12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20240306003.1
Qualification of RFAB using qualified Process Technology, Die Revision and additional Assembly site/BOM options for select devices
Change Notification / Sample Request

Date: March 06, 2024
To: Digi-Key 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

20240306003.1
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
TLV2760IDBVR	NULL
TLV2761IDBVR	NULL
TLV2762IDGKR	NULL
TLV2764IDR	NULL
TLV2764IPWR	NULL
TLV2771CDBVR	NULL
TLV2771IDBVR	NULL
TLV2772CDR	NULL
TLV2772IDGKR	NULL
TLV2772IDR	NULL
TLV2774CDR	NULL
TLV2774CPWR	NULL
TLV2780CDBVR	NULL
TLV2780IDBVR	NULL
TLV2780IDBVT	NULL
TLV2781CDBVT	NULL
TLV2781IDBVR	NULL
TLV2781IDBVT	NULL
TLV2782CDGKR	NULL
TLV2782IDGKR	NULL
TLV2783IDGSR	NULL

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

PCN Number:	20240306003.1	PCN Date:	March 06, 2024
Title:	Qualification of RFAB using qualified Process Technology, Die Revision and additional Assembly site/BOM options for select devices		
Customer Contact:	Change Management Team	Dept:	Quality Services
Proposed 1st Ship Date:	June 04, 2024	Sample requests accepted until:	April 05, 2024*

***Sample requests received after April 05, 2024 will not be supported.**

Change Type:

☒	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 its RFAB fabrication facility as an additional Wafer Fab option in addition to an Assembly site/BOM options for the devices listed below.

Current Fab Site			Additional Fab Site		
Fab Site	Process	Wafer Diameter	Fab Site	Process	Wafer Diameter
DL-LIN	A21	150 mm	RFAB / DMOS6	LBC9	300 mm
DL-LIN	A24	150 mm			

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

Additionally, there will be Assembly site & BOM options introduced for these devices as follows:

Group 1 Device:

	LEN	TFME	TIPI	CDAT
Wire diam/type	1.0mil Au	1.0mil Au	0.8mil Cu	0.8mil Cu
Mount compound	0003C10332	A-03	4207123	4207123
Mold compound	0011G60007	0011G60007	4222198	4222198
Lead finish	NiPdAu	NiPdAu	NiPdAu	Matt-Sn

Group 2 Device:

	FMX	MLA
Wire diam/type	0.96mil Cu	0.8mil Cu

Group 3 Device:

	HNA	ASESH	HFTF	MLA
Wire diam/type	1.0mil Au	1.0mil Au	0.8mil Cu	0.8mil Cu
Mount compound	400180	EY1000063	A-18	4147858
Mold compound	450179	EN2000763	R-30	4211880
Lead finish	NiPdAu	NiPdAu	Matte Sn	NiPdAu

Group 4 Device:

	HNA	ASESH
Wire diam/type	1.0mil Au	0.8mil Cu
Mount compound	400180	EY1000063
Mold compound	450179	EN2000515
Lead finish	NiPdAu	NiPdAuAg
MSL	1	2

Group 5 Device:

	FMX	TAI	MLA
Wire diam/type	0.96mil Cu	0.96mil Cu	0.8mil Cu

Group 6 Device:

	Current	Proposed
Wire diam/type	0.96mil Au / Cu	0.8mil Cu

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 200-millimeter factories to newer, more efficient manufacturing processes and technologies, underscoring our commitment to product longevity and supply continuity.

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None

Impact on Environmental Ratings:

Checked boxes indicate the status of environmental ratings following implementation of this change. If below boxes are checked, there are no changes to the associated environmental ratings.

RoHS	REACH	Green Status	IEC 62474
☒ 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
DL-LIN	DLN	USA	Dallas
RFAB	**RFB**	**USA**	**Richardson**
DMOS6	**DM6**	**USA**	**Dallas**

Die Rev:

Current	New
Die Rev [2P]	**Die Rev [2P]**
A	A, B, C, S

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
LEN	LIN	TWN	Taichung
TFME	NFM	CHN	Chongchuan
HNA	HNT	THA	Ayutthaya
FMX	MEX	MEX	Aguascalientes
TAI	TAI	TWN	Chung Ho, New Taipei City
ASESH	**ASH**	**CHN**	**Shanghai**
MLA	**MLA**	**MYS**	**Kuala Lumpur**
TIPI	**PHI**	**PHL**	**Baguio City**
CDAT	**CDA**	**CHN**	**Chengdu**
HFTF	**HFT**	**CHN**	**Hefei**

Sample product shipping label (not actual product label):

Product Affected:

Group 1 Device: Wafer Fab site, Assembly site

TLV2761IDBVR	TLV2771IDBVR	TLV2781CDBVR	TLV2780IDBVT
TLV2760IDBVR	TLV2781IDBVR	TLV2781CDBVT	TLV2780CDBVR
TLV2771CDBVR	TLV2781IDBVT	TLV2780IDBVR	

Group 2 Device: Wafer Fab site, Assembly site

TLV2762CDR	TLV2772AIDR	TLV2772CDR
TLV2762IDR	TLV2772IDR	TLV2782IDR

Group 3 Device: Wafer Fab site, Assembly site

TLV2762IDGKR	TLV2772CDGKR	TLV2782CDGKR
TLV2762CDGKR	TLV2772IDGKR	TLV2782IDGKR

Group 4 Device: Wafer Fab site, Assembly site

TLV2783IDGSR

Group 5 Device: Wafer Fab site, Assembly site

TLV2764IDR	TLV2774CDR	TLV2784IDR
TLV2774AIDR	TLV2774IDR	

Group 6 Device: Wafer Fab site, BOM change

TLV2764IPWR	TLV2772QPWRG4	TLV2774IPWR	TLV2784IPWR
TLV2772QPWR	TLV2774CPWR	TLV2784CPWR	

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

Qualification Results

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

	Type	Test Name / Condition	Duration	Qual Device: TLV9041IDBVR	QBS Product Reference: TLV9041SIDBVR	QBS Product Reference: TLV9044IDR	QBS Process Reference: BQ25910YFFR	QBS Package Reference: OPA990IDBVR
	PC	PreCon Level 1	Level 1-260C	-	1/79/0	-	-	6/933/0
	PC	PreCon Level 2	Level 2-260C	-	-	1/159/0	-	3/246/0
	ED	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	3/90/0	1/30/0	3/90/0
	HAST	Biased HAST, 130C/85%RH	96 Hours	-	1/77/0	1/77/0	3/231/0	3/231/0
	AC	Autoclave 121C	96 Hours	-	-	-	-	3/231/0
	UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	3/231/0	-
	TC	Temperature Cycle, -55/125C	700 Cycles	-	-	-	3/231/0	-
	TC	Temperature Cycle, -65/150C	500 Cycles	-	-	1/77/0	-	3/231/0
	HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	3/231/0	3/231/0
	HTOL	Life Test, 140C	480 Hours	-	-	-	3/231/0	-
	HTOL	Life Test, 150C	300 Hours	-	1/77/0	1/77/0	-	-
	ELFR	Early Life Failure Rate, 140C	24 Hours	-	-	-	3/2400/0	-
	HBM	ESD - HBM	3000 V	-	-	-	3/9/0	3/9/0
	HBM	ESD - HBM	4000 V	-	1/3/0	3/9/0	-	-
	CDM	ESD - CDM	1500 V	-	1/3/0	2/6/0	3/9/0	3/9/0

	Type	Test Name / Condition	Duration	Qual Device: TLV9041IDBVR	QBS Product Reference: TLV9041SIDBVR	QBS Product Reference: TLV9044IDR	QBS Process Reference: BQ25910YFFR	QBS Package Reference: OPA990IDBVR
	CDM	ESD - CDM	750 V	-	-	1/3/0	-	-
	LU	Latch-up	Per JESD78	-	1/6/0	3/18/0	3/18/0	3/18/0
	MSL	Moisture Sensitivity	Level 1-260C	-	-	-	-	3/36/0
	WBP	Bond Pull	Wires	1/76/0	1/76/0	1/76/0	1/76/0	3/228/0
	WBS	Ball Bond Shear	Wires	1/76/0	1/76/0	1/76/0	1/76/0	3/228/0

- QBS: Qual By Similarity
- Qual Device TLV9041IDBVR is qualified at LEVEL1-260C
- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable
- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20200611-134610

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV9064IPWR	Qual Device: TLV9054IPWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: TLV9064QDRQ1	QBS Reference: TLV9054IDR	QBS Reference: OPA4991QPWRQ1
HAST	A2	Biased HAST	110C/85%RH	264 Hours	-	-	-	-	-	1/77/0
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	3/231/0	-
UHAST	A3	Autoclave	121C/15psig	96 Hours	0/0/0	0/0/0	0/0/0	0/0/0	0/0/0	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	3/231/0	2/154/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	3/135/0	3/135/0	-	1/45/0
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	1/77/0	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	-	3/231/0

Type	#	Test Name	Condition	Duration	Qual Device: TLV9064IPWR	Qual Device: TLV9054IPWR	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: TLV9064QDRQ1	QBS Reference: TLV9054IDR	QBS Reference: OPA4991QPWRQ1
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	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	3/30/0	-	1/10/0
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	1/3/0	-	-
ESD	E2	ESD HBM	-	4000 Volts	-	-	-	-	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	-	1/6/0	1/6/0	1/6/0	3/18/0
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	-	3/90/0

- QBS: Qual By Similarity

- Qual Device TLV9064IPWR is qualified at MSL1 260C
- Qual Device TLV9054IPWR 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-2306-019

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

	Type	Test Name / Condition	Duration	Qual Device: TLV9042IDGK	QBS Product Reference: TLV9042IDR	QBS Process Reference: TLV9062ID	QBS Package Reference: LM5008MM_PCC
	PC	PreCon Level 2	Level 2-260C	-	-	3/1280/0	-
	PC	PreCon Level 1	Level 1 - 260C	-	-	-	3/693/0
	ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	1/30/0	3/90/0	-
	HAST	Biased HAST, 130C	96 Hours	-	-	3/231/0	3/231/0
	HAST	Unbiased HAST, 130C	96 Hours	-	-	3/231/0	3/231/0
	TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0	3/231/0
	HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	3/231/0	3/231/0
	HTOL	Life Test, 150C	300 Hours	-	3/231/0	3/231/0	-
	ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	3/2400/1 (1)	-
	HBM	ESD - HBM	4000 V	1/3/0	1/3/0	2/6/0	-
	CDM	ESD - CDM	1500 V	1/3/0	1/3/0	3/9/0	-
	LU	Latch-up	Per JESD78	-	1/6/0	3/18/0	-
	MSL	Moisture Sensitivity, L1	Level 1 - 260C	-	-	-	3/36/0
	MSL	Moisture Sensitivity, L2	Level 2-260C	-	-	3/36/0	-
	WBP	Bond Pull	Wires	1/76/0	1/76/0	1/76/0	3/228/0
	WBS	Ball Bond Shear	Wires	1/76/0	1/76/0	1/76/0	3/228/0

- QBS: Qual By Similarity

- Qual Device TLV9042IDGK is qualified at LEVEL1-260C
- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable
- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Note (1): One unit failed die EOS, discounted.

TI Qualification ID: 20190612-130250

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

Type	Test Name / Condition	Duration	Qual Device: TLV9061IDBVR	QBS Package Reference: TLV9061IDBVR (Matte Sn)	QBS Package Reference: TPS76933DBVR (PHI)
ED	Electrical Characterization, side by side	Per Datasheet Parameters	Pass	-	-
FLAM	Flammability (UL 94V-0)	-	-	-	3/15/0
FLAM	Flammability (UL-1694)	-	3/15/0	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	-
HTOL	Life Test, 150C	300 Hours	-	3/231/0	-
HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0	-	-
LI	Lead Fatigue	Leads	3/54/0	-	-
LI	Lead Pull	Leads	3/54/0	-	-
MISC	Salt Atmosphere	-	3/66/0	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	-	-
PD	Physical Dimensions	(per mechanical drawing)	3/15/0	-	-
PKG	Lead Finish Adhesion	Leads	3/54/0	-	-
SD	Solderability	Pb Free	3/66/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	-
UHAST	Unbiased HAST 130C/85%RH	96 Hours	3/231/0	-	-
VM	Visual / Mechanical	(per mfg. Site specification)	3/984/0	-	-
WBP	Bond Pull	Wires	3/228/0	-	-
WBS	Ball Bond Shear	Wires	3/228/0	-	-

- QBS: Qual By Similarity
- Qual Device TLV9061IDBVR is qualified at LEVEL1-260C

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20200211-132947

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV9042IPWR	Qual Device: TLV9052IPWR	QBS Reference: TLV9064QDRQ1	QBS Reference: LM2903BQPWRQ1	QBS Reference: TLV9032QDGKRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	3/231/0	1/77/0
UHAST	A3	Unbiased HAST	130C/85%RH	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	-	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	3/135/0	1/77/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	3/231/0	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	3/231/0	1/77/0
HTOL	B1	Life Test	150C	560 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	1/22/0	1/15/0

Type	#	Test Name	Condition	Duration	Qual Device: TLV9042IPWR	Qual Device: TLV9052IPWR	QBS Reference: TLV9064QDRQ1	QBS Reference: LM2903BQPWRQ1	QBS Reference: TLV9032QDGKRQ1
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/15/0	1/22/0	1/15/0
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	3/30/0	-
ESD	E2	ESD CDM	-	1000 Volts	-	-	-	-	1/3/0
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	1/3/0	-
ESD	E2	ESD CDM	-	500 Volts	-	-	1/3/0	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	1/3/0	1/3/0	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	-	1/6/0	-	1/6/0
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 TLV9042IPWR is qualified at MSL1 260C
- Qual Device TLV9052IPWR 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-2401-097

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV9042IDR	Qual Device: TLV9052IDR	QBS Reference: OPA2991QDGKRQ1	QBS Reference: LM2903BQDRQ1	QBS Reference: TLV9052IPWR	QBS Reference: OPA2991QDRQ1	QBS Reference: TLV9044IDR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/2	3/231/0	3/231/0	3/231/0	1/77/0
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	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	3/231/0	3/231/0	3/231/0	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0	-	3/135/0	-
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	3/231/0	-	-
HTSL	A6	High Temperature Storage Life	175C	630 Hours	-	-	3/135/0	-	-	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	3/231/0	-	-	1/77/0
HTOL	B1	Life Test	150C	408 Hours	-	-	3/231/1[1]	-	-	1/77/1[2]	-

Type	#	Test Name	Condition	Duration	Qual Device: TLV9042IDR	Qual Device: TLV9052IDR	QBS Reference: OPA2991QDGKRQ1	QBS Reference: LM2903BQDRQ1	QBS Reference: TLV9052IPWR	QBS Reference: OPA2991QDRQ1	QBS Reference: TLV9044IDR
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	3/2400/4[3]	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	1/15/0	-	-	-
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	-	3/30/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	-	-	-	2/6/0
ESD	E2	ESD CDM	-	250 Volts	-	-	-	-	1/3/0	-	-
ESD	E2	ESD CDM	-	500 Volts	-	-	-	1/3/0	-	1/3/0	-
ESD	E2	ESD CDM	-	750 Volts	-	-	-	-	-	-	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	-
ESD	E2	ESD HBM	-	4000 Volts	-	-	-	-	-	-	3/9/0
LU	E4	Latch-Up	Per JESD78	-	-	-	1/6/0	1/6/0	1/6/0	1/6/0	3/18/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	3/90/0	3/90/0	1/30/0	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device TLV9042IDR is qualified at MSL1 260C
- Qual Device TLV9052IDR 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-2401-092

[1]-One unit failed Vio due to bad BI socket contact
[2]-HTOL failed due to rejects mixed back in with tested good units
[3]-Three units failed Vio due to bad BI socket contact
one EOS failure due to reverse-insertion

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV9044IDR	Qual Device: TLV9054IDR	QBS Reference: OPA2991QDGKRQ1	QBS Reference: TLV9064QDRQ1	QBS Reference: TLV9062QDRQ1	QBS Reference: OPA4991QDRQ1	QBS Reference: OPA2991QDRQ1	QBS Reference: TLV9044IDR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/2	3/231/0	3/231/0	3/231/0	3/231/0	1/77/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	3/231/0	-	3/231/0	3/231/0	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	-	-	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	2/154/0	2/154/0	-	1/77/0
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	-	1/45/0	-	-
HTSL	A6	High Temperature Storage Life	175C	630 Hours	-	-	3/135/0	-	-	-	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	-	3/231/0	-	-	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	-	-	-	-	1/77/0
HTOL	B1	Life Test	150C	408 Hours	-	-	3/231/1[1]	-	1/77/0	1/77/0	1/77/1[2]	-
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	-	3/2400/4[3]	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

Type	#	Test Name	Condition	Duration	Qual Device: TLV9044IDR	Qual Device: TLV9054IDR	QBS Reference: OPA2991QDGKRQ1	QBS Reference: TLV9064QDRQ1	QBS Reference: TLV9062QDRQ1	QBS Reference: OPA4991QDRQ1	QBS Reference: OPA2991QDRQ1	QBS Reference: TLV9044IDR
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/15/0	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	1/15/0	-	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	3/30/0	3/30/0	-	3/30/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	-	-	1/3/0	-	2/6/0
ESD	E2	ESD CDM	-	500 Volts	-	-	-	1/3/0	-	-	1/3/0	-
ESD	E2	ESD CDM	-	750 Volts	-	-	-	-	-	-	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	-	1/3/0	1/3/0	-	-	1/3/0	-
ESD	E2	ESD HBM	-	4000 Volts	-	-	-	-	-	1/3/0	-	3/9/0
LU	E4	Latch-Up	Per JESD78	-	-	-	1/6/0	1/6/0	-	1/6/0	1/6/0	3/18/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	3/90/0	3/90/0	2/60/0	3/90/0	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device TLV9044IDR is qualified at MSL1 260C
- Qual Device TLV9054IDR 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-2401-093

[1]-One unit failed Vio due to bad BI socket contact
[2]-HTOL failed due to rejects mixed back in with tested good units
[3]-Three units failed Vio due to bad BI socket contact
one EOS failure due to reverse-insertion

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV9044IPWR	QBS Reference: TLV9064QDRQ1	QBS Reference: PTPS38FPUENGDSKRQ1	QBS Reference: OPA4991QPWRQ1	QBS Reference: LM2903BQPWRQ1	QBS Reference: TLV9044IDR
HAST	A2	Biased HAST	110C/85%RH	264 Hours	-	-	-	1/77/0	-	-
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	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	-	-	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	2/154/0	-	1/77/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	3/231/0	2/90/0	-	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	3/135/0	-
HTOL	B1	Life Test	125C	1000 Hours	-	3/231/0	2/154/0	-	-	-
HTOL	B1	Life Test	150C	300 Hours	-	-	-	3/231/0	3/231/0	1/77/0
HTOL	B1	Life Test	150C	560 Hours	-	-	-	-	1/77/0	-

Type	#	Test Name	Condition	Duration	Qual Device: TLV9044IPWR	QBS Reference: TLV9064QDRQ1	QBS Reference: PTPS38FPUENGDSKRQ1	QBS Reference: OPA4991QPWRQ1	QBS Reference: LM2903BQPWRQ1	QBS Reference: TLV9044IDR
ELFR	B2	Early Life Failure Rate	125C	48 Hours	-	3/2400/0	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); PB Solder;	-	-	1/15/0	-	-	1/22/0	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	1/15/0	1/15/0	-	1/22/0	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	3/30/0	1/10/0	3/30/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	1/3/0	1/3/0	2/6/0
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	1/3/0	-	-	-
ESD	E2	ESD CDM	-	750 Volts	-	-	-	-	-	1/3/0
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	1/3/0	-	1/3/0	-
ESD	E2	ESD HBM	-	4000 Volts	-	-	-	1/3/0	-	3/9/0
LU	E4	Latch-Up	Per JESD78	-	-	1/6/0	1/6/0	3/18/0	-	3/18/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	3/90/0	-	3/90/0	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device TLV9044IPWR 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-2401-095

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV9052IDGKR	Qual Device: TLV9062IDGKR	QBS Reference: PCM6260QRTVRQ1	QBS Reference: SN74LV244AQDGSRQ1	QBS Reference: TLV9052IPWR	QBS Reference: SN74HCS244DGSR	QBS Reference: TLV1812QDGKRQ1	QBS Reference: SN74ACT244QDGSRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	1/77/0	3/231/0	-	1/77/0	1/77/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	1/77/0	-	-	-	-
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	-	3/231/0	-	3/231/0	1/77/0	1/77/0	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	1/77/0	3/231/0	1/77/0	1/77/0	1/77/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	-	3/231/0	-	-	-
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	-	-	-	-	1/77/0	1/45/0
HTOL	B1	Life Test	125C	1000 Hours	-	-	3/231/0	1/77/0	-	-	-	1/77/0
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	-	-	1/15/0	-
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	-	1/15/0	1/15/0	-	1/22/0	1/15/0	1/15/0

Type	#	Test Name	Condition	Duration	Qual Device: TLV9052IDGKR	Qual Device: TLV9062IDGKR	QBS Reference: PCM6260QRTVRQ1	QBS Reference: SN74LV244AQDGSRQ1	QBS Reference: TLV9052IPWR	QBS Reference: SN74HCS244DGSR	QBS Reference: TLV1812QDGKRQ1	QBS Reference: SN74ACT244QDGSRQ1
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes); PB-Free Solder;	-	-	-	-	-	-		-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	1/10/0	-	-	1/10/0	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	-	-	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	-	1/6/0	-
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	3/90/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0

- QBS: Qual By Similarity
- Qual Device TLV9052IDGKR is qualified at MSL1 260C
- Qual Device TLV9062IDGKR 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-2401-096

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

	Type	Test Name / Condition	Duration	Qual Device: TLV9041SIDBVR	QBS Product Reference: TLV9044IDR	QBS Process Reference: BQ25910YFFR	QBS Package Reference: OPA990IDBVR	QBS Package Reference: OPA990ISDBVR
	PC	PreCon Level 1	Level 1-260C	1/79/0	-	-	3/933/0	1/77/0
	PC	PreCon Level 2	Level 2-260C	-	1/159/0	-	-	-
	ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	3/90/0	1/30/0	3/90/0	1/30/0
	HAST	Biased HAST, 130C/85%RH	96 Hours	1/77/0	1/77/0	3/231/0	3/231/0	-
	UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	3/231/0	-	-
	AC	Autoclave 121C	96 Hours	-	-	-	3/231/0	-
	TC	Temperature Cycle, -55/125C	700 Cycles	-	-	3/231/0	-	-
	TC	Temperature Cycle, -65/150C	500 Cycles	-	1/77/0	-	3/231/0	1/77/0
	HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	3/231/0	-
	HTOL	Life Test, 140C	480 Hours	-	-	3/231/0	-	-
	HTOL	Life Test, 150C	300 Hours	1/77/0	1/77/0	-	-	-
	ELFR	Early Life Failure Rate, 140C	24 Hours	-	-	3/2400/0	-	-
	HBM	ESD - HBM	2500 V	-	-	-	-	1/3/0
	HBM	ESD - HBM	3000 V	-	-	3/9/0	3/9/0	-
	HBM	ESD - HBM	4000 V	1/3/0	3/9/0	-	-	-

	Type	Test Name / Condition	Duration	Qual Device: TLV9041SIDBVR	QBS Product Reference: TLV9044IDR	QBS Process Reference: BQ25910YFFR	QBS Package Reference: OPA990IDBVR	QBS Package Reference: OPA990ISDBVR
	CDM	ESD - CDM	1500 V	1/3/0	2/6/0	3/9/0	3/9/0	1/3/0
	CDM	ESD - CDM	750 V	-	1/3/0	-	-	-
	LU	Latch-up	Per JESD78	1/6/0	3/18/0	3/18/0	3/18/0	1/6/0
	MSL	Moisture Sensitivity	Level 1-260C	-	-	-	3/36/0	-
	WBP	Bond Pull	Wires	1/76/0	1/76/0	1/76/0	3/228/0	1/76/0
	WBS	Ball Bond Shear	Wires	1/76/0	1/76/0	1/76/0	3/228/0	1/76/0

- QBS: Qual By Similarity
- Qual Device TLV9041SIDBVR is qualified at LEVEL1-260C
- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable
- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/

Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20200616-134652

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV9002IDR	Qual Device: TLV9062IDR	QBS Reference: TLV1805QDBVRQ1	QBS Reference: TLV9002QDRQ1	QBS Reference: TLV9062QDRQ1	QBS Reference: TLV9002QDRQ1	QBS Reference: TLV9002QDRQ1	QBS Reference: TLV9062QDRQ1	QBS Reference: TLV9062QDRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	-	-	-	-	-	-
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	Autoclave	121C/15psig	96 Hours	-	-	-	1/77/1[1]	1/77/0	-	1/77/0	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	-	-	-	-	-	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	1/77/0	1/77/0	-	1/77/0	2/154/0	1/77/0
HTSL	A6	High Temperature Storage Life	175C	500 Hours	-	-	3/135/0	-	-	-	-	-	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	3/231/0	-	-	-	-	-	-
HTOL	B1	Life Test	150C	408 Hours	-	-	-	-	-	-	1/77/0	1/77/0	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	-	3/30/0	-	-	-	-	3/30/0	-
ESD	E2	ESD CDM	-	1000 Volts	-	-	-	-	-	1/3/0	-	-	1/3/0
ESD	E2	ESD CDM	-	500 Volts	-	-	1/3/0	-	-	-	-	-	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	1/3/0	-	-	-	-	-	-
ESD	E2	ESD HBM	-	4000 Volts	-	-	-	-	-	1/3/0	-	-	1/3/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0	-	-	1/30/0	-	2/60/0	1/30/0

- QBS: Qual By Similarity
- Qual Device TLV9002IDR is qualified at MSL1 260C
- Qual Device TLV9062IDR is qualified at MSL1 260C

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable
- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: R-CHG-2202-043

[1]-Fail due to mechanical damage from unknown source. See attached 8D documents.

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV9064IDR	QBS Reference: TLV9022QDRQ1	QBS Reference: PCM6260QRTVRQ1	QBS Reference: TLV9064QDRQ1	QBS Reference: TL074HIDR	QBS Reference: OPA2991QDRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0	-	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0	-	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	-	-	1/77/0	-
HTOL	B1	Life Test	150C	408 Hours	-	-	-	-	-	1/77/1[1]
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	1/15/0	-	-

Type	#	Test Name	Condition	Duration	Qual Device: TLV9064IDR	QBS Reference: TLV9022QDRQ1	QBS Reference: PCM6260QRTVRQ1	QBS Reference: TLV9064QDRQ1	QBS Reference: TL074HIDR	QBS Reference: OPA2991QDRQ1
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	-	1/15/0	1/15/0	1/15/0	-	-
PD	C4	Physical Dimensions	Cpk>1.67	-	-	3/30/0	3/30/0	3/30/0	-	3/30/0
ESD	E2	ESD CDM	-	1500 Volts	-	-	-	-	3/9/0	-
ESD	E2	ESD CDM	-	500 Volts	-	1/3/0	1/3/0	1/3/0	-	1/3/0
ESD	E2	ESD HBM	-	1500 Volts	-	-	-	-	3/9/0	-
ESD	E2	ESD HBM	-	2000 Volts	-	1/3/0	1/3/0	1/3/0	-	1/3/0
LU	E4	Latch-Up	Per JESD78	-	-	1/6/0	1/6/0	1/6/0	3/9/0	1/6/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0

- QBS: Qual By Similarity
- Qual Device TLV9064IDR 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-2401-094

[1]-HTOL failed due to rejects mixed back in with tested good units

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TLV9061IDBVR	QBS Package Reference: TLV9061IDBVR (NiPdAu)	QBS Package Reference: TPS76933DBVR (PHI)
AC	Autoclave 121C	96 Hours	-	-	-
ED	Electrical Characterization, side by side	Per Datasheet Parameters	-	Pass	-
FLAM	Flammability (UL 94V-0)	--	-	-	3/15/0
FLAM	Flammability (UL-1694)	-	-	3/15/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-	-
HTOL	Life Test, 150C	300 Hours	3/231/0	-	-
HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0	-	-
LI	Lead Fatigue	Leads	3/54/0	-	-
LI	Lead Pull	Leads	3/66/0	-	-
MISC	Salt Atmosphere	-	3/66/0	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	-	-
PD	Physical Dimensions	(per mechanical drawing)	3/15/0	-	-
PKG	Lead Finish Adhesion	Leads	3/54/0	-	-
SD	Solderability	Pb Free	3/66/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	-
UHAST	Unbiased HAST 130C/85%RH	96 Hours	3/231/0	-	-
VM	Visual / Mechanical	(per mfg. Site specification)	3/984/0	-	-
WBP	Bond Pull	Wires	3/228/0	-	-
WBS	Ball Bond Shear	Wires	3/228/0	-	-

- QBS: Qual By Similarity
- Qual Device TLV9061IDBVR is qualified at LEVEL1-260C

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/

Green/Pb-free Status:

Qualified Pb-Free (SMT) and Green

TI Qualification ID: 20200909-136068

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TLV9062SIDGSR	QBS Process Reference: TLV9062ID
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass
ELFR	Early Life Failure Rate, 125C	48 Hours	-	3/2400/1[A]
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0
HBM	ESD - HBM	4000 V	1/3/0	2/6/0
CDM	ESD - CDM	1500 V	1/3/0	3/9/0
HTOL	Life Test, 150C	300 Hours	-	3/231/0
HTSL	High Temp. Storage Bake, 170C	420 Hours	3/231/0	3/231/0
LU	Latch-up	Per JESD78	1/6/0	3/18/0
SD	Solderability	Pb Free	-	3/66/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0
UHAST	Unbiased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours
- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours
- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: http://www.ti.com/

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

- (A) Die EOS, 1 unit – discounted

TI Qualification ID: 20170404-121498

For questions regarding this notice, e-mails can be sent to the Change Management team or your local Field Sales Representative.