

PCN Number:	20210305000.1		PCN Date:	Mar 09, 2021	
Title:	Add Cu as Alternative Wire Base Metal for Selected Device(s)				
Customer Contact:	PCN Manager		Dept:	Quality Services	
Proposed 1st Ship Date:	June 09, 2021		Estimated Sample Availability:	Date provided at sample request	
Change Type:					
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design	<input type="checkbox"/>	Wafer Bump Site
<input checked="" type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet	<input type="checkbox"/>	Wafer Bump Material
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change	<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>	Mechanical Specification	<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Site
<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process	<input type="checkbox"/>	Wafer Fab Materials
				<input type="checkbox"/>	Wafer Fab Process
PCN Details					
Description of Change:					
<p>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:</p>					
Group 1:					
	Material	Current	Proposed		
	Wire	0.96mil, 1.3mil Au	0.8mil, 1mil Cu		
Group 2:					
	Material	Current	Proposed		
	Wire	0.96mil Au	0.8mil Cu		
	Mold Compound	4209640	4211471		
	Leadframe finish	NiPdAu	Roughened NiPdAu		
Group 3:					
	Material	Current	Proposed		
	Wire	0.96mil Au	0.96mil Cu		
	Mount Compound	4042500	4147858		
	Mold Compound	4209640	4211880		
Reason for Change:					
<p>Continuity of supply.</p> <ol style="list-style-type: none"> 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					
<input type="checkbox"/>	No Impact to the Material Declaration	<input checked="" type="checkbox"/>	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			
TPS23861PW	UCC27200ADDAR	UCC27201ADDA	UCC27201DDAR
TPS23861PWR	UCC27200DDA	UCC27201ADDAR	
UCC27200ADDA	UCC27200DDAR	UCC27201DDA	
Product Affected: Group 2			
SN1902071PWR			
Product Affected: Group 3			
UCC27210D	UCC27210DR	UCC27211D	UCC27211DR

Group 1 and 2 Qualification Report

Approve Date 23-Feb-2021

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TPS238 61PWR	QBS Product Reference: TPS238 61PW	QBS Product Reference: TPS238 61PWR	QBS Product Reference: TPS238 61PWR	QBS Product Reference: TPS238 6BPW	QBS Process Reference: SN9601 9PFP	QBS Process Reference: SN8400 2PAP	QBS Package Reference: SN65C 1168P WR	QBS Package Reference: TPS21 11PWR	QBS Package Reference: TPS23 861P WR
AC	Autoclave 121C	96 Hours	3/231/0	-	1/77/0	-	1/77/0	3/231/0	3/231/0	3/231/0	3/231/0	-
VM	Visual Quality Reliability Inspection	Post ACLV 96 hours	-	-	-	-	-	-	-	-	3/6/0	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	Pass	Pass	Pass	Pass	-	-	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	-	-	3/2400/0	-	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	1/79/0	3/231/0	3/231/0	3/227/0	-	3/231/0
HAST	Biased HAST, 130C/85%RH	192 Hours	-	-	-	-	-	-	-	3/227/0	-	3/231/0
VM	Visual Quality Reliability Inspection	Post bHAST 96 hours	-	-	-	-	-	-	-	-	-	3/6/0
HB	ESD - HBM	2500 V	-	1/3/0	1/3/0	1/3/0	1/3/0	3/9/0	2/6/0	-	-	-

M													
C D M	ESD - CDM	1000 V	-	1/3/0	1/3/0	1/3/0	1/3/0	3/9/0	3/9/0	-	-	-	-
H T O L	Life Test, 145C	400 Hours	-	1/77/0	-	-	2/80/0	-	-	-	-	-	-
H T O L	Life Test, 125C	1000 Hours	-	-	-	-	-	3/231/0	3/231/0	-	-	-	-
H T S L	High Temp. Storage Bake, 170C	420 Hours	3/231/0	-	1/77/0	-	-	3/231/0	-	3/231/0	-	-	-
H T S L	High Temp. Storage Bake, 150C	1000 Hours	-	-	-	-	-	-	3/231/0	-	-	-	-
L U	Latch-up	(per JESD78)	-	-	1/6/0	1/6/0	1/5/0	1/6/0	1/6/0	-	-	-	-
S D	Solderability	Pb Free	-	-	-	-	1/24/0	-	-	-	-	-	-
S D	Solderability	Pb	-	-	-	-	1/24/0	-	-	-	-	-	-
T C	Temperature Cycle, - 65/150C	500 Cycles	3/231/0	-	1/77/0	-	1/77/0	3/231/0	3/231/0	3/230/0	3/231/0	-	-
B P T C	Post TC Bond Pull	-	3/90/0	-	-	-	-	--	-	-	-	-	-
V M	Visual Quality Reliability Inspection	Post T/C 500 Cycles	-	-	-	-	-	-	-	-	3/6/0	-	-
F T Y	FTY and Bin Summary	-	3/Pass	-	-	-	-	-	--	-	-	-	-
M Q	Manufacturabi lity	Per site specifications	3/Pass	-	-	-	-	-	-	-	3/Pass	3/Pass	3/Pass
M S L	Moisture Sensitivity	(per the appropriate pkg level)	1/12/0										

- QBS: Qual By Similarity

- Qual Device TPS23861PWR is qualified at LEVEL2-260C

- 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 0.7e: 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 09-Feb-2021

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>UCC27201DDAR</u>	QBS Product and Package Reference: <u>UCC27211DDA</u>	QBS Product and Package Reference: <u>UCC27211DDA</u>	QBS Package Reference: <u>LM5164DDA</u>	QBS Package Reference: <u>LM5164DDA</u>
-	Thermal Path Integrity (Cu Wire)	(per the appropriate pkg level)	1/100/0	-	-	-	-
AC	Autoclave 121C	96 Hours	-	-	3/231/0	2/154/0	-
ED	Electrical Characterization	Per Datasheet Parameters	1/Pass	1/Pass	2/Pass	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	3/231/0	1/77/0
HTOL	Life Test, 140C	480 Hours	-	-	1/76/0	-	-
HTOL	Life Test, 150C	384 Hours	-	-	-	2/154/0	-
HTOL	Life Test, 150C	408 Hours	-	-	-	1/77/0	-
HTSL	High Temp Storage Bake 175C	500 Hours	-	-	-	3/231/0	1/45/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	-	3/230/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/230/0	3/231/0	1/77/0

- 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

Group 3 Qualification Report

Approve Date 28-Jan-2021

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>UCC27211DR</u>	QBS Package Reference: <u>MAX232DR</u>	QBS Package Reference: <u>RC4558DR</u>	QBS Package Reference: <u>SN65HVDA10 40AQDRQ1</u>	QBS Package Reference: <u>SN74LV14AD R</u>	QBS Package Reference: <u>ULN2003ADR</u>
AC	Autoclave 121C	96 Hours	-	3/231/0	1/77/0	3/231/0	1/77/0	1/77/0
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	1/Pass	-	-	1/Pass	1/Pass
ED	Electrical Distributions	Cpk>1.67	-	-	-	3/90/0	-	-

Type	Test Name / Condition	Duration	Qual Device: <u>UCC27211DR</u>	QBS Package Reference: <u>MAX232DR</u>	QBS Package Reference: <u>RC4558DR</u>	QBS Package Reference: <u>SN65HVD A10 40AQDRQ1</u>	QBS Package Reference: <u>SN74LV14ADR</u>	QBS Package Reference: <u>ULN2003ADR</u>
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	1/77/0	3/231/0	1/77/0	1/77/0
HTOL	Life Test, 125C	1000 Hours	-	-	-	3/231/0	-	-
HTOL	Life Test, 150C	300 Hours	-	3/231/0	1/77/0	-	1/77/0	1/77/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	3/231/0	3/135/0	3/231/0	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0	-	-	-	3/231/0
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	1/Pass	3/Pass	1/Pass	-	1/Pass	1/Pass
MQ	Manufacturability (Auto Assembly)	(per automotive requirements)	-	-	-	3/Pass	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
YLD	Yield Evaluation	(per mfg. Site specification)	1/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

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