

<b>PCN Number:</b>	20180911003.1			<b>PCN Date:</b>	Sept 14 2018				
<b>Title:</b>	Add Cu as Alternative Wire Base Metal for Selected Device(s)								
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>	<b>Dept:</b>	Quality Services						
<b>Proposed 1<sup>st</sup> Ship Date:</b>	Dec 14 2018		<b>Estimated Sample Availability:</b>	Date provided at sample request					
<b>Change Type:</b>									
<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				
<b>PCN Details</b>									
<b>Description of Change:</b>									
<p>Texas Instruments is pleased to announce the qualification of Cu as an additional bond wire option for selected devices listed in "Product affected" section below. Devices will remain in current assembly facilities and there will be no other piece part changes:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #d9e1f2;">Current Wire</th> <th style="background-color: #d9e1f2;">Additional Wire</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Au, 1.0 mils</td> <td style="text-align: center;">Au, 1.0 mils or Cu, 0.8 mils</td> </tr> </tbody> </table>						Current Wire	Additional Wire	Au, 1.0 mils	Au, 1.0 mils or Cu, 0.8 mils
Current Wire	Additional Wire								
Au, 1.0 mils	Au, 1.0 mils or Cu, 0.8 mils								
<b>Reason for Change:</b>									
<p>Continuity of supply.</p> <ol style="list-style-type: none"> <li>1) To align with world technology trends and use wiring with enhanced mechanical and electrical properties</li> <li>2) Maximize flexibility within our Assembly/Test production sites.</li> <li>3) Cu is easier to obtain and stock</li> </ol>									
<b>Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):</b>									
None									
<b>Anticipated impact on Material Declaration</b>									
<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 <a href="#">TI ECO website</a> .						
<b>Changes to product identification resulting from this PCN:</b>									
None									
<b>Product Affected:</b>									
LMX2582RHAR	LMX2592RHAR	LMX2594RHAR	LMX2595RHAR						
LMX2582RHAT	LMX2592RHAT	LMX2594RHAT	LMX2595RHAT						



## Qualification Report

### LMX2594/95 product qualification with 10.5 mil die thickness and 0.8 mils Cu wire Approved 8-13-2018

#### Product Attributes

Die Attributes	Qual Device: LMX2594RHA-LMX2595RHA	QBS Device references LMX2594RHA	QBS Device References LMX2592RHA	QBS Product References: LMX2594RHA
Die Revision	A	A	A	A
Wafer Fab Site	FFAB	MAINEFAB	MAINEFAB	MAINEFAB
Wafer Fab Process	BICMOS13	BICMOS13	BICMOS13	BICMOS13
Assembly Site	NSE (UTAC)	NSE (UTAC)	NSE (UTAC)	NSE (UTAC)
Package Family	QFN	QFN	QFN	QFN
Package Designator	RHA	RHA	RHA	RHA
Pin Count	40	40	40	40
Flammability Rating	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:LMX2592RHA, LMX2594RHA

#### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: LMX2594RHA	QBS Device references: LMX2594RHA	QBS Device references: LMX2592RHA	QBS Device references: LMX2594RHA
HAST	Biased HAST, 130C/85%RH	96 Hours		-	3/231/0	3/231/0
AC	Autoclave 121C	96 Hours	1/77/0	3/231/0	3/231/0	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	2/154/0	3/231/0	3/231/0
HTSL	High Temp. Storage Bake, 170C	420 Hours		1/77/0	3/231/0	-
HTSL	High Temp. Storage Bake, 150C	1000 Hours	1/77/0			
HTOL	Life Test, Tj=145C	1000 Hours		1/77/0	1/77/0	-
WBP	Bond Pull	Wires		1/76/0	3/231/0	-
WBS	Ball Bond Shear	Wires		1/76/0	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	-	-
SAM	CSAM /TSAM	Before and after 500 Temp Cycle		1/10/0	0/10/0	0/10/0
ESD	ESD-HBM	4000V		1/3/0	-	-
ESD	ESD-CDM	1500V		1/3/0	-	-
LU	Latch-Up-25C	(per JESD78)		1/6/0	-	-
LU	Latch-Up-85C	(per JESD78)		1/6/0	-	-
VQR	Visual Quality Inspection	Post 500 Temp Cycle		3/2/0	3/2/0	
ED			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

THIS INFORMATION RELATING TO QUALITY AND RELIABILITY IS PROVIDED "AS IS." Product information detailed in this report may not accurately reflect TI's current Product materials, processes and testing used in the construction of the TI products. Customers are solely responsible to conduct sufficient engineering and additional qualification testing to determine whether a device is suitable for use in their applications. Using TI products outside limits stated in TI's datasheet may void TI's warranty. See TI's Terms of Sale at the following link: TERMS OF SALE.



## Qualification Report

### Qualification of LMX2582-LMX2592 product family at UTAC with .8 mils Cu wire Approve Date 08-Aug-2018

#### Product Attributes

Die Attributes	Qual Device: LMX2582- LMX2592	QBS Device References: LM97937RME_Cu	QBS Package Reference: ADC14X250	QBS Package Reference: DAC5682ZIRGCR
Die Revision	A	A	A	G
Wafer Fab Supplier	MFAB	MFAB	MFAB	RFAB
Wafer Process	BICMOS13	BICMOS13	BICMOS13	1833C05X5
Assembly Site	UTAC	UTAC	UTAC / NSE	UTAC (NSE)
Package Family	QFN	QFN	QFN	QFN
Package Designator	RME	RME	RHB	RGC
Pin Count	40	56	32	64
Flammability Rating	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: LM97937RME\_PCC

#### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: LMX2582- LMX2592	QBS Device References: LM97937RME_Cu	QBS Package Reference: ADC14X250	QBS Package Reference: DAC5682ZIRGCR
AC	Autoclave 121C	96 Hours		3/231/0	-	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters		-	Pass	-
ELFR	Early Life Failure Rate, 125C	48 Hours		-	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours		-	3/231/0	-
HBM	ESD - HBM	4000 V		-	-	-
CDM	ESD - CDM	1500 V		-	-	-
HTOL	Life Test, 125C	1000 Hours		-	-	-
HTOL	Life Test, 80C	952 Hours		-	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours		3/231/0	3/231/0	-
LU	Latch-Up	(per JESD78)		-	3/18/0	-
TC	Temperature Cycle, -40/125C	1000 Cycles		-	-	-
TC	Temperature Cycle, -65/150C	500 Cycles		3/231/0	3/231/0	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours		-	3/231/0	3/231/0
MQ	Manufacturing Assembly	(per mfg. Site specification)	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.

<b>Location</b>	<b>E-Mail</b>
USA	<a href="mailto:PCNAmericasContact@list.ti.com">PCNAmericasContact@list.ti.com</a>
Europe	<a href="mailto:PCNEuropeContact@list.ti.com">PCNEuropeContact@list.ti.com</a>
Asia Pacific	<a href="mailto:PCNAsiaContact@list.ti.com">PCNAsiaContact@list.ti.com</a>
Japan	<a href="mailto:PCNJapanContact@list.ti.com">PCNJapanContact@list.ti.com</a>