

PCN Number:	20231219000.1	PCN Date:	December 21, 2023
Title:	Qualification of additional Fab site (RFAB) using qualified Process Technology and additional Assembly Site/BOM options for select devices		
Customer Contact:	Change Management team	Dept:	Quality Services
Proposed 1st Ship Date:	Mar 19, 2024	Sample Requests accepted until:	Jan 20, 2024*
*Sample requests received after Jan 20, 2024 will not be supported.			
Change Type:			
<input checked="" type="checkbox"/> Assembly Site	<input checked="" type="checkbox"/> Design	<input type="checkbox"/> Wafer Bump Material	
<input checked="" type="checkbox"/> Assembly Process	<input type="checkbox"/> Data Sheet	<input type="checkbox"/> Wafer Bump Process	
<input checked="" type="checkbox"/> Assembly Materials	<input type="checkbox"/> Part number change	<input checked="" type="checkbox"/> Wafer Fab Site	
<input type="checkbox"/> Mechanical Specification	<input type="checkbox"/> Test Site	<input checked="" type="checkbox"/> Wafer Fab Materials	
<input checked="" type="checkbox"/> Packing/Shipping/Labeling	<input type="checkbox"/> Test Process	<input checked="" type="checkbox"/> Wafer Fab Process	

PCN Details

Description of Change:

Qualification of additional Fab site (RFAB) using qualified Process Technology and additional BOM options for the list of devices in the product affected section below.

Current Fab Site			Additional Fab site		
Current Fab Site	Process	Wafer Diameter	Additional Fab site	Process	Wafer Diameter
SFAB	HCMOS	150mm	RFAB	LBC9	300mm

The die was also changed as a result of the process change.

Construction differences are noted below:

Group 2 BOM Table (RFAB/Process migration, Die Change & BOM update):

	Current	Additional
Bond wire composition, diameter	Cu, 0.96 mil	Au, 0.8 mil

Group 3 BOM Table (RFAB/Process migration, Die Change & Qualify CDAT & TIPI as an additional Assembly site):

	HFTF	NFME	ASEWH	HNA	CDAT	TIPI
Mount Compound	SID# A-03	SID# A-03	SID#1120999A2	SID#400180	4207123	8095733
Bond wire composition, diameter	Cu, 1.0 mil	Cu, 1.0 mil	Au, 1.0 mil	Cu, 1.0 mil	Cu, 0.8 mil	Cu, 0.8 mil
Mold Compound	SID#R-27	SID#R-17	SID#4020039A1	SID#450413	4222198	4222198
Pin one Mark	stripe	stripe	stripe	stripe	dot	dot

Group 4 BOM Table (RFAB/Process migration, Die Change & Qualify CDAT (from MLA) as an additional Assembly site):

	MLA	CDAT
Mold Compound	4208625	4222198
Bond wire composition, diameter	Cu, 1.0 mil	Cu, 0.8 mil
Mount Compound	4205846	4207123

Group 5 BOM table (RFAB/Process migration, Die Change & Qualify TIPI as an additional Assembly site):

	NFME	TIPI
Mold Compound	SID#R-17	4222198
Bond wire composition, diameter	Au, 0.8 mil	Cu, 0.8 mil
Mount Compound	SID# A-03	8095733
Pin one Mark	stripe	dot

Qual details are provided in the Qual Data Section.

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
<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
RFAB	RFB	USA	Richardson

Die Rev:

Current

New

Die Rev [2P]	Die Rev [2P]
A, B, C, H, J, -	A

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
NFME	NFM	CHN	Economic Development ZoneA
ASEWH	AWH	CHN	Weihai
HNA	HNT	THA	Ayutthaya
MLA	MLA	MYS	KUALA LUMPUR
HFTF	HFT	CHN	Hefei
CDAT	CDA	CHN	Chengdu
TIPI	PHI	PHL	Baguio City

Sample product shipping label (not actual product label):

TEXAS INSTRUMENTS
 MADE IN: Malaysia
 2DC: 20:
 MSL 2 /260C/1 YEAR SEAL DT
 MSL 1 /235C/UNLIM 03/29/04
 OPT: 39
 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) GSO: SHE (21L) CCO:USA
 (22L) ASO: MLA (23L) ACO: MYS

Product Affected:

Group 2 Device list (RFAB/Process migration, Die Change & BOM update):

CD74AC244M96	CD74ACT540M96	SN74AC573DWRG4	SN74ACT564DWR
CD74AC273M96	CD74ACT541M96	SN74AC574DWR	SN74ACT564NSR
CD74AC373M96	CD74ACT541M96E4	SN74ACT240DWR	SN74ACT573DWR
CD74AC541M96	CD74ACT541M96G4	SN74ACT244DBR	SN74ACT574DWR
CD74AC541M96E4	CD74ACT541SM96	SN74ACT244DWR	SN74ACT574NSR
CD74AC574M96	SN74AC240DWR	SN74ACT244DWRE4	SN74AHC02DR
CD74AC574M96G4	SN74AC244DWR	SN74ACT244DWRG4	SN74AHC126DR
CD74ACT244M96	SN74AC373DWR	SN74ACT244NSR	SN74AHC132DR
CD74ACT273M96	SN74AC373DWRE4	SN74ACT244NSRG4	SN74AHC32DR
CD74ACT273M96E4	SN74AC374DWR	SN74ACT373DBR	SN74AHC14DBR
CD74ACT273SM96	SN74AC534NSR	SN74ACT373DWR	SN74AHCT04NSR
CD74ACT374M96	SN74AC573DWR	SN74ACT374NSR	SN74AHCT126NSR

Group 3 Device list (RFAB/Process migration, Die Change & Qualify CDAT & TIPI as an additional Assembly site):

SN74AHC1G00DBVR	SN74AHC1G14DBVR	SN74AHCT1G125DBVR	SN74LV1T08DBVR
SN74AHC1G02DBVR	SN74AHC1G32DBVR	SN74AHCT1G126DBVR	SN74LV1T125DBVR
SN74AHC1G04DBVR	SN74AHC1G86DBVR	SN74AHCT1G14DBVR	SN74LV1T126DBVR
SN74AHC1G08DBVR	SN74AHCT1G00DBVR	SN74AHCT1G32DBVR	SN74LV1T32DBVR
SN74AHC1G09DBVR	SN74AHCT1G02DBVR	SN74AHCT1G86DBVR	SN74LV1T34DBVR
SN74AHC1G125DBVR	SN74AHCT1G04DBVR	SN74LV1T00DBVR	SN74LV1T86DBVR
SN74AHC1G126DBVR	SN74AHCT1G08DBVR	SN74LV1T04DBVR	

Group 4 Device list (RFAB/Process migration, Die Change & Qualify CDAT (from MLA) as an additional Assembly site):

SN74AHC00RGYR	SN74AHC125RGYR	SN74AHC74RGYR	SN74AHCT02RGYR
SN74AHC08RGYR	SN74AHC14RGYR	SN74AHC74RGYRG4	SN74AHCT125RGYR

Group 5 Device list (RFAB/Process migration, Die Change & Qualify TIPI as an additional Assembly site):

74AHCT1G32DBVRG4	SN74AHC1G14DBVRE4	SN74AHC1G14DBVRG4
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Group 6 Device list (RFAB/Process migration, Die Change & Qualify only):

CD74ACT273PWR	SN74AC244NSR	SN74AC574PWR	SN74ACT374PWR
SN74AC240NSR	SN74AC244PWR	SN74AC574PWRG4	SN74ACT564PWR
SN74AC240PWR	SN74AC373PWR	SN74ACT240PWR	SN74ACT573PWR
SN74AC240PWRE4	SN74AC573PWR	SN74ACT241PWR	SN74ACT574PWR
SN74AC241PWR	SN74AC573PWRE4	SN74ACT373PWR	

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

R-CHG-2310-079

Qualification Report
BD9 Redbull Q423- (RFAB) in FMX using 14-pin D Commercial
Approve Date 01-NOVEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC02DR	Qual Device: SN74AHC132DR	QBS Reference: SN74AHC5740PWRO1	QBS Reference: LM393BIDR	QBS Reference: SN74LV4T080WBOAR01	QBS Reference: SN74AHC102BQAR	QBS Reference: SN74AHC104DR	QBS Reference: SN74AHC132DR	QBS Reference: SN74AHC02DR
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	-	1/45/0	-	-	-	-
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	-	-	-	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	1/77/0	-	-	-	-
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	-	1/10/0	-	-	-	-
ESD	E2	ESD CDM	-	250 Volts	-	-	-	2/6/0	-	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: SN74AHC02DR	Qual Device: SN74AHC132DR	QBS Reference: SN74AHC5740PWRO1	QBS Reference: LM393BIDR	QBS Reference: SN74LV4T080WBOAR01	QBS Reference: SN74AHC102BQAR	QBS Reference: SN74AHC104DR	QBS Reference: SN74AHC132DR	QBS Reference: SN74AHC02DR
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	2/6/0	-	1/3/0	-	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	1/3/0	-	1/3/0	-	-	-	-
LU	E4	Latch-Up	Per JESD78	-	-	-	16/0	2/6/0	16/0	1/3/0	-	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	-	3/90/0	-	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	-	-	-	-
FTY	E6	Final Test Yield	-	-	-	-	-	1/1/0	-	-	-	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHC02DR is qualified at MSL1 260C
- Qual Device SN74AHC132DR 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-2310-079

Qualification Report

BD9 Redbull Q323- (RFAB) in CDAT using 14-pin RGY
Approve Date 01-NOVEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT02RGYR	Qual Device: SN74AHCT125RGYR	QBS Reference: SN74HCS74QPWR01	QBS Reference: SN74HCS595QBQR01	QBS Reference: SN74LV4T08QWBQAR01	QBS Reference: SN74AHCT02BQAR
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	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	3/135/0	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 Solderability	8 Hours Steam Age	-	-	-	-	1/22/0	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/15/0	-	-	-
SD	C3	PB-Free Solderability	8 Hours Steam Age	-	-	-	-	1/22/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT02RGYR	Qual Device: SN74AHCT125RGYR	QBS Reference: SN74HCS74QPWR01	QBS Reference: SN74HCS595QBQR01	QBS Reference: SN74LV4T08QWBQAR01	QBS Reference: SN74AHCT02BQAR
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
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	-	7000 Volts	-	-	-	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	-	1/6/0	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
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 SN74AHCT02RGYR is qualified at MSL1 260C
- Qual Device SN74AHCT125RGYR 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-2307-006

R-CHG-2307-059

Qualification Report

BD9 Redbull Q423- (RFAB) in MLA using 14-pin DB Commercial
Approve Date 01-NOVEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: <u>SN74AHC14DBR</u>	QBS Reference: <u>SN74HCS244QPWRQ1</u>	QBS Reference: <u>TL494IDR</u>	QBS Reference: <u>TLC320AD77CDBR</u>	QBS Reference: <u>SN74AHCT14BQAR</u>
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	1/77/0	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	-	1/77/0	-	3/231/0	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	1/45/0	-	3/231/0	-
HTOL	B1	Life Test	150C	300 Hours	-	1/77/0	-	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	1/22/0	-	-	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	-	-	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	-	-	-

Type	#	Test Name	Condition	Duration	Qual Device: <u>SN74AHC14DBR</u>	QBS Reference: <u>SN74HCS244QPWRQ1</u>	QBS Reference: <u>TL494IDR</u>	QBS Reference: <u>TLC320AD77CDBR</u>	QBS Reference: <u>SN74AHCT14BQAR</u>
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
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	-	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHC14DBR 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-2307-059

Qualification Report
BD9 Redbull Q323- (RFAB) in MLA using 14-pin NS
Approve Date 01-NOVEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT04NSR	Qual Device: SN74AHCT126NSR	QBS Reference: SN74HC374QPWR01	QBS Reference: SN74LV14ANSR	QBS Reference: SN74LV244AODGSR01	QBS Reference: SN74LV273AODGSR01	QBS Reference: SN74LV541AODGSR01	QBS Reference: SN74LV4T080WB0AR01	QBS Reference: SN74AHCT140WB0AR01	QBS Reference: SN74AHCT14DR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/2310	-	1/770	1/770	1/770	1/770	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	3/2310	1/770	1/770	1/770	1/770	1/770	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	-	-	-	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/2310	1/770	1/770	1/770	1/770	1/770	-	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	3/1350	-	1/450	1/450	1/450	1/450	-	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	-	-	-	-	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	3/2310	-	1/770	-	-	-	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	-	-	1/770	-	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	3/24000	-	-	-	-	-	-	-
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	-	-	-	1/760	-	-	-	-	-	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	-	-	-	1/760	-	-	-	-	-	-
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/150	-	1/150	-	-	-	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/150	-	1/150	-	-	-	-	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes), PB-Free Solder	-	-	1/220	-	-	-	-	-	-	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/900	-	1/100	1/100	1/100	1/100	-	-
ESD	E2	ESD CDM	-	350 Volts	-	-	-	1/30	-	-	-	-	-	1/30
ESD	E2	ESD CDM	-	500 Volts	-	-	1/30	-	1/30	1/30	1/30	1/30	1/30	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	1/30	-	1/30	1/30	1/30	1/30	1/30	-
LU	E4	Lash-Up	Per JE5078	-	-	-	1/60	-	1/60	1/60	1/60	1/60	1/60	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT04NSR	Qual Device: SN74AHCT126NSR	QBS Reference: SN74HC374QPWR01	QBS Reference: SN74LV14ANSR	QBS Reference: SN74LV244AODGSR01	QBS Reference: SN74LV273AODGSR01	QBS Reference: SN74LV541AODGSR01	QBS Reference: SN74LV4T080WB0AR01	QBS Reference: SN74AHCT140WB0AR01	QBS Reference: SN74AHCT14DR
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/300	1/300	-	1/300	-	-	-	-	-	1/300
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/900	-	1/300	1/300	3/900	1/300	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHCT04NSR is qualified at MSL1 260C
- Qual Device SN74AHCT126NSR is qualified at MSL1 260C

- Preconditioning was performed for Autoclave, Unbiased HAST, THBiased 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 JE5078: -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-2307-005

Qualification Report

BD9 Redbull Q423- (RFAB) in MLA using 14-pin D Commercial
Approve Date 01-NOVEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC02DR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74QDRQ1	QBS Reference: SN74AHC02BQAR	QBS Reference: SN74AHC04DR
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	-	-
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	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	3/45/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC02DR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74HCS74QDRQ1	QBS Reference: SN74AHC02BQAR	QBS Reference: SN74AHC04DR
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	3/45/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	3/30/0	-	-
ESD	E2	ESD CDM	-	250 Volts	1/3/0	-	-	1/3/0	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
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	3/90/0	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHC02DR 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-2309-034

Qualification Report

Commercial for Gatorade BD13 (RFAB/LBC9) in CDAT 5 DBV Group 1
Approve Date 13-NOVEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT1G14DBVR	Qual Device: SN74AHCT1G125DBVR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: TLV9061IDBVR	QBS Reference: TPS3840PH30DBVRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	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	-	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
HTOL	B1	Life Test	150C	300 Hours	-	-	-	3/231/0	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	3/2400/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: <u>SN74AHCT1G14DBVR</u>	Qual Device: <u>SN74AHCT1G125DBVR</u>	QBS Reference: <u>SN74HCS74QPWRQ1</u>	QBS Reference: <u>TLV9061IDBVR</u>	QBS Reference: <u>TPS3840PH30DBVRQ1</u>
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	-	-	-	3/228/0	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	-	-	-	3/228/0	-
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;	-	-	-	-	3/66/0	-
PD	C4	Physical Dimensions	(per mechanical drawing)	-	-	-	-	3/15/0	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	-	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	-	-	1/3/0	1/6/0	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	1/30/0	-	-	-

Type	#	Test Name	Condition	Duration	Qual Device: <u>SN74AHCT1G14DBVR</u>	Qual Device: <u>SN74AHCT1G125DBVR</u>	QBS Reference: <u>SN74HCS74QPWRQ1</u>	QBS Reference: <u>TLV9061IDBVR</u>	QBS Reference: <u>TPS3840PH30DBVRQ1</u>
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0	-	3/90/0
FTY	E6	Final Test Yield	-	-	-	-	3/3/0	-	-

- QBS: Qual By Similarity
- Qual Device SN74AHCT1G14DBVR is qualified at MSL1 260C
- Qual Device SN74AHCT1G125DBVR 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-2303-096

R-CHG-2303-097

Qualification Report
 Approve Date 06-DECEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT1G14DBVR	Qual Device: SN74AHCT1G125DBVR	QBS Reference: SN74LV1T34QDCKRQ1	QBS Reference: SN74HC574QPWRQ1	QBS Reference: TLV9001DBVR	QBS Reference: SN74LV1T125QDCKRQ1	QBS Reference: SN74AHCT1G125DBVR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	1/77/0	3/231/0	3/231/0	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	1/77/0	3/231/0	-	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	3/231/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	1/77/0	3/231/0	3/231/0	-	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	1/45/0	3/135/0	3/231/0	-	-
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	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	-	-	-	1/10/0	3/300	-	1/10/0	-
ESD	E2	ESD CDM	-	250 Volts	-	-	-	-	1/3/0	-	1/3/0

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHCT1G14DBVR	Qual Device: SN74AHCT1G125DBVR	QBS Reference: SN74LV1T34QDCKRQ1	QBS Reference: SN74HC574QPWRQ1	QBS Reference: TLV9001DBVR	QBS Reference: SN74LV1T125QDCKRQ1	QBS Reference: SN74AHCT1G125DBVR
ESD	E2	ESD CDM	-	500 Volts	-	-	1/3/0	1/3/0	-	1/3/0	-
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	-	1/3/0	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	-	1/3/0	1/3/0	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	-	1/6/0	1/6/0	1/3/0	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
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0	3/90/0	-	1/30/0	-

- QBS: Qual By Similarity
- Qual Device SN74AHCT1G14DBVR is qualified at MSL1 260C
- Qual Device SN74AHCT1G125DBVR 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 TTs external Web site: <http://www.ti.com/>

TI Qualification ID: R-CHG-2303-097

Qualification Report

Commercial for Gatorade BD13 TIPI G4 device
Approve Date 08-DECEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: 74AHCT1G32DBVRG4	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: TLV9001IDBVR	QBS Reference: SN74LV1T125QDCKRQ1	QBS Reference: SN74AHCT1G125DBVR
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	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	-	-	-

Type	#	Test Name	Condition	Duration	Qual Device: 74AHCT1G32DBVRG4	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: TLV9001IDBVR	QBS Reference: SN74LV1T125QDCKRQ1	QBS Reference: SN74AHCT1G125DBVR
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	-	1/10/0	-
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	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	-	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	1/6/0	1/3/0	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	-	1/30/0	-

- QBS: Qual By Similarity
- Qual Device 74AHCT1G32DBVRG4 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-2310-022

R-CHG-2306-037

Qualification Report
 Approve Date **11-DECEMBER -2023**

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AC244PWR	Qual Device: SN74AC373PWR	Qual Device: SN74AC573PWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LVBT245QPWRQ1	QBS Reference: SN74AC244QWRKSRQ1	QBS Reference: SN74AC373DWR	QBS Reference: SN74ACT564DWR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	1/77/0	1/77/0	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0	-	-	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	1/77/0	1/77/0	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	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	-	-	-	-	1/45/0	1/45/0	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	3/231/0	-	-	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	1/77/0	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	1/10/0	1/10/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74AC244PWR	Qual Device: SN74AC373PWR	Qual Device: SN74AC573PWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: SN74LVBT245QPWRQ1	QBS Reference: SN74AC244QWRKSRQ1	QBS Reference: SN74AC373DWR	QBS Reference: SN74ACT564DWR
ESD	E2	ESD CDM	-	250 Volts	1/3/0	1/3/0	1/3/0	-	-	-	1/3/0	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	-	-	1/3/0	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	1/3/0	-	-
LU	E4	Latch-Up	Per JESD78	-	-	-	-	1/6/0	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
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	3/90/0	3/90/0	2/60/0	-	-

- QBS: Qual By Similarity
- Qual Device SN74AC244PWR is qualified at MSL1 260C
- Qual Device SN74AC373PWR is qualified at MSL1 260C
- Qual Device SN74AC573PWR 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-2306-037

Qualification Report
 Approve Date 11-DECEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: CD74AC541M96	Qual Device: CD74ACT540M96	Qual Device: SN74AC244DWR	Qual Device: SN74ACT32DWR	Qual Device: SN74ACT540DWR	QBS Reference: TL9302200B01	QBS Reference: SN74ACT540DWR01	QBS Reference: SN74ACT540DWR	QBS Reference: SN74ACT540DWR	QBS Reference: SN74ACT540DWR01	QBS Reference: SN74ACT540DWR01
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	3/2310	3/2310	-	-	-	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	-	3/2310	-	-	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	-	3/2310	-	-	-	-	-
TC	A4	Temperature Cycle	65C/150C	500 Cycles	-	-	-	-	-	3/2310	3/2310	1/770	1/770	-	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	3/1350	3/1350	-	-	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	-	-	-	3/2310	-	-	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	-	1/770	-	-	-	-	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	3/24000	-	-	-	-
SD	C3	PB Solderability	Precondition w/155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/150	1/150	-	-	-	-
SD	C3	PB-Free Solderability	Precondition w/155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	-	-	-	1/150	1/150	-	-	-	-
SD	C3	PB-Free Solderability	Precondition w/155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder	-	-	1/220	-	-	-	-	-	-	-	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	-	-	-	3/300	3/300	-	-	-	-
ESD	E2	ESD CDM	-	250 Volts	1/30	-	1/30	1/30	1/30	-	-	1/30	1/30	-	-
ESD	E2	ESD CDM	-	500 Volts	-	-	-	-	-	1/30	1/30	-	-	1/30	1/30
ESD	E2	ESD HBM	-	1000 Volts	-	-	-	1/30	-	-	-	-	1/30	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	-	-	1/30	1/30	-	-	1/30	1/30
LU	E4	Latch-Up	Per JE5078	-	-	-	-	1/30	-	1/60	1/60	-	1/30	1/60	1/60
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/300	1/300	1/300	1/300	1/300	-	-	1/300	1/300	-	-
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	-	-	3/300	3/300	-	-	1/300	1/300

- QBS: Qual By Similarity
- Qual Device CD74AC541M96 is qualified at MSL1 260C
- Qual Device CD74ACT540M96 is qualified at MSL1 260C
- Qual Device SN74AC244DWR is qualified at MSL1 260C
- Qual Device SN74ACT32DWR is qualified at MSL1 260C
- Qual Device SN74ACT540DWR 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 JE5047 : -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 2306-033

Qualification Report
Approve Date 11-DECEMBER -2023

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74AC244NSR	Qual Device: SN74ACT564NSR	QBS Reference: SN74HCS74QPWR01	QBS Reference: SN74LV14ANSR	QBS Reference: SN74LVC8T245NSR	QBS Reference: SN74ACT564DWR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	-	-	-
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	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	-	-	-
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	-	-	-	1/76/0	-	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	-	-	-	1/76/0	-	-
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	-	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	-	1/3/0	-	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	1/3/0	-	-	-

Type	#	Test Name	Condition	Duration	Qual Device: SN74AC244NSR	Qual Device: SN74ACT564NSR	QBS Reference: SN74HCS74QPWR01	QBS Reference: SN74LV14ANSR	QBS Reference: SN74LVC8T245NSR	QBS Reference: SN74ACT564DWR
LU	E4	Latch-Up	Per JESD78	-	-	-	1/6/0	-	-	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	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 SN74AC244NSR is qualified at MSL1 260C
- Qual Device SN74ACT564NSR 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-2306-034

Qualification Report
Approve Date 11-DECEMBER -2023

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:	QBS Reference:	QBS Reference:	QBS Reference:	QBS Reference:	QBS Reference:
					CD74ACT273SM96	CD74ACT541SM96	SN74ACT244DBR	SN74ACT373DBR	SN74HCS244OPWR01	D_42310R	TLC320AD77CDBR	SN74AC244RKSR	CD74AC541M96
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	1/77/0	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	-	-	-	-	1/77/0	-	3/231/0	1/77/0	-
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	145/0	-	3/231/0	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	1/77/0	-	-	-	-
SD	C3	PB-Free Solderability	Precondition w/155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	-	1/22/0	-	-	-	-	-	-
ESD	E2	ESD CDM	-	250 Volts	-	1/3/0	1/3/0	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 JE5D78	-	-	-	-	-	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	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 CD74ACT273SM96 is qualified at MSL1 260C
- Qual Device CD74ACT541SM96 is qualified at MSL1 260C
- Qual Device SN74ACT244DBR is qualified at MSL1 260C
- Qual Device SN74ACT373DBR 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/>

TI Qualification ID: R-CHG-2306-035

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