

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:																							
<table border="1"> <thead> <tr> <th colspan="3">Current Fab Site</th> <th colspan="3">Additional Fab Site</th> </tr> <tr> <th>Current Fab Site</th> <th>Process</th> <th>Wafer Diameter</th> <th>Additional Fab Site</th> <th>Process</th> <th>Wafer Diameter</th> </tr> </thead> <tbody> <tr> <td>SFAB</td> <td>HCMOS</td> <td>150 mm</td> <td>RFAB</td> <td>LBC9</td> <td>300 mm</td> </tr> </tbody> </table>			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			
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)



MADE IN: Malaysia
2DC: 29:

MSL '2 /260C/1 YEAR	SEAL DT
MSL 1 /235C/UNLIM	03/29/04

OPT:
ITEM:

LBL: 5A (L)T0:1750



(1P) SN74LS07NSR
(Q) 2000 (D) 0336
(31T) LOT: 3959047MLA
(4W) TKY (1T) 7523483SI2

(P)
(2P) REV: (V) 0033317
(20L) CCO: CHE (21L) CCO: USA
(22L) ASO: MLA (23L) ACO: MYS

Product Affected:

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

SN74AHC245PWR	SN74AHCT245PWR	SN74AHCT245PW RG4	SN74LV245APW RE4
SN74AHC245PW RE4	SN74AHCT245PW RE4	SN74LV245APWR	SN74LV245APW RG4
SN74AHC245PW RG4			

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

SN74AHC245DBR	SN74AHCT245DBR	SN74LV165ADB R	SN74LV245ANSR
SN74AHC245DWR	SN74AHCT245DBRG4	SN74LV244ANSR	SN74LV273ANSR
SN74AHC245DW RE4	SN74AHCT245DWR	SN74LV245ADB R	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	SN74AHCT08PW RG4	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](https://www.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
UHA	A3	Autoclave	121C/15psig	96 Hours	-	3/231/0	-	-	-	-	-	1/77/0	-
UHA	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	-

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
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: SN74LV595AOWBOBRQ1	QBS Reference: ULQ2003AQDRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	-	1/77/0	3/231/0
UHA	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

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV138ANSR	Qual Device: SN74LV595ANSR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LVC8T245NSR	QBS Reference: SN74LV595AOWBOBRQ1	QBS Reference: ULQ2003AQDRQ1
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: <u>SN74LV4040ADR</u>	QBS Reference: <u>SN74HCS74QPWRQ1</u>	QBS Reference: <u>LM393BIDR</u>	QBS Reference: <u>SN74LV4040APWR</u>
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	-	-

Type	#	Test Name	Condition	Duration	Qual Device: <u>SN74LV4040ADR</u>	QBS Reference: <u>SN74HCS74QPWRQ1</u>	QBS Reference: <u>LM393BIDR</u>	QBS Reference: <u>SN74LV4040APWR</u>
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
UHA	A3	Autoclave	121C/15psig	96 Hours	-	3/231/0	-
UHA	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	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV4040APWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74PWR
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	-	-
UHA	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	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV4040APWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LV4040APWR	QBS Reference: SN74AHC245RKSR
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: SN74AHC245DWR	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	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC245DWR	Qual Device: SN74AHC245DWR	Qual Device: SN74LV245ADWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74AHC245DBR	QBS Reference: SN74AHC245RKSR
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 SN74AHC245DWR 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	-	-
UHA	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	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC245NSR	Qual Device: SN74LV245ANSR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LVC8T245NSR	QBS Reference: SN74AHC245RKSR
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: <u>SN74AHC245DBR</u>	Qual Device: <u>SN74AHCT245DBR</u>	Qual Device: <u>SN74LV245ADBR</u>	QBS Reference: <u>SN74HCS74QPWRQ1</u>	QBS Reference: <u>TLC320AD77CDBR</u>	QBS Reference: <u>TLC6946DBQR</u>	QBS Reference: <u>SN74AHC245RKSR</u>
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	-	-	-

Type	#	Test Name	Condition	Duration	Qual Device: <u>SN74AHC245DBR</u>	Qual Device: <u>SN74AHCT245DBR</u>	Qual Device: <u>SN74LV245ADBR</u>	QBS Reference: <u>SN74HCS74QPWRQ1</u>	QBS Reference: <u>TLC320AD77CDBR</u>	QBS Reference: <u>TLC6946DBQR</u>	QBS Reference: <u>SN74AHC245RKSR</u>
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

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: SN74AHCT245PWR	Qual Device: SN74AHCT245PWG4	Qual Device: SN74AHCT245PWR	Qual Device: SN74AHCT245PWG4	Qual Device: SN74LV245APWR	Qual Device: SN74LV245APWGS4	QBS Reference: SN74LV245APWGS4	QBS Reference: SN74LV245APWGS4	QBS Reference: SN74LV245APWGS4	QBS Reference: SN74LV245APWGS4
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	3/231/0	3/231/0	-	1/77/0
UHAIST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	-	3/231/0	3/231/0	-	-
UHAIST	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	-	-	-	-	-	-	-	3/300/0	3/300/0	-	1/100/0
ESD	E2	ESD CDM	-	2000 Volts	-	-	-	-	-	-	1/30/0	-	-	-
ESD	E2	ESD CDM	-	250 Volts	1/30/0	-	-	-	-	-	-	-	1/30/0	-
ESD	E2	ESD CDM	-	500 Volts	-	-	-	-	-	-	-	1/30/0	-	1/30/0
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	-	-	-	-	1/30/0	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	-	-	-	-	1/30/0	-	1/30/0
ESD	E2	ESD HBM	-	5000 Volts	-	-	-	-	-	-	1/30/0	-	-	-
LU	E4	Latch-Up	Per JEDEC78	-	-	-	-	-	-	-	1/60/0	1/60/0	1/30/0	1/60/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/300/0	1/300/0	1/300/0	1/300/0	1/300/0	1/300/0	-	-	1/300/0	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	-	-	-	3/900/0	3/900/0	-	3/900/0

- QBS - Qual By Similarity
- Qual Device SN74AHCT245PWR is qualified at MSL1 260C
- Qual Device SN74AHCT245PWG4 is qualified at MSL1 260C
- Qual Device SN74AHCT245PWR is qualified at MSL1 260C
- Qual Device SN74AHCT245PWG4 is qualified at MSL1 260C
- Qual Device SN74LV245APWR is qualified at MSL1 260C
- Qual Device SN74LV245APWGS4 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 HTOL options based on an activation energy of 0.7eV: 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JEDEC47: -55C/125C/100 Cycles and -55C/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

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	-	-
UHAIST	A3	Autoclave	121C/15psig	96 Hours	-	-	3/231/0	-	-
UHAIST	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: SN74AHC100PWR	Qual Device: SN74AHC20PWR	Qual Device: SN74AHC108PWR	Qual Device: SN74AHC74PWR	Qual Device: SN74AHC132PWR	QBS Reference: SN74AHC574QPWRQ1	QBS Reference: SN74LV4108BWBQAPQ1	QBS Reference: SN74LV4108PWR	QBS Referen SN74LV4100P
HAST	A2	Biased HAST	130C/85%PH	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: SN74AHC100PWR	Qual Device: SN74AHC102PWR	Qual Device: SN74AHC108PWR	Qual Device: SN74AHC174PWR	Qual Device: SN74AHC132PWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LV4108QWBQARQ1	QBS Reference: SN74LV4108PWR	QBS Reference: SN74LV4100PWR
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot and cold	-	-	-	-	-	-	3/90/0	3/90/0	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHC100PWR is qualified at MSL1 260C
- Qual Device SN74AHC102PWR is qualified at MSL1 260C
- Qual Device SN74AHC108PWR is qualified at MSL1 260C
- Qual Device SN74AHC174PWR is qualified at MSL1 260C
- Qual Device SN74AHC132PWR 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: P-CHG-2305-035

TI Information
Selective Disclosure

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: SN74AHC102PWR	Qual Device: SN74AHC100PWR	Qual Device: SN74AHC108PWR	Qual Device: SN74AHC132PWR	Qual Device: SN74AHC174PWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74PWR	QBS Reference: SN74LV4108QWBQARQ1	QBS Reference: SN74LV4108PWR
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: SN74AHC102PWR	Qual Device: SN74AHC100PWR	Qual Device: SN74AHC108PWR	Qual Device: SN74AHC132PWR	Qual Device: SN74AHC174PWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74PWR	QBS Reference: SN74LV4108QWBQARQ1	QBS Reference: SN74LV4108PWR
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 SN74AHC102PWR is qualified at MSL1 260C
- Qual Device SN74AHC100PWR is qualified at MSL1 260C
- Qual Device SN74AHC108PWR is qualified at MSL1 260C
- Qual Device SN74AHC132PWR is qualified at MSL1 260C
- Qual Device SN74AHC174PWR 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: P-CHG-2305-056

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	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74LV244ANSR	Qual Device: SN74LV273ANSR	Qual Device: SN74LV541ANSR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LVC8T245NSR	QBS Reference: SN74LV244AQWRKSRQ1
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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