

<b>PCN Number:</b>	20220328001.1	<b>PCN Date:</b>	March 30, 2022
<b>Title:</b>	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly & BOM options for select devices		
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>	<b>Dept:</b>	Quality Services
<b>Proposed 1<sup>st</sup> Ship Date:</b>	Jun 30, 2022	<b>Estimated Sample Availability:</b>	Date provided at sample request.
<b>Change Type:</b>			
<input checked="" type="checkbox"/>	Assembly Site	<input 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 & 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)	N (PDIP)	NS (SO)	PW (TSSOP)	D (SOIC)	NS (SO)	PW (TSSOP)	DB (SSOP)	DW (SOIC)	N (PDIP)	NS (SO)	PW (TSSOP)	UNIT
		14 PINS	14 PINS	14 PINS	14 PINS	16 PINS	16 PINS	16 PINS	20 PINS	20 PINS	20 PINS	20 PINS		
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-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

**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:**

**Fab Site Information:**

Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City
SH-BIP-1	SHE	USA	Sherman
<b>RFAB</b>	<b>RFB</b>	<b>USA</b>	<b>Richardson</b>

**Die Rev:**

**Current**

**New**

Die Rev [2P]	Die Rev [2P]
A, E, F, G, I, J,-	<b>A, B</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
<b>HFTFAT</b>	<b>HFT</b>	<b>CHN</b>	<b>Hefei</b>
<b>TFME</b>	<b>NFM</b>	<b>CHN</b>	<b>Economic Development Zone</b>

Sample product shipping label (not actual product label)

**TEXAS INSTRUMENTS**  
 MADE IN: Malaysia  
 2DC: 2d:  
 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) 830-SHE (21L) C60-USA  
 (22L) ASO: MLA (23L) ACO: MYS

**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:	Qual Device:	Qual Device:	Qual Device:	Qual Device:	Qual Device:	Qual Device:
			CD74HC73M96 HF TF	CD74HC73M96 ML A	CD74HCT21M96 ML A	SN74HC109DR ML A	SN74HC112DR HF TF	SN74HC112DR ML A	SN74HC175DR HF TF
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:	Qual Device:	Qual Device:	QBS Process Reference:	QBS Package Reference:	QBS Package Reference:
			SN74HC175DR_MLA	SN74HC368DR_HFTF	SN74HC368DR_MLA	SN74HC S74QPWRQ1	SN74HC S74DR	SN74HC S74QDRQ1
-	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: <u>SN74HC273DBR</u>	QBS Product Reference: <u>SN74HC273PWR</u>	QBS Product Reference: <u>SN74HC541PWR</u>	QBS Product Reference: <u>SN74HC574PWR</u>	QBS Process Reference: <u>SN74HC5273QPWRQ1</u>	QBS Package Reference: <u>1M16374QDLREP</u>	QBS Package Reference: <u>1R16214CDL</u>
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: <u>BQ77PL900DL</u>	QBS Package Reference: <u>SN75976A10L</u>	QBS Package Reference: <u>TLC59200LR</u>
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: CD74HC564M 96	Qual Device: SN74HC273DWR R	Qual Device: SN74HC563DWR R	QBS Process Reference: SN74HC574QPWR Q1	QBS Package Reference: SN65LBC170DW_QMI505MT_CU STD	QBS Package Reference: SN74AC240QPWR SV	QBS Package Reference: SN74HCS273QPWR Q1
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

## Qualification Report

 BD3 HC/HCT PCN Devices at MLA and TFME : P/W/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: SN74HCT340N	QBS Reference: SN74LS03N	QBS Reference: SN74HCS740PWRQ1	QBS Reference: SN74HCS74PWR	QBS Reference: TPIC8A596NE	QBS Reference: SN74HCS2730PW
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 JE5D78	-	-	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 SN74HCT541PWR is qualified at MSL1 260C
- Qual Device SN74HCT541PWR 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 SN74HCT374PWR is qualified at MSL1 260C
- Qual Device SN74HCT175PWR 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 JE5D47 : -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

**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



**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: SN74HCS74QPWR01	QBS Reference: SN74LVC8T245NSR	QBS Reference: TLC6946DBOR
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:	Qual Device:	Qual Device:	Qual Device:	Qual Device:	QBS Reference:	QBS Reference:	QBS Reference:	QBS Reference:
					CD74HCT14M96	CD74HCT14M96	SN74HCT14DR	SN74HCT14DR	SN74HCT14DRG4	SN74HCS174DR	SN74HCS74QPWRQ1	SN74HCS74OORQ1	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/>

GreenPb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: R-NPD-2203-021

**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: SN74HCS74QPWR01	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

**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: CD74HC393M96	Qual Device: CD74HC4024M96	Qual Device: CD74HC393M96	Qual Device: CD74HC393M96	Qual Device: CD74HC4024M96	QBS Reference: SN74HCS174DR	QBS Reference: SN74HC574QPWRQ1	QBS Reference: SN74HC574QDRQ1
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 CD74HC393M96 is qualified at MSL1 260C
- Qual Device CD74HC4024M96 is qualified at MSL1 260C
- Qual Device CD74HC393M96 is qualified at MSL1 260C
- Qual Device CD74HC393M96 is qualified at MSL1 260C
- Qual Device CD74HC393M96 is qualified at MSL1 260C
- Qual Device CD74HC4024M96 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-2112-022

 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
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