PCN Number:	20220309004.2	PCN Date:	March 17, 2022
Title:	Add Cu as Alternative Wire Base Metal for Selected Device(s) in TI Clark		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Sept 17, 2022	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 in TI Clark 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	1.98 mil Au	1.98 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:

LMR14020QDPRRQ1	LMR14020SQDPRTQ1	LMR14030SQDPRRQ1	LMR14050QDPRTQ1
LMR14020QDPRTQ1	LMR14030QDPRRQ1	LMR14030SQDPRTQ1	LMR14050SQDPRRQ1
LMR14020SQDPRRQ1	LMR14030QDPRTQ1	LMR14050QDPRRQ1	LMR14050SQDPRTQ1

Automotive New Product Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)

Qualification Report

Approve Date 04-MARCH -2022

Product Attributes

Attributes	Qual Device: LMR14050SQDPRRQ1	QBS Reference: TPS2543QRTETQ1
Automotive Grade Level	Grade 1	Grade 1
Operating Temp Range (C) Ta	-40 to 125	-40 to 125
Product Function	Power Management	Power Management
Die Attributes		
Wafer Fab Supplier	DP1DM5	RFAB
Package Attributes		
Assembly Site	CLARK-AT	CLARK-AT
Package Group	QFN	QFN
Package Designator	DPR	RTE
Package Size (mm)	4 x 4	3 x 3
Body Thickness (mm)	0.75	0.75
Pin Count	10	16
Lead Finish	NIPDAU	NIPDAU
Lead Pitch(mm)	0.8	0.5

QBS: Qual By Similarity
Qual Device LMR14050SQDPRRQ1 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: LMR14050SQDPRRQ1	QBS Reference: TPS2543QRTETQ1
Test Group A - Accelerated Environment Stress Tests									
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	-	3/462/0	3/692/0
HAST	A2	JEDEC JESD22A110	3	77	Biased HAST	130C/85%RH	96 Hours	QBS	3/231/0
AC	A3	JEDEC JESD22A102	3	77	Unbiased HAST	130C/85%RH	96 Hours	3/231/0	
TC	A4	JEDEC JESD22A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	3/231/0	

			1	5	Post TC bond pulls	after 500 cycles		1/5/0 (30 wires)	
PTC	A5	JEDEC JESD22A105	1	45	PTC	-40/125C	1000 Cycles	Not applicable	
HTSL	A6	JEDEC JESD22A103	1	45	High Temperature Storage Life	175C	500 Hours	1/45/0	
Test Group B - Accelerated Lifetime Simulation Tests									
All test group B qualification results are carried over from prior qualification of LMR140XXDPRxQ1									
Test Group C - Package Assembly Integrity Tests									
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	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	3/90/0	3/90/0
All other group C qualifications results are carried over from prior qualification of LMR140XXDPRxQ1									
Test Group D - Die Fabrication Reliability Tests									
EM	D1	JESD61	-	-	Electromigration	-	-	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
HCI	D3	JESD60 & 28	-	-	Hot Carrier Injection	-	-	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
SM	D5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
Test Group E - Electrical Verification Tests									
All test group E qualification results are carried over from prior qualification of LMR140XXDPRxQ1									

Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours

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/

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

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.