500 Cycles	-	1/77/0	-	3/231/0	3/231/0	3/231/0	1/77/0
WBP	Wire Bond Pull (Cpk>1.67)	Wires	-	-	-	3/90/0	-	3/90/0	1/30/0
WBS	Wire Bond Shear (Cpk>1.67)	Wires	-	-	-	3/90/0	-	3/90/0	1/30/0

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

	Type	Test Name / Condition	Duration	QBS Package Reference: SN74LVC541ADW_QMI505MT_AU_STD
	AC	Autoclave 121C	96 Hours	3/231/0
	ED	Electrical Distributions	Per datasheet parameters	Pass
	HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0
	TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0

- QBS: Qual By Similarity
- Qual Device SN74HC563DWR is qualified at LEVEL1-260C
- Qual Device CD74HC564M96 is qualified at LEVEL1-260C
- Qual Device SN74HC273DWR 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

TI Qualification ID: 20210215-138613

TEXAS INSTRUMENTS

Qualification Report

BD3 HC/HCT PCN Devices at MLA and TFME : PW/N Commercial
Approve Date 14-DECEMBER -2021

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: CD74HC112PWR	Qual Device: SN74HCT373PWR	Qual Device: SN74HC688PWR	Qual Device: SN74HC368PWR	QBS Reference: SN74HCT540N	QBS Reference: SN74LS03N	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74PWR	QBS Reference: TPIC6A596NE	QBS Reference: SN74HCS273QPW
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	3/231/0	3/231/0	-	-
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	-	-	1/77/0
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	-	3/231/0	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	3/231/0	3/231/0	-	-	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	-	-	-	3/231/0	1/77/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	3/231/0	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	3/231/0	-	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	3/231/0	3/231/0	-	3/231/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	-	-	-	-	3/231/0	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	-	-	3/231/0	-	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	-	-	-	-	1/45/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	3/231/0	3/231/0	-	-	-	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	-	-	-	-	3/135/0	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	-	3/231/0	-	3/231/0	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	-	-	-	-	-	1/77/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	3/2400/0	-	-	-
PD	C4	Physical Dimensions	(per mechanical drawing)	-	-	-	-	-	-	-	-	3/15/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	-	-	-	3/30/0	-	3/30/0	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	-	-	-	-	-	-	1/10/0
ESD	E2	ESD CDM	-	250 Volts	1/3/0	1/3/0	1/3/0	1/3/0	-	-	-	3/9/0	-	-
ESD	E2	ESD CDM	-	500 Volts	-	-	-	-	-	-	1/3/0	-	-	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	-	1/3/0	1/3/0	1/3/0	-	-	-	-	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	-	-	-	1/3/0	-	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	1/3/0	1/3/0	1/3/0	-	-	-	-	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	1/30/0	1/30/0	1/30/0	-	-	3/90/0	3/90/0	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device CD74HC112PWR is qualified at MSL1 260C
- Qual Device SN74HCT373PWR is qualified at MSL1 260C
- Qual Device SN74HC688PWR is qualified at MSL1 260C
- Qual Device SN74HC368PWR is qualified at MSL1 260C
- Qual Device SN74HCT574PWR is qualified at MSL1 260C
- Qual Device SN74HCT541PWR is qualified at MSL1 260C
- Qual Device SN74HCT240PWR is qualified at MSL1 260C
- Qual Device SN74HCT374PWR is qualified at MSL1 260C
- Qual Device SN74HC175PWR is qualified at MSL1 260C
- Qual Device CD74HC112PWR 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: R-CHG-2110-006

TEXAS INSTRUMENTS

Qualification Report
Approve Date 16-MARCH -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: CD74HC73E	Qual Device: CD74HC73E	Qual Device: CD74HCT688E	Qual Device: SN74HC682N	QBS Reference: NE5532P	QBS Reference: SN74HCT540N	QBS Reference: TLC339IN	QBS Reference: SN74HCS74QPWRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	3/231/0	-	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	3/231/0	3/231/0	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	-	3/231/0	3/231/0	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	-	-	3/135/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	-	3/231/0	3/231/0	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	-	-	3/231/0
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	3/231/0	-	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	-	3/2400/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	-	-	-	-	3/30/0
ESD	E2	ESD CDM	-	250 Volts	1/3	-	1/3	1/3	-	-	-	-
ESD	E2	ESD CDM	-	500 Volts	-	-	-	-	-	-	-	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	-	-	1/3	1/3	-	-	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	-	-	-	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	-	1/3	1/3	-	-	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	1/30	1/30	-	-	-	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	-	-	-	-	3/90/0

- QBS: Qual By Similarity
- Qual Device CD74HC73E is qualified at MSL1 250C
- Qual Device CD74HC73E is qualified at MSL1 250C
- Qual Device CD74HCT688E is qualified at MSL1 250C
- Qual Device SN74HC682N is qualified at MSL1 250C

- 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 Qualification ID: R-CHG-2111-010

TEXAS INSTRUMENTS

Qualification Report
Approve Date 17-MARCH -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: CD74HC85PWR	Qual Device: SN74HCT273PWR	Qual Device: CD74HC85NSR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LVC8T245NSR	QBS Reference: TLC6946DBQR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	-	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0	-	3/135/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	3/231/0	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	3/231/0	-	3/231/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	3/2400/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	3/30/0	-	-
ESD	E2	ESD CDM	-	1500 Volts	1/3/0	1/3/0	1/3/0	-	-	1/3/0
ESD	E2	ESD HBM	-	4000 Volts	1/3/0	1/3/0	-	-	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/3/0	-	-	-	1/3/0
CHAR	E5	Electrical	Per	-	1/30/0	1/30/0	-	3/90/0	-	3/90/0
		Characterization	Datasheet Parameters							

- QBS: Qual By Similarity
- Qual Device CD74HC85PWR is qualified at MSL1 260C
- Qual Device SN74HCT273PWR is qualified at MSL1 260C
- Qual Device CD74HC85NSR 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: R-CHG-2202-013

Qualification Report
Approve Date 22-MARCH -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: CD74HCT14M96	Qual Device: CD74HCT14M96	Qual Device: SN74HCT14DR	Qual Device: SN74HCT14DR	Qual Device: SN74HCT14DRG4	QBS Reference: SN74HCS174DR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74QDRQ1	QBS Reference: SN74HCT14PWR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	3/231/0	3/231/0	3/231/0	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	3/231/0	3/231/0	3/231/0	-
TC	A4	Temperature Cycle	-65/150C	500 Cycles	-	-	-	-	-	3/231/0	3/231/0	3/231/0	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	-	3/231/0	-	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	3/231/0	3/231/0	3/231/0	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	3/2400/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	-	-	-	3/30/0	3/30/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	1/3/0	1/3/0	-	1/3/0	1/3/0	1/3/0	1/3/0
ESD	E2	ESD HBM	-	4000 Volts	-	-	-	-	-	-	1/3/0	1/3/0	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	-	-	-	-	-	-	-	1/3
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	-	-	-	3/90/0	3/90/0	3/90/0	1/30/0

- QBS: Qual By Similarity
- Qual Device CD74HCT14M96 is qualified at MSL1 260C
- Qual Device CD74HCT14M96 is qualified at MSL1 260C
- Qual Device SN74HCT14DR is qualified at MSL1 260C
- Qual Device SN74HCT14DR is qualified at MSL1 260C
- Qual Device SN74HCT14DRG4 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: R-NPD-2203-021

TEXAS INSTRUMENTS

Qualification Report
Approve Date 22-MARCH -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: CD74HCT14E	Qual Device: CD74HCT14E	Qual Device: SN74HCT14N	Qual Device: SN74HCT14N	QBS Reference: NE5532P	QBS Reference: SN74HCT540N	QBS Reference: TLC339IN	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCT14PWR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	3/231/0	-	-	3/231/0	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	3/231/0	3/231/0	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	-	3/231/0	3/231/0	3/231/0	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	-	-	3/135/0	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	-	3/231/0	3/231/0	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	-	-	3/231/0	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	3/231/0	-	-	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	-	3/2400/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	1/3	1/3	-	-	-	1/3/0	1/3
ESD	E2	ESD HBM	-	4000 Volts	-	-	-	-	-	-	-	1/3/0	1/3
LU	E4	Latch-Up	Per JESD78	-	-	-	-	-	-	-	-	-	1/3
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	-	-	-	-	-	3/90/0	1/30

- QBS: Qual By Similarity
- Qual Device CD74HCT14E is qualified at MSL1 NOT CLASSIFIED

- Qual Device CD74HCT14E is qualified at MSL1 NOT CLASSIFIED
- Qual Device SN74HCT14N is qualified at MSL1 NOT CLASSIFIED
- Qual Device SN74HCT14N is qualified at MSL1 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 Qualification ID: R-NPD-2203-015

Qualification Report
Approve Date 22-MARCH -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: CD74HCT14PWR	Qual Device: CD74HCT14PWR	Qual Device: SN74HCT14PWR	Qual Device: SN74HCT14PWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74PWR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	3/231/0	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	3/231/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	3/135/0	3/231/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	3/231/0	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	3/2400/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	1/3/0	-	1/3/0	-
ESD	E2	ESD HBM	-	4000 Volts	-	-	1/3/0	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	-	1/3/0	-	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	1/30/0	-	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device CD74HCT14PWR is qualified at MSL1 260C
- Qual Device CD74HCT14PWR is qualified at MSL1 260C

- Qual Device SN74HCT14PWR is qualified at MSL1 260C
- Qual Device SN74HCT14PWR 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: R-NPD-2203-019

Texas Instruments

Qualification Report
Approve Date 21-MARCH -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74HCT138PWR	Qual Device: CD74HCT238PWR	Qual Device: SN74HCT138PWR	Qual Device: CD74HCT238PWR	Qual Device: SN74HC393PWR	Qual Device: CD74HC4024PWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74PWR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	3/231/0	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	3/231/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	-	-	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	-	3/135/0	3/231/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	-	3/231/0	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	3/2400/0	-
PD	C4	Physical Dimensions	(per mechanical drawing)	-	-	-	-	-	-	-	3/30/0	3/15/0
ESD	E2	ESD CDM	-	1500 Volts	1/3	1/3	1/3	1/3	1/3	1/3	-	3/9/0
ESD	E2	ESD HBM	-	5000 Volts	-	-	1/3	1/3	1/3	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	-	1/3	1/3	1/3	-	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	1/30	1/30	1/30	-	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device SN74HCT138PWR is qualified at MSL1 260C
- Qual Device CD74HCT238PWR is qualified at MSL1 260C
- Qual Device SN74HCT138PWR is qualified at MSL1 260C
- Qual Device CD74HCT238PWR is qualified at MSL1 260C
- Qual Device CD74HC4024PWR is qualified at MSL1 260C
- Qual Device SN74HC393PWR is qualified at MSL1 260C
- Qual Device CD74HC4024PWR is qualified at MSL1 260C
- Qual Device SN74HC393PWR is qualified at MSL1 260C
- Qual Device CD74HC4024PWR is qualified at MSL1 260C
- Qual Device SN74HC4040PWR 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: R-CHG-2112-016

Qualification Report

BD4 HC/HCT PCN Devices : SOIC_D Commercial MLA & HFTAT
Approve Date 16-MARCH -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: CD74HCT164M96	Qual Device: CD74HCT164M96	Qual Device: CD74HC93M96	Qual Device: CD74HC4024M96	Qual Device: CD74HCT393M96	Qual Device: CD74HC93M96	Qual Device: CD74HC4024M96	QBS Reference: SN74HCS174DR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74QDRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	3/231/0	3/231/0	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	3/231/0	3/231/0	3/231/0
TC	A4	Temperature Cycle	-65/150C	500 Cycles	-	-	-	-	-	-	-	3/231/0	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	-	-	-	3/135/0	-	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	-	-	-	3/135/0	1/45/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	-	-	3/231/0	3/231/0	3/231/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	-	-	3/2400/0	-
ESD	E2	ESD CDM	-	1500 Volts	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	-	-	-
ESD	E2	ESD HBM	-	4000 Volts	1/3/0	-	-	-	1/3/0	1/3/0	-	-	-	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	-	-	-	1/3/0	1/3/0	-	-	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-	-	1/30/0	1/30/0	-	3/90/0	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device CD74HCT164M96 is qualified at MSL1 260C
- Qual Device CD74HCT164M96 is qualified at MSL1 260C
- Qual Device CD74HC93M96 is qualified at MSL1 260C
- Qual Device CD74HC4024M96 is qualified at MSL1 260C
- Qual Device CD74HCT393M96 is qualified at MSL1 260C
- Qual Device CD74HC93M96 is qualified at MSL1 260C
- Qual Device CD74HC4024M96 is qualified at MSL4 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

TI Qualification ID: R-CHG-2112-022

TI Information
Selective Disclosure

Qualification Report
Approve Date 18-MARCH -2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74HC393NSR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: PCM1801U	QBS Reference: SN74LVC8T245NSR
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	3/231/0	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	3/135/0	-	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	3/231/0	3/231/0
HTOL	B1	Life Test	125C	1000 Hours	-	3/231/0	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2400/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	-	-
ESD	E2	ESD CDM	-	1500 Volts	1/3/0	-	-	-
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	-	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	-	-

- QBS: Qual By Similarity
- Qual Device SN74HC393NSR 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/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: R-CHG-2112-032

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

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