12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20230629000.1

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: June 30, 2023
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 and approval of this 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 Change Management team. For sample requests or sample related questions, contact your local Field Sales Representative. As always, we thank you for your continued business.

Change Management Team
SC Business Services

20230629000.1
Attachment: 1

Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, you have recently purchased these devices. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
SN74AHCT02PWR	null
SN74AHCT08PWRG4	null
SN74AHCT245PWR	null
SN74LV244ANSR	null
SN74LV245APWR	null
SN74LV245APWRG4	null
SN74LV4040APWR	null
SN74LV541ANSR	null
SN74LV138ANSR	null
SN74LV245ANSR	null
SN74AHC245PWR	null
SN74AHCT08PWR	null
SN74AHCT32PWR	null
SN74AHCT74PWR	null
SN74LV595ANSR	null
SN74AHCT00PWR	null
SN74AHCT245PWRG4	null
SN74LV273ANSR	null
SN74LV4040ARGYR	null
SN74AHC245NSR	null
SN74AHC245PWRG4	null

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

PCN Number:	20230629000.1	**PCN Date:**	June 30, 2023
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly & BOM options for select devices		
Customer Contact:	Change Management Team	**Dept:**	Quality Services
Proposed 1st Ship Date:	Sept 27, 2023	**Sample requests accepted until:**	July 29, 2023*

***Sample requests received after Jul 29, 2023 will not be supported.**

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

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 2 Device list (RFAB/Process migration & BOM Option)

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

Group 3 Device list (RFAB/Process migration/BOM Option plus TFME as additional Assembly site)

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

Group 4 Device list (RFAB/Process migration plus CDAT as additional Assembly site)

	MLA	CDAT
Bond wire diameter (Cu)	0.96 mil	0.8 mil
Mount Compound	4205846	4207123
Mold Compound	4208625	4222198

Group 5 Device list (RFAB/Process migration plus MLA as additional Assembly site)

	FMX (Current)	FMX (New)	MLA
Bond wire diameter (Cu)	0.96 mil	0.8mil	0.8 mil

Upon expiry of this PCN TI will combine lead free solutions in a single ***standard part number***, for the devices in groups 1 & 2. For example; ***SN74LV10APWR*** – can ship with both Matte Sn and NiPdAu/Ag.

Example:

- Customer order for 7500 units of SN74LV10APWR 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.

Additionally, as a result of these changes, some of the impacted device datasheets will be updated. Target for these datasheet updates is the start of production. For a preview of these upcoming datasheet changes, please see below:

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,B,C,H,I,M	**A**

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
MLA	MLA	MYS	Kuala Lumpur
FMX	MEX	MEX	Aguascalientes
CDAT	**CDA**	**CHN**	**Chengdu**
TFME	**NFM**	**CHN**	**Economic Development Zone**

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

G4

(1P) SN74LS07NSR
(Q) 2000 (D) 0336
(31T)LOT: 3959047MLA
(4W) TKY(1T) 7523483SI2
(P)
(2P) REV: (V) 0033317
(20L) ~~CSO:SHE~~ (21L) ~~CCO:USA~~
(22L) ASO:MLA (23L) ACO:MYS

Product Affected:

Group 1 Device list (Group 1: RFAB/Process migration only)

SN74AHC245PWR	SN74AHCT245PWR	SN74AHCT245PWRG4	SN74LV245APWRE4
SN74AHC245PWRE4	SN74AHCT245PWRE4	SN74LV245APWR	SN74LV245APWRG4
SN74AHC245PWRG4			

Group 2 Device list (RFAB/Process migration & BOM Option)

SN74AHC245DBR	SN74AHCT245DBR	SN74LV165ADBR	SN74LV245ANSR
SN74AHC245DWR	SN74AHCT245DBRG4	SN74LV244ANSR	SN74LV273ANSR
SN74AHC245DWRE4	SN74AHCT245DWR	SN74LV245ADBR	SN74LV541ANSR
SN74AHC245NSR	SN74LV138ANSR	SN74LV245ADWR	SN74LV595ANSR

Group 3 Device list (RFAB/Process migration/BOM Option plus TFME as additional Assembly site)

SN74AHCT00PWR	SN74AHCT08PWR	SN74AHCT32PWR	SN74LV4040APWR
SN74AHCT02PWR	SN74AHCT08PWRG4	SN74AHCT74PWR	

Group 4 Device list (RFAB/Process migration plus CDAT as additional Assembly site)

SN74LV4040ARGYR

Group 5 Device list (RFAB/Process migration plus MLA as additional Assembly site)

SN74LV4040ADR

For alternate parts with similar or improved performance, please visit the product page on TI.com"

Qualification Report

BD6_LVA_16DB_MLA
Approve Date 16-JUNE -2023

Qualification Results

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

Type	**#**	**Test Name**	Condition	**Duration**	Qual Device: SN74LV165ADBR	**QBS Reference: SN74HCS74QPWRQ1**	QBS Reference: ADS900E	**QBS Reference: TLC320AD77CDBR**	QBS Reference: SN74LV138ADR	**QBS Reference: SN74LV367ADR**	QBS Reference: SN74LV595ADR	**QBS Reference: SN74LV595AQWBQBRQ1**	QBS Reference: TLC6946DBQR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	-	-	-	-	-	1/77/0	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	-	-	-	-	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	1/77/0	3/231/0	-	-	-	1/77/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	3/135/0	-	3/231/0	-	-	-	-	3/231/0
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	-	-	-	1/45/0	-
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	-	-	-	-	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-	-	-	-	-	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-	-	-	-	-	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	-	-	-	-	-	-	-
ESD	E2	ESD CDM	-	250 Volts	-	-	-	-	1/3/0	1/3/0	1/3/0	-	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	-	-	-	-	-	1/3/0	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	-	-	-	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	-	-	-	-	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	1/6/0	-	-	-	-	-	1/6/0	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-	-	1/30/0	1/30/0	1/30/0	-	3/90/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	-	-	-	-	-	3/90/0	-

- QBS: Qual By Similarity
- Qual Device SN74LV165ADBR 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/

TI Qualification ID: R-NPD-2112-027

Qualification Report

BD6_LVA_16NS_MLA
Approve Date 16-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV138ANSR	**Qual Device: SN74LV595ANSR**	QBS Reference: SN74HCS74QPWRQ1	**QBS Reference: SN74LVC8T245NSR**	QBS Reference: SN74LV595AQWBQBRQ1	**QBS Reference: ULQ2003AQDRQ1**
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	-	1/77/0	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	3/231/0	-	1/77/0	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	3/231/0	1/77/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	3/135/0	3/231/0	-	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	1/45/0	-
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	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/15/0	-	-	1/15/0
SD	C3	PB Solderability	>95% Lead Coverage 8 Hr Steam Age	-	-	-	1/15/0	-	-	1/15/0
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/15/0	-	-	1/15/0
SD	C3	PB-Free Solderability	>95% Lead Coverage 8 Hr Steam Age	-	-	-	1/15/0	-	-	1/15/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	-	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	1/3/0	-	-	-	-
ESD	E2	ESD CDM	-	500 Volts	-	-	1/3/0	-	1/3/0	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	1/3/0	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	-	1/6/0	-	1/6/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	-	-	-	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0	-	3/90/0	-

- QBS: Qual By Similarity
- Qual Device SN74LV138ANSR is qualified at MSL1 260C
- Qual Device SN74LV595ANSR 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/

TI Qualification ID: R-NPD-2112-026

Qualification Report

BD8_LVA_16D_FMX
Approve Date 16-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV4040ADR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: LM393BIDR	QBS Reference: SN74LV4040APWR
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	-	-
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	175C	500 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	3/2400/0	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	2/6/0	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	-	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	2/6/0	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	1/6/0	2/6/0	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	3/90/0	1/30/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	-	-
FTY	E6	Final Test Yield	-	-	-	-	1/1/0	-

- QBS: Qual By Similarity
- Qual Device SN74LV4040ADR 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/

TI Qualification ID: R-NPD-2203-061

Qualification Report

BD8_LVA_16PW_TFME
Approve Date 12-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV4040APWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74PWR
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	-
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	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	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB Solder;	-	-	-	3/66/0
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	-	3/66/0
PD	C4	Physical Dimensions	(per mechanical drawing)	-	-	-	3/15/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	3/9/0
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	-
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/6/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	3/90/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	-

- QBS: Qual By Similarity
- Qual Device SN74LV4040APWR 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/

TI Qualification ID: R-NPD-2203-063

Qualification Report

BD8_LVA_16RGY_CDAT
Approve Date 02-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV4040ARGYR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: TS3A5017QRGYRQ1	QBS Reference: SN74HCS245QRKSRQ1	QBS Reference: SN74HCS245QWRKSRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	1/77/0
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	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	3/231/0	3/231/0	3/231/0	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	1/45/0	1/45/0
HTOL	B1	Life Test	125C	1000 Hours	-	3/231/0	3/231/0	3/231/0	1/77/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2400/0	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	1/15/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV4040ARGYR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: TS3A5017QRGYRQ1	QBS Reference: SN74HCS245QRKSRQ1	QBS Reference: SN74HCS245QWRKSRQ1
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	3/30/0	-	3/30/0
ESD	E2	ESD CDM	-	1500 Volts	-	-	1/3/0	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	-	-	-
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	-	-	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	1/3/0	-	-	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	1/3/3	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/6/0	1/6/0	-	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-	-	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	3/90/0	1/30/0	3/90/0

- QBS: Qual By Similarity
- Qual Device SN74LV4040ARGYR 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/

TI Qualification ID: R-NPD-2203-064

Qualification Report

BD8_LVA_16PW_MLA
Approve Date 19-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV4040APWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LV4040APWR	QBS Reference: SN74AHC245RKSR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	3/231/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	-	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	3/135/0	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	3/231/0	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2400/0	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	-	-	1/22/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3	-	1/3/0	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	-	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	1/3/0	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	1/6/0	1/3/0	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	1/30/0	1/30/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	-	-

- QBS: Qual By Similarity
- Qual Device SN74LV4040APWR 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/

TI Qualification ID: R-NPD-2203-062

Qualification Report

BD8_LVA_20DW_MLA
Approve Date 16-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC245DWR	Qual Device: SN74AHCT245DWR	Qual Device: SN74LV245ADWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74AHC245DBR	QBS Reference: SN74AHC245RKSR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	3/231/0	-	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	3/231/0	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	3/2400/0	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	1/22/0	-	-	-	-	1/22/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	3/30/0	-	-
ESD	E2	ESD CDM	-	250 Volts	-	-	-	-	1/3/0	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	-	-	1/3/0	-	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	-	-	1/6/0	-	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	1/30/0	-	1/30/0	1/30/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	3/90/0	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHC245DWR is qualified at MSL1 260C
- Qual Device SN74AHCT245DWR is qualified at MSL1 260C
- Qual Device SN74LV245ADWR 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/

TI Qualification ID: R-NPD-2203-065

Qualification Report

BD8_LVA_20NS_MLA
Approve Date 19-JUNE -2023

Qualification Results

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

Type	#	**Test Name**	Condition	**Duration**	Qual Device: SN74AHC245NSR	**Qual Device: SN74LV245ANSR**	QBS Reference: SN74HCS74QPWRQ1	**QBS Reference: SN74LVC8T245NSR**	QBS Reference: SN74AHC245RKSR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	3/231/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	3/231/0	1/77/0
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	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	1/22/0	-	-	-	1/22/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	-	-
ESD	E2	ESD CDM	-	250 Volts	-	-	-	-	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	-	1/3/0	-	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	-	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	-	1/6/0	-	1/3/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	-	-	1/30/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHC245NSR is qualified at MSL1 260C
- Qual Device SN74LV245ANSR 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/

TI Qualification ID: R-NPD-2203-066

Qualification Report

BD8_LVA_20DB_MLA
Approve Date 16-JUNE -2023

Qualification Results

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

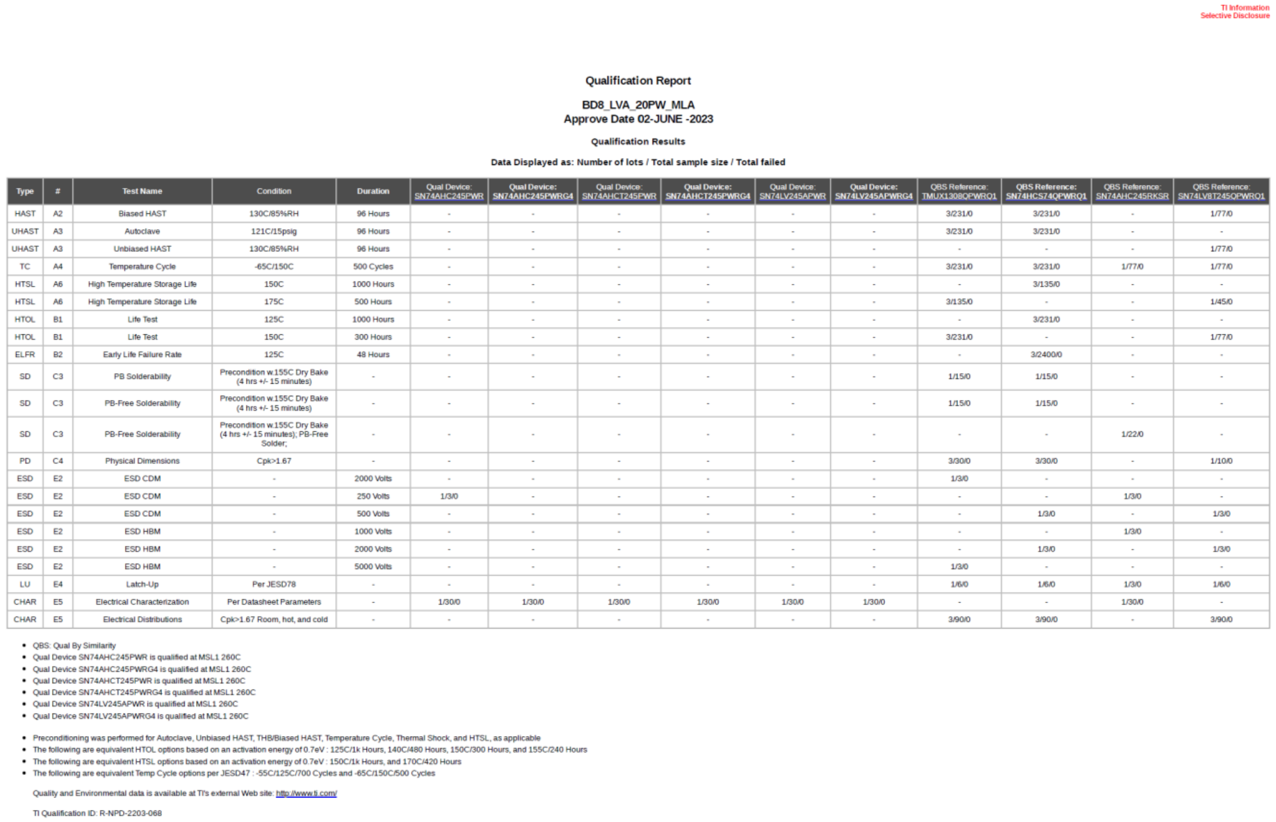
Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC245DBR	Qual Device: SN74AHCT245DBR	Qual Device: SN74LV245ADBR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: TLC320AD77CDBR	QBS Reference: TLC6946DBQR	QBS Reference: SN74AHC245RKSR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	-	3/231/0	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0	-	-	-
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	3/231/0	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0	3/231/0	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	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	-	-	-	-	-	1/22/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	3/30/0	-	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	-	-	-	1/3/0	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	-	-	1/3/0	-	-	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	-	1/3/0	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	1/3/0	-	-	-
LU	E4	Latch-Up	Per JESD78	-	-	-	-	1/6/0	-	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	1/30/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	3/90/0	-	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHC245DBR is qualified at MSL1 260C
- Qual Device SN74AHCT245DBR is qualified at MSL1 260C
- Qual Device SN74LV245ADBR 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/

TI Qualification ID: R-NPD-2203-067



TI Information
Selective Disclosure

Qualification Report

BD8_LVA_20PW_MLA
Approve Date 02-JUNE -2023

Qualification Results

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

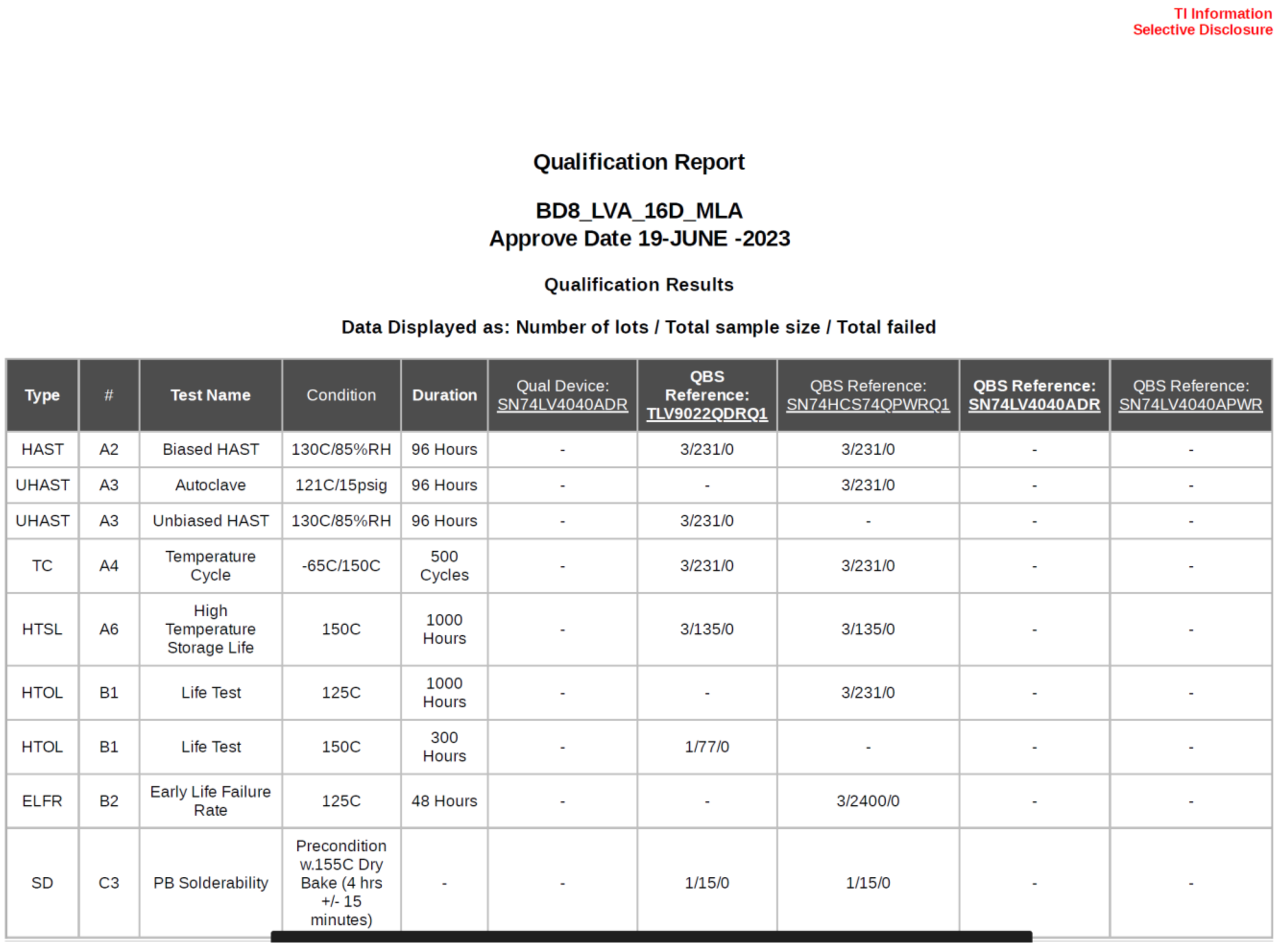
Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC245PWR	Qual Device: SN74AHC245PWRG4	Qual Device: SN74AHCT245PWR	Qual Device: SN74AHCT245PWRG4	Qual Device: SN74LV245APWR	Qual Device: SN74LV245APWRG4	QBS Reference: TMUX1308QPWRQ1	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74AHC245RKSR	QBS Reference: SN74LV8T245QPWRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	3/231/0	3/231/0	-	1/77/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	-	3/231/0	3/231/0	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	-	-	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	-	-	3/231/0	3/231/0	1/77/0	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	-	-	3/135/0	-	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	-	-	3/135/0	-	-	1/45/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	-	-	3/231/0	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	-	-	3/231/0	-	-	1/77/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	-	3/2400/0	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	-	1/15/0	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	-	1/15/0	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	-	-	-	-	-	-	-	1/22/0	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	-	-	-	3/30/0	3/30/0	-	1/10/0
ESD	E2	ESD CDM	-	2000 Volts	-	-	-	-	-	-	1/3/0	-	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	-	-	-	-	-	-	1/3/0	-
ESD	E2	ESD CDM	-	500 Volts	-	-	-	-	-	-	-	1/3/0	-	1/3/0
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	-	-	-	-	1/3/0	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	-	-	-	-	1/3/0	-	1/3/0
ESD	E2	ESD HBM	-	5000 Volts	-	-	-	-	-	-	1/3/0	-	-	-
LU	E4	Latch-Up	Per JESD78	-	-	-	-	-	-	-	1/6/0	1/6/0	1/3/0	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	-	-	1/30/0	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	-	-	-	3/90/0	3/90/0	-	3/90/0

- QBS: Qual By Similarity
- Qual Device SN74AHC245PWR is qualified at MSL1 260C
- Qual Device SN74AHC245PWRG4 is qualified at MSL1 260C
- Qual Device SN74AHCT245PWR is qualified at MSL1 260C
- Qual Device SN74AHCT245PWRG4 is qualified at MSL1 260C
- Qual Device SN74LV245APWR is qualified at MSL1 260C
- Qual Device SN74LV245APWRG4 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/

TI Qualification ID: R-NPD-2203-068



TI Information
Selective Disclosure

Qualification Report

BD8_LVA_16D_MLA
Approve Date 19-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV4040ADR	QBS Reference: TLV9022QDRQ1	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LV4040ADR	QBS Reference: SN74LV4040APWR
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	-	-
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	3/135/0	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	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	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	1/15/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV4040ADR	QBS Reference: TLV9022QDRQ1	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LV4040ADR	QBS Reference: SN74LV4040APWR
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	1/15/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	3/30/0	-	-
ESD	E2	ESD CDM	-	250 Volts	-	-	-	1/3/0	1/3
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	1/3/0	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	1/6/0	1/6/0	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-	1/30/0	1/30/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	3/90/0	-	-

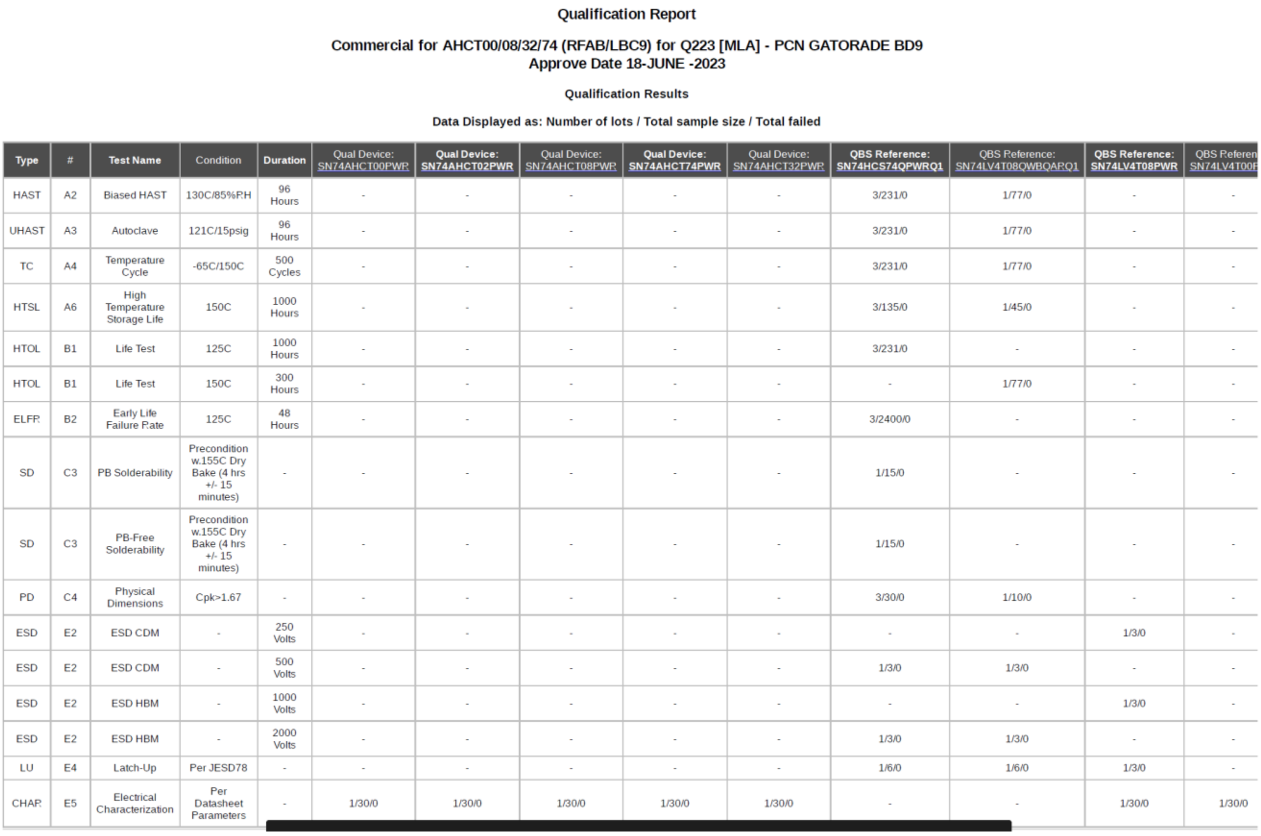
- QBS: Qual By Similarity
- Qual Device SN74LV4040ADR is qualified at MSL1 260C

- 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/

TI Qualification ID: R-NPD-2203-060

TI Information
Selective Disclosure



Qualification Report

Commercial for AHCT00/08/32/74 (RFAB/LBC9) for Q223 [MLA] - PCN GATORADE BD9
Approve Date 18-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT00PWR	Qual Device: SN74AHCT02PWR	Qual Device: SN74AHCT08PWR	Qual Device: SN74AHCT74PWR	Qual Device: SN74AHCT32PWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LV4T08QWBQARQ1	QBS Reference: SN74LV4T08PWR	QBS Referen SN74LV4T00F
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	3/231/0	1/77/0	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	3/231/0	1/77/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	-	3/231/0	1/77/0	-	-
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	-	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	-	-	1/77/0	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	3/2400/0	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/15/0	-	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/15/0	-	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	-	-	3/30/0	1/10/0	-	-
ESD	E2	ESD CDM	-	250 Volts	-	-	-	-	-	-	-	1/3/0	-
ESD	E2	ESD CDM	-	500 Volts	-	-	-	-	-	1/3/0	1/3/0	-	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	-	-	-	1/3/0	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	-	-	1/3/0	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	-	-	-	-	1/6/0	1/6/0	1/3/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	-	-	1/30/0	1/30/0

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT00PWR	**Qual Device: SN74AHCT02PWR**	Qual Device: SN74AHCT08PWR	**Qual Device: SN74AHCT74PWR**	Qual Device: SN74AHCT32PWR	**QBS Reference: SN74HCS74QPWRQ1**	QBS Reference: SN74LV4T08QWBQARQ1	**QBS Reference: SN74LV4T08PWR**	QBS Referen SN74LV4T00F
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	-	-	3/90/0	3/90/0	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHCT00PWR is qualified at MSL1 260C
- Qual Device SN74AHCT02PWR is qualified at MSL1 260C
- Qual Device SN74AHCT08PWR is qualified at MSL1 260C
- Qual Device SN74AHCT74PWR is qualified at MSL1 260C
- Qual Device SN74AHCT32PWR 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/

TI Qualification ID: R-CHG-2305-035

Qualification Report

Commercial for AHCT00/08/32/74 (RFAB/LBC9) for Q223 [TFME] - PCN GATORADE BD9
Approve Date 18-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT02PWR	**Qual Device: SN74AHCT00PWR**	Qual Device: SN74AHCT08PWR	**Qual Device: SN74AHCT32PWR**	Qual Device: SN74AHCT74PWR	**QBS Reference: SN74HCS74QPWRQ1**	QBS Reference: SN74HCS74PWR	**QBS Reference: SN74LV4T08QWBQARQ1**	QBS Referen SN74LV4T08F
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	3/231/0	3/231/0	1/77/0	-
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	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	-	3/231/0	3/231/0	1/77/0	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	3/135/0	3/231/0	1/45/0	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	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	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/15/0	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB Solder;	-	-	-	-	-	-	-	3/66/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/15/0	-	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	-	-	-	-	-	3/66/0	-	-
PD	C4	Physical Dimensions	(per mechanical drawing)	-	-	-	-	-	-	-	3/15/0	-	-

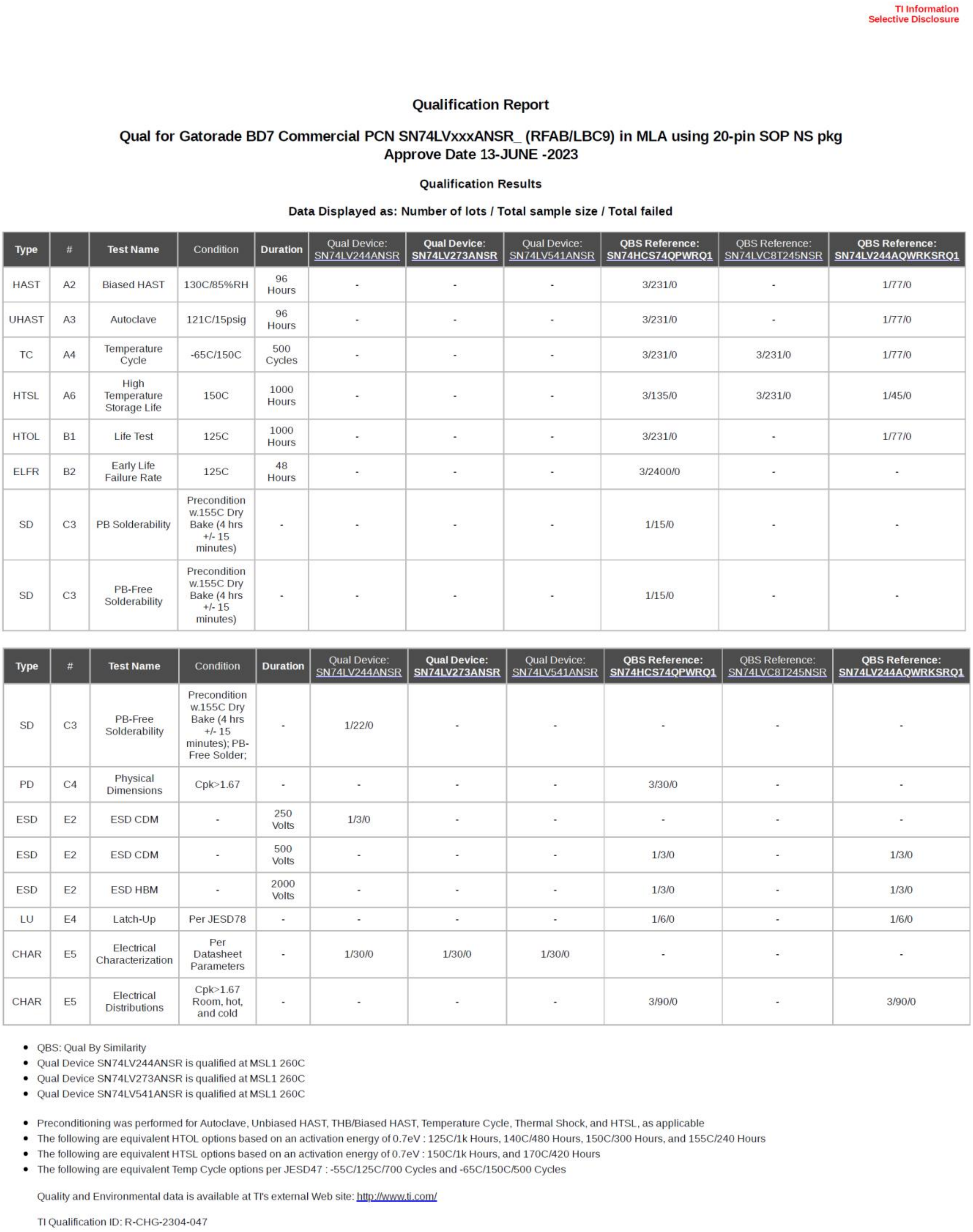
Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT02PWR	**Qual Device: SN74AHCT00PWR**	Qual Device: SN74AHCT08PWR	**Qual Device: SN74AHCT32PWR**	Qual Device: SN74AHCT74PWR	**QBS Reference: SN74HCS74QPWRQ1**	QBS Reference: SN74HCS74PWR	**QBS Reference: SN74LV4T08QWBQARQ1**	QBS Referen SN74LV4T08F
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	-	-	3/30/0	-	1/10/0	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	-	-	-	-	3/9/0	-	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	-	-	-	-	1/3/0	-	1/3/0	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	-	-	-	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	-	-	1/3/0	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	-	-	-	-	1/6/0	-	1/6/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	-	3/90/0	-	1/30/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	-	-	3/90/0	-	3/90/0	-

- QBS: Qual By Similarity
- Qual Device SN74AHCT02PWR is qualified at MSL1 260C
- Qual Device SN74AHCT00PWR is qualified at MSL1 260C
- Qual Device SN74AHCT08PWR is qualified at MSL1 260C
- Qual Device SN74AHCT32PWR is qualified at MSL1 260C
- Qual Device SN74AHCT74PWR 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/

TI Qualification ID: R-CHG-2305-056



TI Information
Selective Disclosure

Qualification Report

Qual for Gatorade BD7 Commercial PCN SN74LVxxxANSR_ (RFAB/LBC9) in MLA using 20-pin SOP NS pkg
Approve Date 13-JUNE -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV244ANSR	Qual Device: SN74LV273ANSR	Qual Device: SN74LV541ANSR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LVC8T245NSR	QBS Reference: SN74LV244AQWRKSRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	-	1/77/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0	-	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	3/231/0	3/231/0	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0	3/231/0	1/45/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	3/231/0	-	1/77/0
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	3/2400/0	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	1/15/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	1/22/0	-	-	-	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	3/30/0	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	-	-	-	-
ESD	E2	ESD CDM	-	500 Volts	-	-	-	1/3/0	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	1/3/0	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	-	-	1/6/0	-	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	1/30/0	-	-	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	3/90/0	-	3/90/0

- QBS: Qual By Similarity
- Qual Device SN74LV244ANSR is qualified at MSL1 260C
- Qual Device SN74LV273ANSR is qualified at MSL1 260C
- Qual Device SN74LV541ANSR 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/

TI Qualification ID: R-CHG-2304-047

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