12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20230327000.1
Add Cu as Alternative Wire Base Metal for Selected Device(s)
Change Notification / Sample Request

Date: March 28, 2023
To: TOKYO ELECTRON DEVICE (DSTR) PCN

Dear Customer:

This is an announcement of a change to a device that is currently offered by Texas Instruments. The details of this change are on the following pages.

Texas Instruments 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 of the change. If samples or additional data are required, requests must be received within **30 days** of this notification.

The changes discussed within this PCN will not take effect any earlier than the proposed first ship date on Page 3 of this notification, unless customer agreement has been reached on an earlier implementation of the change.

This notice does not change the end-of-life status of any product. Should product affected be on a previously issued product withdrawal/discontinuance notice, this notification does not extend the life of that product or change the life time buy offering/discontinuance plan.

For questions regarding this notice or to provide acknowledgement of this PCN, you may contact your local Field Sales Representative or the PCN Team (PCN_ww_admin_team@list.ti.com). For sample requests or sample related questions, contact your local Field Sales Representative.

Sincerely,

PCN Team
SC Business Services

20230327000.1
Attachment: 1

Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
TPS560200DBVR	null
TPS70925DBVT	null
UCC27519DBVT	null
OPA170AIDBVR	null
OPA171AIDBVR	null
TLV1701AIDBVR	null
TLV3201AIDBVR	null
TMP708AIDBVT	null
TPS70915DBVR	null
TPS70918DBVT	null
TPS70618DBVT	null
TPS70960DBVR	null
INA180A1IDBVR	null
INA180A2IDBVT	null
INA180A3IDBVR	null
INA180A3IDBVT	null
INA180A2IDBVR	null
INA180B3IDBVT	null
OPA170AIDBVT	null
OPA188AIDBVR	null
OPA192IDBVR	null
OPA314AIDBVT	null
OPA377AIDBVR	null
SN74AUP1G07DBVT	null
TLV1701AIDBVT	null
UCC27536DBVT	null
OPA192IDBVT	null
UCC27537DBVT	null
OPA197IDBVR	null
TPS61097A-33DBVT	null
OPA322AIDBVR	null
TLV71210DBVR	null
TLV71210DBVT	null
UCC27537DBVR	null
OPA320AIDBVT	null
OPA313IDBVT	null
TMP709AIDBVR	null
OPA197IDBVT	null
TPS70633DBVR	null
TPS709B50DBVT	null
TLV376IDBVR	null
OPA171AIDBVT	null
OPA314AIDBVR	null
INA198AIDBVR	null
TLV3201AIDBVT	null
TMP709AIDBVT	null
TLV376IDBVT	null
UCC27518DBVR	null
INA180A4IDBVR	null
UCC27533DBVR	null
TLV7011DBVR	null
INA180B1IDBVR	null
INA180A4IDBVT	null

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

PCN Number:	20230327000.1	PCN Date:	March 28, 2023
Title:	Add Cu as Alternative Wire Base Metal for Selected Device(s)		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	June 28, 2023	Sample requests accepted until:	Apr. 28, 2023*

*Sample requests received after (Apr. 28, 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:

Texas Instruments is pleased to announce the qualification of new assembly material set to add Cu as an additional bond wire option for devices listed in "Product affected" section below. Devices will remain in current assembly facility and piece part changes as follows:

Material	Current	Proposed
Wire type	0.6mil, 0.8mil, 1.0mil, 1.3mil Au	0.8mil, 1.0mil, 1.3mil Cu

Reason for Change:

Continuity of supply.

1) To align with world technology trends and use wiring with enhanced mechanical and electrical properties
2) Maximize flexibility within our Assembly/Test production sites.
3) Cu is easier to obtain and stock

Anticipated impact on Fit, Form, 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:

None.

Product Affected:

INA180A1IDBVR	OPA314AIDBVR	TLV707T18DBVR	TPS70912DBVT
INA180A1IDBVT	OPA314AIDBVT	TLV707T18DBVT	TPS709135DBVR
INA180A2IDBVR	OPA316IDBVR	TLV707T28DBVR	TPS709135DBVT
INA180A2IDBVT	OPA316IDBVT	TLV707T28DBVT	TPS70915DBVR
INA180A3IDBVR	OPA320AIDBVR	TLV707T30DBVR	TPS70915DBVT
INA180A3IDBVT	OPA320AIDBVT	TLV707T30DBVT	TPS70916DBVR
INA180A4IDBVR	OPA322AIDBVR	TLV707T33DBVR	TPS70916DBVT
INA180A4IDBVT	OPA322AIDBVT	TLV707T33DBVT	TPS70918DBVR
INA180B1IDBVR	OPA377AIDBVR	TLV71210DBVR	TPS70918DBVT
INA180B1IDBVT	OPA377AIDBVT	TLV71210DBVT	TPS70925DBVR
INA180B2IDBVR	SN1603068DBVR	TLV71211DBVR	TPS70925DBVT
INA180B2IDBVT	SN74AUC1G126DBVR	TLV71211DBVT	TPS70927DBVR
INA180B3IDBVR	SN74AUP1G02DBVR	TMP708AIDBVR	TPS70927DBVT
INA180B3IDBVT	SN74AUP1G02DBVT	TMP708AIDBVT	TPS70928DBVR
INA180B4IDBVR	SN74AUP1G06DBVT	TMP709AIDBVR	TPS70928DBVT
INA180B4IDBVT	SN74AUP1G07DBVT	TMP709AIDBVT	TPS70938DBVR
INA183A1IDBVR	SN74AUP1G126DBVR	TMP709SNDBVR	TPS70938DBVT
INA183A1IDBVT	SN74AUP1G126DBVT	TMP709SNDBVT	TPS70939DBVR
INA183A2IDBVR	SN74AUP1G17DBVT	TPS560200DBVR	TPS70939DBVT
INA183A2IDBVT	SN74AUP1G240DBVR	TPS560200DBVT	TPS70960DBVR
INA183A3IDBVR	SN74AUP1G240DBVT	TPS60400QDBVRSV	TPS70960DBVT
INA183A3IDBVT	SN74AUP1G34DBVT	TPS60402QDBVRDL	TPS709A30DBVR
INA195AIDBVR	SN74AUP1G80DBVR	TPS60403QDBVRHT	TPS709A30DBVT
INA195AIDBVR-S	SN74AUP1G80DBVT	TPS61097A-33DBVR	TPS709A33DBVR
INA195AIDBVT-S	TLV1701AIDBVR	TPS61097A-33DBVT	TPS709A33DBVT
INA198AIDBVR	TLV1701AIDBVT	TPS70612DBVR	TPS709B33DBVR
OPA170AIDBVR	TLV3201AIDBVR	TPS70612DBVT	TPS709B33DBVT
OPA170AIDBVT	TLV3201AIDBVT	TPS70615DBVR	TPS709B345DBVR
OPA171AIDBVR	TLV376IDBVR	TPS70615DBVT	TPS709B50DBVR
OPA171AIDBVT	TLV376IDBVT	TPS70618DBVR	TPS709B50DBVT
OPA180IDBVR	TLV6001RIDBVR	TPS70618DBVT	UCC27518DBVR
OPA180IDBVT	TLV6001RIDBVT	TPS70625DBVR	UCC27518DBVT
OPA188AIDBVR	TLV7011DBVR	TPS70625DBVT	UCC27519DBVR
OPA188AIDBVT	TLV7021DBVR	TPS70628DBVR	UCC27519DBVT
OPA192IDBVR	TLV70220PDBVR	TPS70628DBVT	UCC27533DBVR
OPA192IDBVT	TLV70220PDBVT	TPS70630DBVR	UCC27533DBVT
OPA197IDBVR	TLV70229DBVR	TPS70630DBVT	UCC27536DBVR
OPA197IDBVT	TLV70229DBVT	TPS70633DBVR	UCC27536DBVT
OPA313IDBVR	TLV7031DBVR	TPS70633DBVT	UCC27537DBVR
OPA313IDBVT	TLV7041DBVR	TPS70912DBVR	UCC27537DBVT

Qualification Report

Approve Date 20-Oct-2022

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: SN74LVC1G125DBVR	QBS Reference: TLV9061IDBVR	QBS Reference: TPS3840PH30DBVRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0
AC	A3	Autoclave	121C/15psig	96 Hours	-	-	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	3/135/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	3/231/0
HTOL	B1	Life Test	150C	300 Hours	-	3/231/0	-
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	1/76/0	3/228/0	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	1/76/0	3/228/0	-
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)	-	-	3/66/0	1/15/0
PD	C4	Physical Dimensions	(per mechanical drawing)	-	1/5/0	3/15/0	3/30/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0

QBS: Qual By Similarity

Qual Device SN74LVC1G125DBVR 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

Qualification Report
Approve Date 10-Nov-2022

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

Type	#	Test Name	Condition	Duration	Qual Device: TLV70333DBVR	QBS Reference: TLV9061IDBVR	QBS Reference: TPS3840PH30DBVRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0
AC	A3	Autoclave	121C/15psig	96 Hours	-	-	3/231/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	-
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0
HTSL	A6	High Temperature Storage Life	150C	1000 Hours	-	-	3/135/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	3/231/0	-
HTOL	B1	Life Test	125C	1000 Hours	-	-	3/231/0
HTOL	B1	Life Test	150C	300 Hours	-	3/231/0	-
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	1/76/0	3/228/0	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	1/76/0	3/228/0	-
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)	-	-	3/66/0	1/15/0
PD	C4	Physical Dimensions	(per mechanical drawing)	-	-	3/15/0	3/30/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	3/90/0
FTY	E6	Final Test Yield	-	-	1/1/0	3/3/0	-

QBS: Qual By Similarity
Qual Device TLV70333DBVR 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

Qualification Report
Approve Date 10-Nov-2021

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

Type	Test Name / Condition	Duration	Qual Device: TLV9061IDBVR	QBS Package Reference: TLV9061IDBVR (NiPdAu)	QBS Package Reference: TPS76933DBVR (PHI)
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

Qualification Report

Automotive New Product Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)
Approve Date 02-Jun-2022

Product Attributes

Attributes	Qual Device: TMS3840PH30DBVRQ1
Automotive Grade Level	Grade 1
Operating Temp Range	-40 to +125 C
Product Function	Power Management
Wafer Fab Supplier	RFAB
Die Revision	A
Assembly Site	CDAT
Package Type	SOT-23
Package Designator	DBV
Ball/Lead Count	5

- QBS: Qual By Similarity
- Qual Device 3840PH30DBVRQ1 is qualified at LEVEL1-260CG

Qualification Results

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

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: 3840PH30DBVRQ1
Test Group A – Accelerated Environment Stress Tests							
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	No Fails
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0
UHAST	A3	JEDEC JESD22-A102	3	77	Unbiased HAST 130C/85%RH	96 Hours	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0
TC-WBP	A4	MIL-STD883 Method 2011	1	60	Post Temp Cycle Bond Pull	Wires	3/108/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	3/231/0
Test Group B – Accelerated Lifetime Simulation Tests							
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	3/231/0
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A
Test Group C – Package Assembly Integrity Tests							
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear, Cpk>1.67	Wires	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull, Cpk>1.67	Wires	3/90/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free Solder	3/45/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Solder	3/45/0
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	3/30/0
LI	C6	JEDEC JESD22-B105	1	50	Lead Fatigue	Leads	3/66/0
LI	C6	JEDEC JESD22-B105	1	50	Lead Pull to Destruction	Leads	3/66/0
Test Group D – Die Fabrication Reliability Tests							
EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements
SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements
Test Group E – Electrical Verification Tests							
ED	E5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0

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

For questions regarding this notice, e-mails can be sent to the regional contacts shown below or your local Field Sales Representative.

Location	E-Mail
WW PCN Team	PCN_ww_admin_team@list.ti.com

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