PCN Number:	20180614000	**PCN Date:**	June 15, 2018
Title:	Add Cu as Alternative Wire Base Metal for Selected Device(s)		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	Sept 15, 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:

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	Au	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 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:

RF430FRL152HCRGER	TLC0838CDW	TLC1543CDWG4	TLC1543IDWR
RF430FRL152HCRGET	TLC0838CDWG4	TLC1543CDWR	TLC1543IDWRG4
RF430FRL153HCRGER	TLC0838CDWR	TLC1543CDWRG4	
RF430FRL154HCRGER	TLC0838CDWRG4	TLC1543IDW	
RF430TAL152HSRGER	TLC1543CDW	TLC1543IDWG4	

Qualification Report

SUHD Leadframe 20pin DW
Au to Cu wire Conversion

Approve Date 07-Aug-2017

Product Attributes

Attributes	Qual Device: SN74HCT573DWR	Qual Device: SN74LVC244ADWR	QBS Package Reference: SN65LBC170DW	QBS Package Reference: SN74LVC541ADW
Assembly Site	MLA	MLA	MLA	MLA
Package Family	SOIC	SOIC	SOIC	SOIC
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	SH-BIP-1	FR-BIP-1	DFAB	FFAB
Wafer Fab Process	74HC	ASLC10	LBC3S	ASLC10

Attributes	QBS Package Reference: TL494IDR	QBS Package Reference: ULQ2003AQDRQ1
Assembly Site	FMX	FMX
Package Family	SOIC	SOIC
Flammability Rating	UL 94 V0	UL 94 V-0
Wafer Fab Supplier	SFAB	SFAB
Wafer Fab Process	JI1	JI1-SLM

- QBS: Qual By Similarity
- Qual Device qualified at LEVEL1-260C: SN74HCT573DWR, SN74LVC244ADWR

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: SN74HCT573DWR	Qual Device: SN74LVC244ADWR	QBS Package Reference: SN65LBC170DW	QBS Package Reference: SN74LVC541ADW
AC	Autoclave 121C	96 Hours	-	-	3/231/0	3/231/0
ED	Auto Electrical Distributions	Cpk>1.67 Room, hot, and cold test	-	-	-	-
ED	Electrical Characterization, side by side	Per datasheet parameters	-	-	Pass	Pass
HAST	Biased HAST, 130C/85%RH	192 Hours (for info)	-	-	-	-

Type	Test Name / Condition	Duration	Qual Device: SN74HCT573DWR	Qual Device: SN74LVC244ADWR	QBS Package Reference: SN65LBC170DW	QBS Package Reference: SN74LVC541ADW
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-
HTOL	Life Test, 150C	408 Hours	-	-	-	-
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	-	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/231/0	3/231/0
LI	Lead Fatigue	Leads	3/66/0	3/66/0	-	-
LI	Lead Pull	Leads	3/66/0	3/66/0	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	Pass	Pass
MQ	Manufacturability (Auto Assembly)	(per automotive requirements)	-	-	-	-
PD	Physical Dimensions	(per mechanical drawing)	3/15/0	3/15/0	-	-
SD	Solderability	Pb Free	-	-	-	-
SD	Solderability	Steam age, 8 hours	3/66/0	3/66/0	-	-
SD	Surface Mount Solderability	Pb	-	-	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	3/231/0
WBP	Bond Pull	Wires	3/228/0	3/228/0	3/228/0	3/228/0
WBS	Ball Bond Shear	Wires	3/228/0	3/228/0	3/228/0	3/228/0

Type	Test Name / Condition	Duration	QBS Package Reference: TL494IDR	QBS Package Reference: ULQ2003AQDRQ1
AC	Autoclave 121C	96 Hours	-	3/231/0
ED	Auto Electrical Distributions	Cpk>1.67 Room, hot, and cold test	-	3/90/0
ED	Electrical Characterization, side by side	Per datasheet parameters	-	-
HAST	Biased HAST, 130C/85%RH	192 Hours (for info)	3/231/0	3/217/0
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0
HTOL	Life Test, 150C	408 Hours	-	3/231/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	1/45/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-
LI	Lead Fatigue	Leads	-	-
LI	Lead Pull	Leads	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	-	-

Type	Test Name / Condition	Duration	QBS Package Reference: TL494IDR	QBS Package Reference: ULQ2003AQDRQ1
MQ	Manufacturability (Auto Assembly)	(per automotive requirements)	-	Pass
PD	Physical Dimensions	(per mechanical drawing)	-	-
SD	Solderability	Pb Free	-	1/15/0
SD	Solderability	Steam age, 8 hours	-	-
SD	Surface Mount Solderability	Pb	-	1/15/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0
WBP	Bond Pull	Wires	3/228/0	3/228/0
WBS	Ball Bond Shear	Wires	3/228/0	3/228/0

- 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\

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Qualification Report

Apollo device RF430TAL152HSRGER in TI-Clark with Cu wire

Approve Date 30-Apr-2018

Product Attributes

Attributes	Qual Device: DM5 + CU WIRE QUAL MSP430FR5739IRHA40	Qual Device: RF430TAL152HSRGER
Assembly Site	CLARK-AT	CLARK-AT
Package Family	QFN	QFN
Flammability Rating	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	DM5	DM5
Wafer Process	E035	E035

- QBS: Qual By Similarity
- Qual Device RF430TAL152HSRGER is qualified at LEVEL2-260C

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: DM5 + CU WIRE QUAL MSP430FR5739IRHA40	Qual Device: RF430TAL152HSRGER
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0
HAST	Biased HAST, 130C/85%RH	96 Hours	1/78/0	-
HTSL	High Temp. Storage Bake, 125C	500 Hours	-	3/231/0
HTSL	High Temp, Storage Bake, 150C	1000 Hours	1/77/0	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-
TC	Temperature Cycle, -40C/ 85C	850 Cycles	-	3/231/0
THB	Biased Temperature and Humidity, 85C/85%RH	500 Hours	-	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

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