



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20180110006A

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

Date: February 28, 2018

To: TOKYO ELECTRON DEVICE (DSTR) PCN

Dear Customer:

Revision A is to announce the addition of new devices that were not included on the original PCN notification.

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.

We request you acknowledge 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 you require samples or additional data to support your evaluation, please request within 30 days.

The proposed first ship date is indicated 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, contact your local Field Sales Representative or the PCN Manager (PCN_ww_admin_team@list.ti.com).

Sincerely,

PCN Team
SC Business Services

20180110006A
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
TFP401APZP	null
TFP401PZP	null
TFP403PZP	null

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

PCN Number:	20180110006A		PCN Date:	Feb 28, 2018																			
Title:	Add Cu as Alternative Wire Base Metal for Selected Device(s)																						
Customer Contact:	PCN Manager		Dept:	Quality Services																			
Proposed 1st Ship Date:	May 28, 2018		Estimated Sample Availability:	Date provided at sample request																			
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:																							
Revision A is to announce the <u>addition</u> of new devices that were not included on the original PCN notification. These new devices are under Group 2 in the product affected section below. The expected first shipment date for these new devices will be 90 days from this notice for these newly added devices only. 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: <table border="1"> <thead> <tr> <th>Material</th> <th>Current</th> <th>Proposed</th> </tr> </thead> <tbody> <tr> <td>Wire</td> <td>Au</td> <td>Cu</td> </tr> </tbody> </table> Group 2: <table border="1"> <thead> <tr> <th>Material</th> <th>Current</th> <th>Proposed</th> </tr> </thead> <tbody> <tr> <td>Wire</td> <td>Au</td> <td>Cu</td> </tr> <tr> <td>Mount Compound</td> <td>4042504</td> <td>4208458</td> </tr> <tr> <td>Leadframe finish</td> <td>NiPdAu</td> <td>Roughened NiPdAu</td> </tr> </tbody> </table>						Material	Current	Proposed	Wire	Au	Cu	Material	Current	Proposed	Wire	Au	Cu	Mount Compound	4042504	4208458	Leadframe finish	NiPdAu	Roughened NiPdAu
Material	Current	Proposed																					
Wire	Au	Cu																					
Material	Current	Proposed																					
Wire	Au	Cu																					
Mount Compound	4042504	4208458																					
Leadframe finish	NiPdAu	Roughened NiPdAu																					
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 Material Declaration																							
☐	No Impact to the Material Declaration	☒	Material Declarations or Product Content reports are driven from production data and will be available following the production release. Upon production release the revised reports can be obtained from the TI Eco-Info website . There is no impact to the material meeting current regulatory compliance requirements with this PCN change.																				
Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):																							

None.

Changes to product identification resulting from this PCN:

None.

Product Affected: Group 1

LM22670MR-5.0/NOPB	LM22673MR-5.0/NOPB	LM22676MR-ADJ/NOPB
LM22670MR-ADJ/NOPB	LM22673MR-ADJ/NOPB	LM22676MR-ADJ/S7002530
LM22670MRE-5.0/NOPB	LM22673MRE-5.0/NOPB	LM22676MRE-5.0/NOPB
LM22670MRE-ADJ/NOPB	LM22673MRE-ADJ/NOPB	LM22676MRE-ADJ/NOPB
LM22670MRX-5.0/NOPB	LM22673MRX-5.0/NOPB	LM22676MRX-5.0/NOPB
LM22670MRX-ADJ/NOPB	LM22673MRX-ADJ/NOPB	LM22676MRX-ADJ/NOPB
LM22671MR-5.0/NOPB	LM22674MR-5.0/NOPB	LM22676MRX-ADJ/S7002776
LM22671MR-ADJ/NOPB	LM22674MR-ADJ/NOPB	LM22680MR-ADJ/NOPB
LM22671MRE-5.0/NOPB	LM22674MRE-5.0/NOPB	LM22680MRE-ADJ/NOPB
LM22671MRE-ADJ/NOPB	LM22674MRE-ADJ/NOPB	LM22680MRX-ADJ/E7002609
LM22671MRX-5.0/NOPB	LM22674MRX-5.0/NOPB	LM22680MRX-ADJ/NOPB
LM22671MRX-ADJ/NOPB	LM22674MRX-ADJ/NOPB	LV13602MRX-ADJ/NOPB
LM22672MR-5.0/NOPB	LM22675MR-5.0/NOPB	LV13603AMRX-ADJ/NOPB
LM22672MR-ADJ/NOPB	LM22675MR-ADJ/NOPB	LV13603AMRX-H/NOPB
LM22672MRE-5.0/NOPB	LM22675MRE-5.0/NOPB	LV13603BMRX-ADJ/NOPB
LM22672MRE-ADJ/NOPB	LM22675MRE-ADJ/NOPB	LV13603BMRX-H/NOPB
LM22672MRX-5.0/NOPB	LM22675MRX-5.0/NOPB	LV13603CMRX-ADJ/NOPB
LM22672MRX-5.0S1	LM22675MRX-ADJ/NOPB	LV13603CMRX-H/NOPB
LM22672MRX-ADJ/NOPB	LM22676MR-5.0/NOPB	

Product Affected: Group 2

TFP101APZP	TFP201APZPG4	TFP401APZPG4	TFP403PZP
TFP101APZPG4	TFP201PZP	TFP401PZP	TFP403PZPG4
TFP201APZP	TFP401APZP	TFP401PZPG4	

Group 1 Qualification Report

Cu wire Qualification for SOIC Devices at TIEMA
Approve Date 20-Dec-2017

Product Attributes

Attributes	Qual Device: <u>LV13603AMRJA6J</u>	QBS Package Reference: <u>LM3423MHX/NOPB</u>	QBS Package Reference: <u>LM34923MM/NOPB</u>	QBS Package Reference: <u>LM5010MH/NOPB</u>
Assembly Site	TIEMA-AT	TIEMA	TIEM	TIEMA
Package Family	HSOIC	HTSSOP	VSSOP	HTSSOP
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	MFAB	GFAB	MFAB	GFAB
Wafer Process	A5L27M3T	ABCD150XV1	ABCD05	ABCD150XV1

Attributes	QBS Package Reference: <u>LM5072MH-80/NOPB</u>	QBS Package Reference: <u>LP2996MRX TEST LEG</u>	QBS Package Reference: <u>TPS92560DGQR/NOPB</u>
Assembly Site	TIEMA	TIEMA	TIEM
Package Family	HTSSOP	HSOIC	HVSSOP
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	GFAB	MAINEFAB	MFAB
Wafer Process	ABCD150XV2	CS065	ABCD5

- QBS: Qual By Similarity
- Qual Device LV13603AMRJA6J is qualified at LEVEL3-260CG

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>LV13603AMRJA6J</u>	QBS Package Reference: <u>LM3423MHX/NOPB</u>	QBS Package Reference: <u>LM34923MM/NOPB</u>	QBS Package Reference: <u>LM5010MH/NOPB</u>
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0	1/77/0	3/231/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	3/231/0
HTOL	Life Test, 150C	500 Hours	-	-	-	2/154/0
HTSL	High Temp. Storage Bake, 150C	500 Hours	-	3/231/0	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	3/135/0	-	3/231/0	3/231/0
TC	Temperature Cycle, - 65/150C	500 Cycles	3/231/0	3/231/0	-	3/231/0
UHA ST	Unbiased HAST, 130C/85%RH	96 Hours	-	-	-	-
WBP	Bond Pull	Wires	Pass	-	-	-
WBS	Ball Bond Shear	Wires	Pass	-	-	-

Type	Test Name / Condition	Duration	QBS Package Reference: <u>LM5072MH-80/NOPB</u>	QBS Package Reference: <u>LP2996MRX TEST LEG</u>	QBS Package Reference: <u>TPS92560DGQR/NOPB</u>
AC	Autoclave 121C	96 Hours	3/231/0	-	1/77/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-
HTOL	Life Test, 150C	500 Hours	-	-	-
HTSL	High Temp. Storage Bake, 150C	500 Hours	3/231/0	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	3/231/0
TC	Temperature Cycle, - 65/150C	500 Cycles	3/231/0	1/77/0	-
UHA ST	Unbiased HAST, 130C/85%RH	96 Hours	-	1/77/0	-
WBP	Bond Pull	Wires	-	-	-
WBS	Ball Bond Shear	Wires	-	-	-

- 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

TFP401/APZP, TFP201/APZP, and TFP101APZP with 0.96 Cu Wire

Approve Date 27-Feb-2018

Product Attributes

Attributes	Qual Device: <u>TFP401APZP</u>	Qual Device: <u>TFP401PZP</u>	QBS Package Reference: <u>6964BDC0PAPG4</u>	QBS Package Reference: <u>D610A3BPYP225</u>	QBS Package Reference: <u>P1105182F1PLP</u>
Die Revision	C	C	BD	A	A0
Wafer Fab Supplier	DMOS5	DMOS5	MIHO8	DMOS 5	DMOS5
Wafer Process	1833C07	1833C07	LBC7	1233C035.A6C	LBC8
Assembly Site	TAI	TAI	TAI	TAI	TITL
Package Family	HTQFP	HTQFP	HTQFP	HTQFP	TQFP
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0

- QBS: Qual by Similarity

- Qual Devices qualified at LEVEL3-260C: TFP401PZP, TFP401APZP

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>TFP401APZP</u>	Qual Device: <u>TFP401PZP</u>	QBS Package Reference: <u>6964BDC0PAPG4</u>	QBS Package Reference: <u>D610A3BPYP225</u>	QBS Package Reference: <u>P1105182F1PLP</u>
AC	Autoclave 121C	96 Hours	1/77/0	-	3/231/0	3/231/0	3/231/0
ED	Electrical Distributions	Cpk>1.67 Room, Hot, & Cold Test	-	-	-	-	1/77/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	-	-	-
ELFR	Early Life Failure Rate, 125C	72 Hours	-	-	-	-	3/2400/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	3/231/0
HBM	ESD - HBM	2000 V	-	-	-	-	1/3/0
CDM	ESD - CDM	750 V	-	-	-	-	1/3/0
HTOL	Life Test, 125C	1000 Hours	-	-	-	-	3/231/0

HTSL	High Temp Storage Bake 170C	420 Hours	-	-	-	3/231/0	-
HTSL	High Temp Storage Bake 175C	500 Hours	-	-	-	-	1/45/0
LU	Latch-up	(per JESD78)	-	-	-	-	1/6/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	-	3/231/0	3/231/0	1/77/0
THB	Biased Temperature and Humidity, 85C/85%RH	1000 Hours	-	-	-	1/71/0	-
WBP	Bond Pull	Wires	1/76/0	1/76/0			
WBS	Ball Bond Shear	Wires	1/76/0	1/76/0			
TPI	Thermal Path Integrity	Level 3	1/12/0	-	-	-	-
MQ	Manufacturing (Assembly)	-	Pass	Pass	-	-	-

- 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

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
USA	PCNAmericasContact@list.ti.com
Europe	PCNEuropeContact@list.ti.com
Asia Pacific	PCNAsiaContact@list.ti.com
Japan	PCNJapanContact@list.ti.com