12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20230125001.2
Add Cu as Alternative Wire Base Metal for Selected Device(s)
Change Notification / Sample Request

Date: February 24, 2023
To: TOKYO ELECTRON DEVICE (DSTR) PCN

Dear Customer:

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

20230125001.1
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 sixty (60) months. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
TPS7B8250QDRVRQ1	null

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

PCN Number:	20230125001.2	PCN Date:	February 24, 2023
Title:	Add Cu as Alternative Wire Base Metal for Selected Device(s)		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Aug 23, 2023	Sample requests accepted until:	Mar 26, 2023*

*Sample requests received after (Mar 26, 2023) will not be supported.

Change Type:

☐	Assembly Site	☐	Design	☐	Wafer Bump Site
☒	Assembly Process	☐	Data Sheet	☐	Wafer Bump Material
☒	Assembly Materials	☐	Part number change	☐	Wafer Bump Process
☐	Mechanical Specification	☐	Test Site	☐	Wafer Fab Site
☐	Packing/Shipping/Labeling	☐	Test Process	☐	Wafer Fab Materials
				☐	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:

Group 1 device

Material	Current	Proposed
Wire type	0.96mil, 1.15mil, 1.30mil, 2.0 mil Au	0.96mil, 1.30mil, 2.0 mil Cu

Group 2 Device

Material	Current	Proposed
Wire type	0.8 mil Au	0.8 mil 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:

Group 1 Device

LM293P-NG	TPS2012D	TPS2014DR	TPS2030P
TL054IDR-NG	TPS2012DR	TPS2015D	
TL074IDR-NG	TPS2014D	TPS2015DR	

Group 2 Device

TPS7B8150QDRVRQ1	TPS7B8233QDRVRQ1	TPS7B8250QDRVRQ1

Group 1 Qualification Report

Approve Date 17-Oct-2011

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: CD4053BM96	Qual Device: LM358DR	Qual Device: TL494IDR	Qual Device: ULN2003ADR
AC	Autoclave 121C	96 Hours	1/77/0	1/77/0	3/231/0	3/231/0
ED	Electrical Characterization, side by side	Per Datasheet Parameters	Pass	Pass	Pass	Pass
FLAM	Flammability (IEC 695-2-2)	--	-	-	3/15/0	-
FLAM	Flammability (UL 94V-0)	--	-	-	3/15/0	-
FLAM	Flammability (UL-1694)	--	-	-	3/15/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	1/77/0	1/77/0	3/229/0	1/77/0
HTOL	Life Test, 150C	300 Hours	1/77/0	1/77/0	3/231/0	1/77/0
HTSL	High Temp Storage Bake 170C	600 Hours	1/77/0	1/77/0	3/231/0	3/231/0
LI	Lead Pull	Leads	1/22/0	1/22/0	3/66/0	3/66/0
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	Pass	Pass
MSL	Moisture Sensitivity, JEDEC	Level 1-260C	-	3/36/0	3/36/0	3/36/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0	3/231/0	3/231/0
TS	Thermal Shock -65/150C	500 Cycles	1/77/0	3/231/0	3/231/0	3/231/0
VM	Visual / Mechanical	(per mfg. Site specification)	Pass	Pass	Pass	Pass
WBP	Bond Strength	Wires	1/76/0	1/76/0	3/228/0	1/76/0
XRAY	X-ray	(top side only)	1/5/0	1/5/0	3/15/0	3/15/0

- QBS: Qual By Similarity
- Qual Device CD4053BM96, LM358DR, TL494IDR, ULN2003ADR are 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

Approve Date 30-Aug-2013

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: ADS1131IDR	Qual Device: RC4558DR	Qual Device: SN65MLVD207DR	Qual Device: SN74AHC138DR	Qual Device: UCC28061DR
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0	3/231/0	3/231/0	3/227/0
HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	Pass	Pass	Pass
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	3/231/0	3/227/0

- QBS: Qual By Similarity
- Qual Device ADS1131IDR is qualified at LEVEL2-260C
- Qual Device RC4558DR, SN65MLVD207DR, SN74AHC138DR, UCC28061DR are 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

Group 2 Qualification Report

Automotive New Product Qualification Summary

(As per AEC-Q100 and JEDEC Guidelines)

Approve Date 17-Feb-2023

Product Attributes

Attributes	Qual Device: TPS7B8233QDRVRQ1	QBS Package Reference: LM74810QDRRRQ1	QBS Product/Process Reference: TPS7B8250QDRVRQ1	QBS Process Reference: TLC6C5816QPWPRQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 125	-40 to 125	-40 to 125	-40 to 125
Product Function	Power Management	Power Management	Power Management	Power Management
Wafer Fab Supplier	RFAB	RFAB	RFAB	RFAB
Assembly Site	CDAT	CDAT	CDAT	TAI
Package Group	QFN	QFN	QFN	TSSOP
Package Designator	DRV	DRR	DRV	PWP
Pin Count	6	12	6	28

QBS: Qual By Similarity

Qual Device TPS7B8250QDRVRQ1 is qualified at MSL2 260C

Qual Device TPS7B8233QDRVRQ1 is qualified at MSL2 260C

Qual Device TPS7B8150QDRVRQ1 is qualified at MSL2 260C

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: TPS788233QDRVRQ1	QBS Package Reference: LM74810QDRRRQ1	QBS Product/Process Reference: TPS788250QDRVRQ1	QBS Process Reference: TLC6C5816QPWPRQ1
Test Group A - Accelerated Environment Stress Tests											
PC	A1	JEDEC J-STD-020 JESD22A113	3	77	Preconditioning	MSL2 260C	1 Step	1/0/0	3/0/0	3/0/0	-
HAST	A2	JEDEC JESD22A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	3/231/0	3/231/0	-
AC/UHAST	A3	JEDEC JESD22A102/JEDEC JESD22A118	3	77	Autoclave	121C/15psig	96 Hours	-	3/231/0	-	-
AC/UHAST	A3	JEDEC JESD22A102/JEDEC JESD22A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	1/77/0	-	3/231/0	-
TC	A4	JEDEC JESD22A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	3/231/0	3/231/0	-
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	1/5/0	3/15/0	-	-
PTC	A5	JEDEC JESD22A105	1	45	PTC	-40/125C	1000 Cycles	-	-	1/45/0	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	1/45/0	3/135/0	1/45/0	-
Test Group B - Accelerated Lifetime Simulation Tests											
HTOL	B1	JEDEC JESD22A108	1	77	Life Test	125C	1000 Hours	-	3/231/0	3/231/0	3/231/0
ELFR	B2	AEC Q100008	1	77	Early Life Failure Rate	125C	48 Hours	-	-	1/800/0	3/2400/0
Test Group C - Package Assembly Integrity Tests											
WBS	C1	AEC Q100001	1	30	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	1/30/0	3/90/0	3/90/0	-
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	1/30/0	3/90/0	3/90/0	-
SD	C3	JEDEC JSTD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	1/15/0	1/15/0	-
SD	C3	JEDEC JSTD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	1/15/0	1/15/0	-
PD	C4	JEDEC JESD22B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	1/10/0	3/30/0	3/30/0	-
Test Group D - Die Fabrication Reliability Tests											
EM	D1	JESD61	-	-	Electromigration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDDB	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
HCI	D3	JESD60 & 28	-	-	Hot Carrier Injection	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
SM	D5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements

Test Group E - Electrical Verification Tests											
ESD	E2	AEC Q100002	1	3	ESD HBM	-	4000 Volts	1/3/0	-	-	-
ESD	E3	AEC Q100011	1	3	ESD CDM	-	1500 Volts	1/3/0	-	-	-
LU	E4	AEC Q100004	1	6	Latch-Up	Per AEC Q100-004	-	1/6/0	-	1/6/0	-
ED	E5	AEC Q100009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	3/90/0	3/90/0	-

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

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40C to +150C

Grade 1 (or Q): -40C to +125C

Grade 2 (or T): -40C to +105C Grade 3

(or I) : -40C to +85C

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

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

Qualification Report

Automotive New Product Qualification Summary
(As per AEC-Q100, AEC-Q006 and JEDEC Guidelines)
Approve Date 17-Feb-2023

Product Attributes

Attributes	Qual Device: TPS7B8233QDRVRQ1	QBS Package Reference: LM74810QDRRRQ1
Automotive Grade Level	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 125	-40 to 125
Product Function	Power Management	Power Management
Wafer Fab Supplier	RFAB	RFAB
Assembly Site	CDAT	CDAT
Package Group	QFN	QFN
Package Designator	DRV	DRR
Pin Count	6	12

- QBS: Qual By Similarity
- Qual Device TPS7B8233QDRVRQ1 is qualified at MSL2 260C

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: TPS7B8233QDRVRQ1	QBS Package Reference: LM74810QDRRRQ1
Test Group A – Accelerated Environment Stress Tests								
PC	A1	-	3	22	SAM Analysis, Pre Stress	Completed	1/22/0	3/66/0
PC	**A1**	**JEDEC J-STD-020 JESD22-A113**	**3**	**77**	**Preconditioning**	**Level 2-260C**	**No fails**	**No fails**
PC	A1	-	3	22	SAM Analysis, Post Stress	Completed	1/22/0	3/66/0
HAST	**A2**	**JEDEC JESD22-A110**	**3**	**77**	**Biased HAST, 130C/85%RH**	**96 Hours**	**1/77/0**	**3/231/0**
HAST	A2	-	3	1	Cross Section, Post bHAST 96 Hours	Completed	1/1/0	3/3/0
HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 96 Hours	Wires	1/30/0	3/90/0
HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 96 Hours	Wires	1/30/0	3/90/0
HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 96 Hours	Wires	1/30/0	3/90/0
HAST	A2	-	3	22	SAM Analysis, Post bHAST, 96 Hours	Completed	1/22/0	3/66/0
HAST	**A2**	**JEDEC JESD22-A110**	**3**	**77**	**Biased HAST, 130C/85%RH**	**192 Hours**	**-**	**3/210/0**
HAST	A2	-	3	1	Cross Section, Post bHAST 192 Hours	Completed	-	3/3/0
HAST	A2	-	3	22	SAM Analysis, Post bHAST, 192 Hours	Completed	-	3/66/0
HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 192 Hours	Wires	-	3/90/0
HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 192 Hours	Wires	-	3/90/0
HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 192 Hours	Wires	-	3/90/0
TC	**A4**	**JEDEC JESD22-**	**3**	**77**	**Temperature Cycle, -65/150C**	**500 Cycles**	**1/77/0**	**3/231/0**
		A104 and Appendix 3						
TC	A4	-	3	1	Cross Section, Post T/C 500 Cycles	Completed	1/1/0	3/3/0
TC	A4	-	3	22	SAM Analysis, Post T/C, 500 Cycles	Completed	1/22/0	3/66/0
TC	A4	-	3	30	Wire Bond Shear, Post T/C 500 Cycles	Wires	1/30/0	3/90/0
TC	A4	-	3	30	Bond Pull over Stitch Post T/C 500 Cycles	Wires	1/30/0	3/90/0
TC	A4	-	3	30	Bond Pull over Ball Post T/C 500 Cycles	Wires	1/30/0	3/90/0
TC	**A4**	**JEDEC JESD22-A104 and Appendix 3**	**3**	**77**	**Temperature Cycle, -65/150C**	**1000 Cycles**	**-**	**3/210/0**
TC	A4	-	3	1	Cross Section, Post T/C 1000 Cycles	Completed	-	3/3/0
TC	A4	-	3	22	SAM Analysis, Post T/C, 1000 Cycles	Completed	-	3/66/0
TC	A4	-	3	30	Wire Bond Shear, Post T/C 1000 Cycles	Wires	-	3/90/0
TC	A4	-	3	30	Bond Pull over Stitch, Post T/C, 1000 Cycles	Wires	-	3/90/0
TC	A4	-	3	30	Bond Pull over Ball, Post T/C, 1000 Cycles	Wires	-	3/90/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: TPS7B8233QDRVRQ1	QBS Package Reference: LM74810QDRRRQ1
HTSL	**A6**	**JEDEC JESD22-A103**	**3**	**45**	**High Temp Storage Bake 150C**	**1000 Hours**	**1/45/0**	**3/135/0**
HTSL	A6	-	3	1	Cross Section, Post HTSL 1000 Hours	Completed	1/1/0	(1)
HTSL	**A6**	**JEDEC JESD22-A103**	**3**	**44**	**High Temp Storage Bake 150C**	**2000 Hours**	**-**	**3/132/0**
HTSL	A6	-	3	1	Cross Section, Post HTSL 2000 Hours	Completed	-	3/3/0
Test Group C – Package Assembly Integrity Tests								
WBS	C1	AEC Q100-001	3	30	Wire Bond Shear, Cpk>1.67	Wires	1/30/0	3/90/0
WBP	C2	MIL-STD883 Method 2011	3	30	Bond Pull over Ball, Cpk >1.67	Wires	1/30/0	3/90/0

A1 (PC): Preconditioning: Performed for THB, Biased HAST, AC, uHAST & TC samples, as applicable.
Ambient Operating Temperature by Automotive Grade Level:
Grade 0 (or E): -40C to +150C
Grade 1 (or Q): -40C to +125C
Grade 2 (or T): -40C to +105C
Grade 3 (or I) : -40C to +85C
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
Notes:
(1) Cross sectioning not performed

ZVEI ID reference: SEM-PA-08

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

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale (www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.