

PCN Number:	20230728000.1A		PCN Date:	February 08, 2024																			
Title:	Qualification of additional Fab site (DL-LIN) using qualified Process Technology and additional Assembly sites options for select devices																						
Customer Contact:	Change Management team		Dept:	Quality Services																			
Proposed 1st Ship Date:	Oct 31, 2023		Sample Requests accepted until:	Aug 31, 2023*																			
*Sample requests received after Aug 31, 2023 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 Materials																					
☐ Packing/Shipping/Labeling	☐ Test Process	☐ Wafer Fab Process																					
PCN Details																							
Description of Change:																							
Revision A is to correct the mount compound id in the group 5 BOM table below. Rev A updates are noted below in bold yellow font.																							
Qualification of additional Fab site (DL-LIN) using qualified Process Technology and additional Assembly sites options for the list of devices in the product affected section 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>DL-LIN</td> <td>LBC3S LBC4</td> <td>150mm</td> <td>DL-LIN</td> <td>LBC3S LBC4</td> <td>200mm</td> </tr> </tbody> </table>			Current Fab Site			Additional Fab site			Current Fab Site	Process	Wafer Diameter	Additional Fab site	Process	Wafer Diameter	DL-LIN	LBC3S LBC4	150mm	DL-LIN	LBC3S LBC4	200mm			
Current Fab Site			Additional Fab site																				
Current Fab Site	Process	Wafer Diameter	Additional Fab site	Process	Wafer Diameter																		
DL-LIN	LBC3S LBC4	150mm	DL-LIN	LBC3S LBC4	200mm																		
Construction differences are noted below (There are no construction differences for Group 1)																							
Group 2 (DFAB8 qualification plus Bond wire change) BOM Table																							
		Current	Additional																				
Bond wire composition, diameter		Au, 1.15 mil	Cu, 1.0 mil																				
Group 2A (DFAB8 qualification plus Bond wire change) BOM Table																							
		Current	Additional																				
Bond wire composition, diameter		Cu, 1.3 mil	Cu, 0.96 mil																				
Group 3 (DFAB8 qualification plus BOM changes) BOM Table																							
		Current	Additional																				
Mold Compound		4205443	4211649																				
Mount Compound		4042504	4208458																				
Group 4 (DFAB8 qualification plus PHI as additional site) BOM Table																							
		LEN	PHI																				
Mold Compound		SID#0011G60007	4222198																				
Bond wire composition, diameter		Au, 1.0 mil	Cu, 1.0 mil																				

Mount Compound	SID#0003C10332	8095733
Lead finish	NiPdAu	Matte Sn

Group 5 (DFAB8 qualification plus CDAT as additional Assembly site)BOM Table

	LEN	CDAT
Mold Compound	SID#0011G60007	4222198
Bond wire composition, diameter	Au, 1.0 mil	Cu, 1.0 mil
Mount Compound	SID#0003C10332	4207123 or 4226215 **
Lead finish	NiPdAu	Matte Sn

**** only applies to TLV2451IDBVR/T & TLV2451CDBVR/T in group 5 device list**

Upon expiry of this PCN, there will be a transition period where TI will combine lead free solutions in a single [standard part number](#). For example; [TLV2381IDBVT](#) – can ship with both Matte Sn and NiPdAu.

Example:

- Customer order for 7500 units of TLV2381IDBVT 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.

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
☒ 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
DL-LIN	DLN	USA	Dallas

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
LEN	LIN	TWN	Taichung
CDAT	CDA	CHN	Chengdu
TIPI	PHI	PHL	Baguio City

Sample product shipping label (not actual product label)

**Product Affected:****Group 1 Device list (DFAB8 qualification only)**

MAX3238CPWR	TLV2461AIDR	TPS3305-18D	TPS76815QD
MAX3238IDBR	TLV2461CD	TPS3305-18DGN	TPS76815QDR
MAX3238IPWR	TLV2461CDBVR	TPS3305-18DGNR	TPS76815QPWP
SN0806054PWPR	TLV2461CDBVT	TPS3305-18DR	TPS76815QPWPR
SN1002026YS	TLV2461CDR	TPS3305-25D	TPS76818QD
SN1006055YS	TLV2461CP	TPS3305-25DGN	TPS76818QDR
SN1311018YS	TLV2461IDBVR	TPS3305-25DGNR	TPS76818QPWP
SN1401036PWPR	TLV2461IDBVT	TPS3305-25DR	TPS76818QPWPR
SN1402014YS	TLV2461IDR	TPS3305-33D	TPS76825QD
SN1407001PWPR	TLV2462IP	TPS3305-33DGN	TPS76825QDR
SN40057PWPR	TLV2470AID	TPS3305-33DGNR	TPS76825QPWP
SN65HVD231DR	TLV2470CDBVR	TPS3305-33DR	TPS76825QPWPR
SN65HVD231DRG4	TLV2470ID	TPS3306-15D	TPS76827QD
SN65HVD232DR	TLV2470IDBVR	TPS3306-15DGK	TPS76828QD
SN65HVD232DRG4	TLV2470IDBVT	TPS3306-15DGKR	TPS76830QD
SN65HVD233DR	TLV2470IDR	TPS3306-15DR	TPS76830QPWP
SN65HVD233DRG4	TLV2471AID	TPS3306-18D	TPS76833QD
SN65HVD233MDREP	TLV2471AIDR	TPS3306-18DGK	TPS76833QDR
SN65HVD235DR	TLV2471CD	TPS3306-18DGKR	TPS76833QPWP
TLC070CDR	TLV2471CDR	TPS3306-18DR	TPS76833QPWPG4
TLC070IDR	TLV2471ID	TPS3306-25D	TPS76833QPWPR

TLC070IP	TLV2472AID	TPS3306-25DGK	TPS76833QPWPRG4
TLC071AID	TLV2472AIDG4	TPS3306-25DGKR	TPS76850QD
TLC071CD	TLV2472AIDR	TPS3306-25DR	TPS76850QDG4
TLC071CDG4	TLV2472AIP	TPS3306-33D	TPS76850QDR
TLC071CDGN	TLV2472CDGN	TPS3306-33DGK	TPS77501D
TLC071CDGNR	TLV2472CDGNR	TPS3306-33DGKR	TPS77501DR
TLC071CDR	TLV2472CDR	TPS3306-33DR	TPS77501PWP
TLC071IDGNR	TLV2472ID	TPS3307-18D	TPS77501PWPR
TLC071IDR	TLV2472IDGN	TPS3307-18DGN	TPS77515D
TLC072CDGN	TLV2472IDGNG4	TPS3307-18DGNR	TPS77515DG4
TLC072CP	TLV2472IDGNR	TPS3307-18DR	TPS77515DR
TLC072IDGN	TLV2472IDR	TPS3307-25D	TPS77515PWP
TLC073CDGQ	TLV2472IP	TPS3307-25DGN	TPS77515PWPR
TLC073IDGQ	TLV2473AIDR	TPS3307-25DGNR	TPS77516D
TLC073IDGQR	TLV2473CDGQR	TPS3307-25DR	TPS77516DG4
TLC080AIDR	TLV2473CDR	TPS3307-33D	TPS77516DR
TLC080AIP	TLV2473IDGQR	TPS3307-33DGN	TPS77516PWP
TLC080CDGNR	TLV2474AIPWR	TPS3307-33DGNR	TPS77516PWPR
TLC080CDGNRG4	TLV2475AIPWP	TPS3307-33DR	TPS77518D
TLC080CDR	TLV2475AIPWPR	TPS3600D25PW	TPS77518DR
TLC080IDGNR	TLV2475CPWPR	TPS3600D33PW	TPS77518PWP
TLC080IDR	TLV2475IPWPR	TPS3600D33PWR	TPS77518PWPR
TLC081AIDR	TLV272CD	TPS3600D50PW	TPS77525D
TLC081AIP	TLV272CDG4	TPS3613-01DGS	TPS77525DR
TLC081CD	TLV272IP	TPS3613-01DGSR	TPS77525PWP
TLC081CDGNR	TLV27L1IDR	TPS3707-25D	TPS77533D
TLC081CDR	TLV4112IDGNR	TPS3707-25DGN	TPS77533DR
TLC081ID	TLV4112IDR	TPS3707-25DGNR	TPS77533PWP
TLC081IDGNR	TLV6003DBVR	TPS3707-25DR	TPS77533PWPR
TLC081IDR	TPA2001D1PW	TPS3707-30D	TPS77601D
TLC082CDGN	TPA2001D1PWR	TPS3707-30DGN	TPS77601DG4
TLC082CDGNR	TPA2001D1PWRG4	TPS3707-30DGNR	TPS77601DR
TLC082IDGN	TPA301D	TPS3707-30DR	TPS77601DRG4
TLC082IDGNR	TPA301DGN	TPS3707-33D	TPS77601PWP
TLC2262QDR	TPA301DGNR	TPS3707-33DGN	TPS77601PWPR
TLV2241IDBVR	TPA301DR	TPS3707-33DGNR	TPS77618D
TLV2241IDBVT	TPS2010AD	TPS3707-33DR	TPS77618DR
TLV2241IDR	TPS2010ADR	TPS3707-50D	TPS77618PWP
TLV2242ID	TPS2011AD	TPS3707-50DGN	TPS77618PWPR
TLV2242IDGK	TPS2011ADR	TPS3707-50DGNR	TPS77625D
TLV2242IDGKR	TPS2011ADR4	TPS3707-50DR	TPS77625DG4
TLV2242IDGKRG4	TPS2012AD	TPS3801-01DCKR	TPS77625DR
TLV2242IDR	TPS2012ADG4	TPS3801E18DCKR	TPS77625DRG4
TLV2244IDR	TPS2012ADR	TPS3801I50DCKR	TPS77625PWP
TLV2244IPW	TPS2013AD	TPS3801J25DCKR	TPS77633D
TLV2244IPWR	TPS2013ADR	TPS3801K33DCKR	TPS77633DG4
TLV2373IDGS	TPS2020D	TPS3801L30DCKR	TPS77633DR
TLV2373IDGSR	TPS2020DR	TPS3801T50DCKR	TPS77633DRG4

TLV2373IDGSRG4	TPS2021D	TPS3802K33DCKR	TPS77633PWP
TLV2375ID	TPS2021DG4	TPS3802L30DCKR	TPS77633PWPR
TLV2375IDR	TPS2021DR	TPS3836E18DBVR	TPS77701D
TLV2375IPW	TPS2021DRG4	TPS3836E18DBVT	TPS77701DR
TLV2381ID	TPS2021P	TPS3836H30DBVR	TPS77715D
TLV2381IDR	TPS2022D	TPS3836H30DBVT	TPS77715DR
TLV2401CDBVR	TPS2022DG4	TPS3836J25DBVR	TPS77715PWP
TLV2401CDBVT	TPS2022DR	TPS3836J25DBVT	TPS77715PWPG4
TLV2401CDR	TPS2023D	TPS3836K33DBVR	TPS77718D
TLV2401ID	TPS2023DR	TPS3836K33DBVT	TPS77718DR
TLV2401IDBVR	TPS2023P	TPS3836L30DBVR	TPS77718PWP
TLV2401IDBVT	TPS2024D	TPS3836L30DBVT	TPS77718PWPG4
TLV2401IDBVTG4	TPS2024DR	TPS3837E18DBVT	TPS77718PWPR
TLV2401IDR	TPS2024DRG4	TPS3837J25DBVR	TPS77725D
TLV2402CDGKR	TPS2024P	TPS3837J25DBVT	TPS77725PWP
TLV2402CDR	TPS2030D	TPS40055PWP	TPS77725PWPR
TLV2402ID	TPS2030DR	TPS40055PWPG4	TPS77733D
TLV2402IDG4	TPS2030P	TPS40055PWPR	TPS77733DR
TLV2402IDGK	TPS2031D	TPS40055PWPRG4	TPS77733PWP
TLV2402IDGKR	TPS2031DG4	TPS40057ZPWPR	TPS77733PWPR
TLV2402IDR	TPS2031DR	TPS54010PWP	TPS77801D
TLV2402IDRG4	TPS2031DRG4	TPS54010PWPG4	TPS77801DG4
TLV2404CPW	TPS2031P	TPS54010PWPR	TPS77801DR
TLV2404CPWR	TPS2032D	TPS54010PWPRG4	TPS77801PWP
TLV2404ID	TPS2032DR	TPS76701QD	TPS77801PWPG4
TLV2404IDR	TPS2033D	TPS76701QDR	TPS77801PWPR
TLV2404IPW	TPS2033DR	TPS76701QPWP	TPS77801PWPRG4
TLV2404IPWR	TPS2034D	TPS76701QPWPG4	TPS77815D
TLV2450AIDR	TPS2034DG4	TPS76701QPWPR	TPS77815DR
TLV2450ID	TPS2034DR	TPS76701QPWPRG4	TPS77815PWP
TLV2451AIDR	TPS2034P	TPS76715QD	TPS77815PWPG4
TLV2451CD	TPS2080D	TPS76715QDR	TPS77815PWPR
TLV2451CDG4	TPS2080DG4	TPS76715QPWP	TPS77818D
TLV2451CDR	TPS2080DR	TPS76718QD	TPS77818PWP
TLV2451IDR	TPS2081D	TPS76718QDR	TPS77818PWPG4
TLV2451IP	TPS2082D	TPS76718QPWP	TPS77818PWPR
TLV2452AID	TPS2082DR	TPS76718QPWPR	TPS77825D
TLV2452AIDR	TPS2085D	TPS76725QD	TPS77825DR
TLV2452CD	TPS2085DR	TPS76725QPWP	TPS77825PWP
TLV2452CDGK	TPS2087D	TPS76725QPWPG4	TPS77825PWPR
TLV2452CDGKR	TPS2087DR	TPS76725QPWPR	TPS77833D
TLV2452CDR	TPS2090D	TPS76727QD	TPS77833DR
TLV2452ID	TPS2090DR	TPS76727QPWP	TPS77833PWP
TLV2452IDGK	TPS2092D	TPS76728QD	TPS77833PWPR
TLV2452IDGKR	TPS2092DR	TPS76730QD	UCC28051D
TLV2452IDGKRG4	TPS2095D	TPS76730QPWP	UCC28051DG4
TLV2452IDR	TPS2095DR	TPS76730QPWPG4	UCC28051DR
TLV2453CDGSR	TPS2097D	TPS76730QPWPR	UCC28051DRG4

TLV2453CDR	TPS2300IPW	TPS76733QD	UCC28089D
TLV2453IDGSR	TPS2300IPWR	TPS76733QDR	UCC28089DR
TLV2454AID	TPS2301IPW	TPS76733QPWP	UCC28220D
TLV2454AIDR	TPS2301IPWR	TPS76733QPWPG4	UCC28220DR
TLV2454AIN	TPS2320IDR	TPS76733QPWPR	UCC28512DW
TLV2454AIPWR	TPS2320IPW	TPS76733QPWPRG4	UCC28512DWG4
TLV2454CN	TPS2320IPWR	TPS76750QD	UCC28512DWR
TLV2454CPW	TPS2321IPW	TPS76750QDR	UCC28810D
TLV2454CPWR	TPS2321IPWR	TPS767D301PWP	UCC28810DG4
TLV2454ID	TPS2330ID	TPS767D301PWPG4	UCC28810DR
TLV2454IDR	TPS2330IDR	TPS767D301PWPR	UCC28810DRG4
TLV2454IN	TPS2330IPW	TPS767D301PWPRG4	UCC28811D
TLV2454IPW	TPS2330IPWG4	TPS767D318PWP	UCC28811DR
TLV2454IPWR	TPS2330IPWR	TPS767D318PWPG4	UCC2891D
TLV2455AIPWR	TPS2330IPWRG4	TPS767D318PWPR	UCC2891DG4
TLV2455IDR	TPS2331ID	TPS767D325PWP	UCC2891DR
TLV2455IPW	TPS2331IDR	TPS767D325PWPR	UCC2891DRG4
TLV2460CD	TPS2331IPW	TPS76801QD	UCC2893D
TLV2460CDBVR	TPS2331IPWR	TPS76801QDR	UCC2893DR
TLV2460CDBVT	TPS2350D	TPS76801QDRG4	V62/09611-01XE
TLV2460CDBVTG4	TPS2350DR	TPS76801QPWP	XTR300AIRGWR
TLV2460CDR	TPS2350PW	TPS76801QPWPG4	XTR300AIRGWT
TLV2460IDBVR	TPS2350PWG4	TPS76801QPWPR	XTR300AIRGWTG4
TLV2460IDBVT	TPS2350PWR	TPS76801QPWPRG4	XTR305IRGWR

Group 2 Device list (DFAB8 qualification plus Bond wire change)

TPS76750QPWP	TPS76850QPWP
TPS76750QPWPR	TPS76850QPWPR

Group 2A Device list (DFAB8 qualification plus Bond wire change)

UCC2893PW	UCC2893PW RG4
UCC2893PWR	

Group 3 Device list (DFAB8 qualification plus BOM changes)

TPS77701PWP	TPS77701PWPR
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Group 4 Device list (DFAB8 qualification plus PHI as additional site)

TLV2450CDBVR	TLV2450IDBVR	TLV2450IDBVT
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Group 5 Device list (DFAB8 qualification plus CDAT as additional Assembly site)

TLV2381IDBVR	TLV2451IDBVR	TLV2471IDBVR	TLV27L1CDBVT
TLV2381IDBVT	TLV2451IDBVT	TLV2471IDBVT	TLV27L1IDBVR
TLV2451CDBVR	TLV2471CDBVR	TLV27L1CDBVR	TLV27L1IDBVT
TLV2451CDBVT	TLV2471CDBVT		

For alternate parts with similar or improved performance, please visit the product page on [TI.com](https://www.ti.com)

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TLV2401QDBVRQ1	QBS Process Reference: MAX3243IPWG4DL
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0
AC	Autoclave 121C	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 150C	1000 Hours	-	3/231/0
HTSL	High Temp Storage Bake 175C	500 Hours	3/135/0	-
HTOL	Life Test, 150C	408 Hours	3/231/0	3/231/0
ELFR	Early Life Failure Rate, 125C	48 Hours	-	3/2400/0
HBM	ESD - HBM - Q100	500 V	1/3/0	-
CDM	ESD - CDM - Q100	1500 V	1/3/0	-
LU	Latch-up	(per JESD78)	1/6/0	-
ED	Electrical Characterization	Per Datasheet parameters	3/90/0	-

- QBS: Qual by Similarity

- Qual Device TLV2401QDBVRQ1 is qualified at LEVEL1-260C

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or L): -40°C to +85°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold: HTOL, ED

Room/Hot: THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room: AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Change Number: NA

TI Qualification ID: 20190124-128331

Qualification Results

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

	Type	Test Name / Condition	Duration	Qual Device: ALM2402QPWPRQ1	QBS Process Reference: TPS51604QDSGQ1
	HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0
	AC	Autoclave 121C	96 Hours	3/231/0	3/231/0
	TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0
	TC-BP	Post Temp Cycle Bond Pull	per MIL-STD 883 Method 2011	1/30/0	1/30/0
	PTC	Power Temperature Cycle, -40/125C	1000 Cycles	1/45/0	-
	HTSL	High Temp. Storage Bake, 150C	1000 Hours	-	3/135/0
	HTSL	High Temp. Storage Bake, 175C	500 hours	1/45/0	-
	HTOL	Life Test, 125C	1000 Hours	-	3/231/0
	HTOL	Life Test, 150C	300 Hours	3/231/0	-
	ELFR	Early Life Failure Rate, 125C	48 Hours	-	3/2400/0
	EDR	NVM Endurance, Data Retention, and Operational Life	-	N/A	-
	WBS	Bond Shear (Cpk>1.67)	Wires	3/90/0	1/30/0
	WBP	Bond Pull (Cpk>1.67)	Wires	3/90/0	1/30/0
	SD	Surface Mount Solderability	Pb-Free	3/45/0	1/30/0
	SD	Surface Mount Solderability	Pb	3/45/0	-
	PD	Physical Dimensions (Cpk>1.67)	--	3/30/0	3/30/0
	HBM	ESD - HBM	2000 V	1/3/0	1/3/0
	CDM	ESD - CDM	250 V	1/3/0	1/3/0
	LU	Latch-up	(Per AEC Q100-004)	1/6/0	1/12/0
	ED	Electrical Distributions	Cpk>1.67	3/90/0	3/90/0

- Qual Device ALM2402QPWPRQ1 is qualified at LEVEL3-260C
- QBS: Qual By Similarity

A1 (PC): Preconditioning:
Performed for THB, Biased HAST, AC, uHAST & TC samples, as applicable.

Junction Operating Temperature by Automotive Grade Level:
Grade 0 (or E): -40°C to +150°C
Grade 1 (or Q): -40°C to +125°C
Grade 2 (or T): -40°C to +105°C
Grade 3 (or I): -40°C to +85°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):
Room/Hot/Cold: HTOL, ED
Room/Hot: THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
Room: AC/uHAST

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

Note (1): One continuity failure due to mishandling – discounted.

TI Qualification ID: 20150211-111605

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: SN65HVDA1040AQDRQ1
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0
AC	Autoclave 121C	96 Hours	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0
HTSL	High Temp Storage Bake 150C	1000 Hours	3/135/0
HTOL	Life Test, 125C	1000 Hours	3/231/0
ELFR	Early Life Failure Rate, 125C	48 Hours	3/2400/0
HBM	ESD - HBM	4000 V	1/3/0
HBM	ESD - HBM (Pin 5)	10000 V	1/3/0
HBM	ESD - HBM (Pin 6 & 7)	12000 V	1/3/0
CDM	ESD - CDM	1500 V	1/3/0
LU	Latch-up	(per JESD78)	1/6/0
ED	Electrical Distributions	Per Datasheet parameters	3/90/0

- QBS: Qual by Similarity

- Qual Devices SN65HVDA1040AQDRQ1 (MLA) and SN65HVDA1040AQDRQ1 (TAI) are qualified at LEVEL1-260C

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I): -40°C to +85°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold: HTOL, ED

Room/Hot: THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room: AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20170424-121679

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>3840PH30DBVRQ1</u>
PC	Preconditioning	Level 1-260C	No Fails
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0
TC-WBP	Post Temp Cycle Bond Pull	Wires	3/108/0
PTC	Power Temperature Cycle	1000 Cycles	N/A
HTSL	High Temp Storage Bake 150C	1000 Hours	3/231/0
HTOL	Life Test, 125C	1000 Hours	3/231/0
WBS	Wire Bond Shear, Cpk>1.67	Wires	3/90/0
WBP	Bond Pull, Cpk>1.67	Wires	3/90/0
SD	Surface Mount Solderability	Pb Free Solder	3/45/0
SD	Surface Mount Solderability	Pb Solder	3/45/0
PD	Physical Dimensions	Cpk>1.67	3/30/0
LI	Lead Fatigue	Leads	3/66/0
LI	Lead Pull to Destruction	Leads	3/66/0
ED	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0

- QBS: Qual By Similarity

- Qual Device 3840PH30DBVRQ1 is qualified at LEVEL1-260CG

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I): -40°C to +85°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold: HTOL, ED

Room/Hot: THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room: AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Change Number: C2004431

TI Qualification ID: 20201126-137339

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

Type	Test Name / Condition	Duration	Qual Device: <u>SN3257QPWRQ1</u>	QBS Process Reference: <u>SN3257QDYYRQ1</u>
PC	Preconditioning	Level 1-260C	No Fails	-
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-
AC	Autoclave 121C	96 Hours	3/231/0	-
TC	Temperature Cycle, - 55/150C	1000 Cycles	3/231/0	-
TC- WBP	Bond Pull Post Temp Cycle	Wires	1/60/0	-
HTSL	High Temp Storage Bake 175C	500 Hours	3/135/0	-
HTOL	Life Test, 150C	300 Hours	3/231/0	3/231/0
ELFR	Early Life Failure Rate, 150C	24 Hours	-	3/2400/0
WBS	Wire Bond Shear, Cpk >1.67	Wires	3/90/0	-
WBP	Bond Pull, Cpk >1.67	Wires	3/90/0	-
SD	Surface Mount Solderability	PB Solder	1/15/0	-
SD	Surface Mount Solderability	Pb Free Solder	1/15/0	-
PD	Physical Dimensions	Cpk>1.67	3/30/0	-
HBM	ESD - HBM	5000 V	1/3/0	-
CDM	ESD - CDM	2000 V	1/3/0	-
LU	Latch-up	Per AEC Q100-004	1/6/0	-
ED	Electrical Distributions	Cpk >1.67	3/90/0	-

- QBS: Qual By Similarity

- Qual Device SN3257QPWRQ1 is qualified at LEVEL1-260C

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold: HTOL, ED

Room/Hot: THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room: AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20190311-128972

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

Type	Test Name / Condition	Duration	Qual Device: TLV3401IDBVT	QBS Product Reference : TLV2241D	QBS Package Reference : TPS76933DBVR
AC	Autoclave 121C	96 Hours	-	-	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	1/Pass	-	-
HAST	Biased HAST, 110C/85%RH	96 Hours	-	-	3/231/0
HTOL	Life Test, 155C	240 Hours	-	1/77/0	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	3/231/0
HBM	ESD-HBM	2000 V	1/3/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	1/Pass	-	-
MQ	Test MQ	(per specification)	Pass	-	-
YLD	Yield Evaluation	(per mfg. Site specification)	Pass	-	-

- QBS: Qual By Similarity

- Qual Device TLV3401IDBVT 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

Change Number: C1811100

TI Qualification ID: 20181113-127568

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

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