

<b>PCN Number:</b>	20151030001A		<b>PCN Date:</b>	01/26/2016													
<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>	02/02/2016	<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><b>Revision A</b> is to announce the <u>retraction</u> of select devices. These devices will continue to be manufactured as prior and will not be subjected to the change described in this notification. Affected devices are identified with a <del>strikethrough</del> and are highlighted in yellow in the Product Affected Section.</p> <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"> <thead> <tr> <th>Pkg Family</th> <th>Current Wire</th> <th>Additional Wire</th> </tr> </thead> <tbody> <tr> <td>VSSOP</td> <td>Au, 1.0 mil &amp; 1.3</td> <td>Cu, 1.0 &amp; 1.3</td> </tr> <tr> <td>TQFP, PBGA, QFN, TSSOP, LQFP</td> <td>Au, 0.96</td> <td>Cu, 0.8</td> </tr> <tr> <td>TSSOP (a)</td> <td>Au, 1.97 &amp; 1.98mil</td> <td>Cu, 1.98 mil</td> </tr> </tbody> </table>						Pkg Family	Current Wire	Additional Wire	VSSOP	Au, 1.0 mil & 1.3	Cu, 1.0 & 1.3	TQFP, PBGA, QFN, TSSOP, LQFP	Au, 0.96	Cu, 0.8	TSSOP (a)	Au, 1.97 & 1.98mil	Cu, 1.98 mil
Pkg Family	Current Wire	Additional Wire															
VSSOP	Au, 1.0 mil & 1.3	Cu, 1.0 & 1.3															
TQFP, PBGA, QFN, TSSOP, LQFP	Au, 0.96	Cu, 0.8															
TSSOP (a)	Au, 1.97 & 1.98mil	Cu, 1.98 mil															
<b>Reason for Change:</b>																	
<p>Continuity of supply.</p> <ol style="list-style-type: none"> <li>To align with world technology trends and use wiring with enhanced mechanical and electrical properties</li> <li>Maximize flexibility within our Assembly/Test production sites.</li> <li>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																	

**Product Affected:**

<b>Device</b>	<b>Package Family</b>	<b>Device</b>	<b>Package Family</b>
ADS5271IPFP	TQFP	PLM46001PWP	TSSOP (a)
ADS5271IPFPG4	TQFP	SN0408089DGQR	VSSOP
ADS5271IPFPT	TQFP	SN0408089DGQRG4	VSSOP
ADS5271IPFPTG4	TQFP	SN0805015DGQR	VSSOP
AM1705DPTP3	LQFP	SN0805015DGQRG4	VSSOP
AM1705DPTP4	LQFP	TLV320DAC3203IRGER	QFN
AM1705DPTPA3	LQFP	TLV320DAC3203IRGET	QFN
AM1707DZKB3	PBGA	TMS320C6743DPTP2	LQFP
AM1707DZKB4	PBGA	TMS320C6743DPTP3	LQFP
AM1707DZKBA3	PBGA	TMS320C6745DPTP3	LQFP
AM1707DZKBD4	PBGA	TMS320C6745DPTP4	LQFP
BQ24090DGQR	VSSOP	TMS320C6745DPTPA3	LQFP
BQ24090DGQT	VSSOP	TMS320C6745DPTPD4	LQFP
BQ24091DGQR	VSSOP	TMS320C6747DZKB3	PBGA
BQ24091DGQT	VSSOP	TMS320C6747DZKB4	PBGA
BQ24092DGQR	VSSOP	TMS320C6747DZKBA3	PBGA
BQ24092DGQT	VSSOP	TMS320C6747DZKBD4	PBGA
BQ24093DGQR	VSSOP	TMX320C6747DZKBA3	PBGA
BQ24093DGQT	VSSOP	TPS40000DGQ	VSSOP
D802K003BPFP250	TQFP	TPS40000DGQG4	VSSOP
D804K003BPFP250	TQFP	TPS40000DGQR	VSSOP
D805K003DPTP266	LQFP	TPS40000DGQRG4	VSSOP
D807K013DPTP266	LQFP	TPS40007DGQ	VSSOP
D808K003DPTP300	LQFP	TPS40007DGQG4	VSSOP
D808K003DPTP456	LQFP	TPS40007DGQR	VSSOP
D808K013DPTP300	LQFP	TPS40007DGQRG4	VSSOP
D808K013DPTP400	LQFP	TPS40009DGQ	VSSOP
D808K013DPTP456	LQFP	TPS40009DGQG4	VSSOP
D808K023DPTP400	LQFP	TPS40009DGQR	VSSOP
D80YK113DPTP400	LQFP	TPS40009DGQRG4	VSSOP
D80YK113DPTP5	LQFP	TPS5401DGQ	VSSOP
D810K003DZKB300	PBGA	TPS5401DGQR	VSSOP
D810K013DZKB400	PBGA	TPS5401DGQT	VSSOP
D810K013DZKB456	PBGA	TPS54040ADGQ	VSSOP

D810K023DZKB456	PBGA	TPS54040ADGQR	VSSOP
D81YK113DZKB400	PBGA	TPS54040DGQ	VSSOP
D81YK113DZKB5	PBGA	TPS54040DGQR	VSSOP
D830K003DZKB300	PBGA	TPS54060ADGQ	VSSOP
D830K003DZKB400	PBGA	TPS54060ADGQR	VSSOP
D830K013DZKB400	PBGA	TPS54060DGQ	VSSOP
D830K013DZKB400Z	PBGA	TPS54060DGQR	VSSOP
D830K013DZKB456	PBGA	TPS54062DGKR	VSSOP
D830K023DZKB456	PBGA	TPS54140ADGQ	VSSOP
DH808K003DPTP300	LQFP	TPS54140ADGQR	VSSOP
LM43600PWP	TSSOP (a)	TPS54160ADGQ	VSSOP
LM43600PWPR	TSSOP (a)	TPS54160ADGQR	VSSOP
LM43600PWPT	TSSOP (a)	TPS54240DGQ	VSSOP
LM43601PWP	TSSOP (a)	TPS54240DGQR	VSSOP
LM43601PWPR	TSSOP (a)	TPS54260DGQ	VSSOP
LM43601PWPT	TSSOP (a)	TPS54260DGQR	VSSOP
LM46000PWP	TSSOP (a)	TPS54260DGQR-P	VSSOP
LM46000PWPR	TSSOP (a)	TPS61085DGKR	VSSOP
LM46000PWPT	TSSOP (a)	TPS61085DGKRG4	VSSOP
LM46001PWP	TSSOP (a)	TPS61085DGKT	VSSOP
LM46001PWPR	TSSOP (a)	TPS61085DGKTG4	VSSOP
LM46001PWPT	TSSOP (a)	TPS7A1601DGNR	VSSOP
OMAPL137DZKB3	PBGA	TPS7A1601DGNT	VSSOP
OMAPL137DZKB4	PBGA	TPS7A1633DGNR	VSSOP
OMAPL137DZKBA3	PBGA	TPS7A1633DGNT	VSSOP
OMAPL137DZKBD4	PBGA	TPS7A1650DGNR	VSSOP
<b>PCM5100APW</b>	TSSOP	TPS7A1650DGNT	VSSOP
<b>PCM5100APWR</b>	TSSOP	XD810K013DZKB400	PBGA
<b>PCM5101APW</b>	TSSOP	XOMAPL137DZKBA3	PBGA
<b>PCM5101APWR</b>	TSSOP		

## Qualification Report

**Qualify 1.0 and 1.3 mil PCC wire for MSOP for BOAC devices**  
**Approve Date 14-Sep-2015**

### Product Attributes

Attributes	Qual Device: BQ24090DGQ	Qual Device: TPS54260DGQ	QBS Package Reference: TPS2062DGN
Assembly Site	UTAC	UTAC	UTAC
Package Family	VSSOP	VSSOP	VSSOP
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	MIHO	DMOS5	DFAB
Wafer Process	LBC7	LBC5	LBC4

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL1-260CG: TPS54260DGQ, BQ24090DGQ

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: BQ24090DGQ	Qual Device: TPS54260DGQ	QBS Package Reference: TPS2062DGN
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	3/78/0
HTOL	Life Test, 150C	300 Hours	-	-	3/119/0
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	3/231/0
HTSL	High Temp. Storage Bake, 175C	500 Hours	3/231/0	3/231/0	-
TC	Temperature Cycle, -55/125C	750 Cycles	-	-	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/230/0
TS	Thermal Shock -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

## Qualification Report PTP and ZKB packages Copper wire qualification

Report compiled 8<sup>th</sup> August 2015

Qualification Information			
<b>Qual Type:</b>	Major Change	<b>Affected Sites:</b>	Wafer fab : TSMC-14 A/T : TI PHILIPPINES
<b>Affected business:</b>	TI DSP products	<b>Status:</b>	Released
<b>Project Reference:</b>			
The qualification was based on TI Q55 009-401 and Automotive Electronic Council AEC-Q100 rev G where test groups A and C were conducted to prove the change.			

### CONSTRUCTION INFORMATION

Package Attributes: PTP Package			
<b>Assembly Site</b>	PHI	<b>Mold Compound</b>	4211649
<b>Bond Wire Composition</b>	Cu	<b>Package Designator</b>	PTP
<b>Moisture Sensitivity Level</b>	LEVEL3-260C	<b>Package Size</b>	24 x 24 mm
<b>Mount Compound</b>	4208458	<b>Pin Count</b>	176
<b>Package Family</b>	PowerPad LQFP	<b>Leadframe Finish</b>	NiPdAu

Package Attributes: ZKB Package			
<b>Assembly Site</b>	PHI	<b>Mold Compound</b>	4205443
<b>Bond Wire Composition</b>	Cu	<b>Package Designator</b>	ZKB
<b>Moisture Sensitivity Level</b>	LEVEL3-260C	<b>Package Size</b>	17 x 17 mm
<b>Mount Compound</b>	4205412	<b>Pin Count</b>	256
<b>Package Family</b>	PBGA	<b>Solder Ball Composition</b>	SnAgCu

### QUALIFICATION RESULTS : PTP PACKAGE

Tests groups A and C only were run for this change.

Test Type	Duration / Stress /Test	Lots	Results	Fail	Qualification vehicle
<b>AEC Q100: TEST GROUPS A – ACCELERATED ENVIRONMENT STRESS TESTS</b>					
PC : Preconditioning	MSL3/ 260C	3 lots : All units prior to AC, TC, HTSL	0 / 864		TMS320C6743PTP
	CSAM inspection after Preconditioning	864 units	Validated no internal delamination observed		TMS320C6743PTP
UHAST: Unbiased HAST	110C/2ATM/264 hours	3 lots x 77 units	0/231 @ 264 hours		TMS320C6743PTP
Temperature Cycle	-65C/150C for 500 cycles	3 lots x 77 units	0/231 @ 500 cycles		TMS320C6743PTP
HTSL : High temp storage	150C for 1000 hours	1 lots x 45 units	0/231 @ 1000 hours		TMS320C6743PTP
Reliability data on Biased Humidity testing is QBS to 52C1RFPT that share same x021 bond pad / bonding process/ package BOM.					
THB : Biased Humidity*	85C/85% RH 1000 hours	3 lots x 77 units	0/231 @ 1000 hours		52C1RFPT
*=devices were preconditioned to MSL3/260C prior to THB					
<b>AEC Q100: TEST GROUPS C – PACKAGE INTEGRITY TESTS</b>					
WBP: Wire Bond pull	Cpk > 1.67	1 lot x 5 parts x 30 bonds	Pass		x021 QFP family data
WBS: Wire Bond Shear	Cpk > 1.67	1 lot x 5 parts x 30 bonds	Pass		x021 QFP family data
Data taken post group A reliability testing on x021 QFP devices show no change after package reliability testing					

QUALIFICATION RESULTS : ZKB PACKAGE					
Tests groups A and C only were run for this change where change qualified on TMS4MUFB63I1ZKBQ – same silicon node and BOM.					
Test Type	Duration / Stress /Test	Lots	Results	Fail	Qualification vehicle
<b>AEC Q100: TEST GROUPS A – ACCELERATED ENVIRONMENT STRESS TESTS</b>					
PC : Preconditioning	MSL3/ 260C	3 lots : All units prior to UHAST, THB and TC	0 / 693		TMS4MUFB63I1ZKBQ
	CSAM inspection after Preconditioning	693 units	Validated no internal delamination observed		TMS4MUFB63I1ZKBQ
THB: Temperature Humidity Bias	85C/85C% RH @ Vmax for 1000 hours	3 lots x 77 units	0/231 @ 1000 hours		TMS4MUFB63I1ZKBQ
AC: Autoclave	121C/ 96 hours	3 lots x 77 units	0/231 @ 96 hours		TMS4MUFB63I1ZKBQ
Temperature Cycle	-65C/150C for 500 cycles	3 lots x 77 units	0/231 @ 500, 1000		TMS4MUFB63I1ZKBQ
HTSL : High temp storage	150C for 1000 hours	1 lots x 45 units	0/231 @ 1000 hours		TMS4MUFB63I1ZKBQ
<b>AEC Q100: TEST GROUPS C – PACKAGE INTEGRITY TESTS</b>					
WBP: Wire Bond pull	Cpk > 1.67	1 lot x 5 parts x 30 bonds	Pass		x021 BGA family data
WBS: Wire Bond Shear	Cpk > 1.67	1 lot x 5 parts x 30 bonds	Pass		x021 BGA family data
Data taken post group A reliability testing on x021 BGA devices show no change after package reliability testing					

**Use Disclaimer**

Plastic encapsulated TI semiconductor devices are not designed and are not warranted to be suitable for use in some military applications and/or military environments. Use of plastic encapsulated TI semiconductor devices in military applications and/or military environments, in lieu of hermetically sealed ceramic devices, is understood to be fully at the risk of the buyer.

**Quality and Reliability Data Disclaimer**

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customer should provide adequate design and operating safeguards.

Quality and reliability data provided by Texas Instruments is intended to be an estimate of product performance based upon history only. It does not imply that any performance levels reflected in such data can be met if the product is operated outside the conditions expressly stated in the latest published data sheet for a device.

Reliability data shows characteristic failure mechanisms of the specific environmental stress as documented in the industry standards for each stress condition.



**TI Information  
Selective Disclosure**

**Qualification Report**

**Copper wire bonding Qualification on Aluminum Bond Pads**

Approved 07/07/2011

**Product Attributes**

Attribute	Qual Device: ADS1230L PW	Qual Device: DRV590G QC	Qual Device: F741900A PFB	Qual Device: SN75DP139 RGZ	Qual Device: THS7303 PW	Qual Device: TPA5050 RSA	Qual Device: TSB12LV21B PGF	Qual Device: TSB81BA3E PFP	Qual Device: TVAIC3106IZ QER
Assembly Site	TAI	TAI	TAI	MLA	TAI	MLA	PHI	TAI	PHI
Package Family	TSSOP	JRBGA	TQFP	VQFN	TSSOP	VQFN	LQFP	TQFP	JRBGA
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Site	DMOS5	DFAB	DMOS5	FFAB	FFAB	DMOS5	DMOS5	DMOS5	DMOS5
Wafer Fab Process	50HPA07X3	LBC3S	1833C05X4	BICOM3XL	BICOM3	1833C05X4	33C12X3	1833C05X4	1833C05.24LRD

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL2-260C: ADS1230IPW, SN75LVDS84ADGG, THS7303PW, TPA5050RSA
- Qual Device DRV590GQC is qualified at LEVEL2A-235C
- Qual Devices qualified at LEVEL3-250C: F741900APFB, SN75DP139RGZ, TSB81BA3EPFP, TVAIC3106IZQER

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: ADS1230IPW	Qual Device: DRV590GQC	Qual Device: F741900APFB	Qual Device: SN75DP139RGZ	Qual Device: THS7303PW	Qual Device: TPA5050RSA	Qual Device: TSB12LV21BPGF	Qual Device: TSB81BA3EPFP	Qual Device: TVAIC3106IZQER
AC	Autoclave 121C	96 Hours	3/231/0	-	-	1/77/0	-	3/230/0	-	3/231/0	-
UHA ST	Unbiased HAST 110C/85%RH	264 Hours	-	-	-	-	-	-	-	-	3/231/0
UHA ST	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	-	-	-	-	-	-
TC	Temperature Cycle, -55/125C	700 Cycles	-	1/77/0	-	-	-	-	3/231/0	-	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	3/231/0	1/77/0	3/231/0	3/231/0	3/231/0	3/231/0	-
HTS L	High Temp. Storage Bake, 150C	1000 Hours	-	-	-	-	-	-	-	-	3/231/0
HTS L	High Temp. Storage Bake, 170C	420 Hours	3/231/0	-	3/231/0	1/77/0	3/231/0	3/231/0	3/270/0	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

### Qualification Report

Copper wire bonding on Aluminum Bond Pads - (VQFN, VSON & WSON Packages)  
Approved 07/01/2011

### Product Attributes

Attributes	Qual Device: DRV401AIRGW	Qual Device: SN75DP122ARTQ	Qual Device: TLVDAC32IRHBR	Qual Device: TPA2005D1DRB	Qual Device: TPS51217DSCR	Qual Device: TPS51621RHA
Assembly Site	CLARK-AT	CLARK-AT	CLARK-AT	CLARK-AT	CLARK-AT	CLARK-AT
Package Family	VQFN	VQFN	VQFN	VSON	WSON	VQFN
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	Class UL94-V0	UL 94 V-0	UL 94 V-0
Wafer Fab Site	DMOS5	FFAB	DMOS5	FR-BIP-1	RFAB	DFAB
Wafer Fab Process	50HPA07	50BICOM3XL	1833C05X4	3370A12X3	LBC7	LBC4

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL2-260C: DRV401AIRGW, TLVDAC32IRHBR, TPA2005D1DRB, TPS51217DSCR, TPS51217DSC

- Qual Devices qualified at LEVEL3-260C: SN75DP122ARTQ, TPS51621RHA

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: DRV401AIRGW	Qual Device: SN75DP122ARTQ	Qual Device: TLVDAC32IRHBR	Qual Device: TPA2005D1DRB	Qual Device: TPS51217DSCR	Qual Device: TPS51621RHA
AC	Autoclave 121C	96 Hours	3/229/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
TC	Temperature Cycle - 65/150C	500 Cycles	3/230/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
BHAST	Bias HAST 130C 85%RH	96 Hours	-	-	-	-	3/231/0	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	Pass	Pass	Pass	Pass	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

**Qualification Report**

Qualification 0.95 mils Wire  
Diameter- Cu  
Approved 09/19/2012

**Product Attributes**

Attributes	Qual Device: MAX232DR	Qual Device: RC4558DR	Qual Device: SN74LV14ADR	Qual Device: ULN2003ADR
Assembly Site	MLA (TIM)	MLA (TIM)	MLA (TIM)	MLA (TIM)
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 Site	SFAB	SFAB	SFAB	SFAB
Wafer Fab Process	LBC3S	J11-Lin	EPIC1-S_SLM	JI-SLM

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL1-260C: MAX232DR, RC4558DR, SN74LV14ADR, ULN2003ADR

**Qualification Results**

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

Type	Test Name / Condition	Duration	Qual Device: MAX232DR	Qual Device: RC4558DR	Qual Device: SN74LV14ADR	Qual Device: ULN2003ADR
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	1/77/0	1/77/0	1/77/0
AC	Autoclave 121C	96 Hours	3/231/0	1/77/0	1/77/0	1/77/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	3/231/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	3/231/0	3/231/0	-
HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0	-	-	3/231/0
HTOL	Life Test, 150C	300 Hours	3/231/0	1/77/0	1/77/0	1/77/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	Pass
	Bond Strength	Wires	3/228/0	1/76/0	1/76/0	1/76/0
DPA	Lead Pull to Destruction	Leads	3/66/0	1/22/0	1/22/0	1/22/0
FLAM	Flammability (IEC 695-2-2)	--	3/15/0	1/5/0	1/5/0	-
FLAM	Flammability (UL 94V-0)	--	3/15/0	1/5/0	1/5/0	-
FLAM	Flammability (UL-1694)	--	3/15/0	1/5/0	1/5/0	-

MQ	Manufacturability	(per mfg. Site specification)	Pass	Pass	Pass	Pass
MSL	Moisture Sensitivity, JEDEC	Level 1-260C	3/36/0	3/36/0	3/36/0	3/36/0
XRAY	X-ray	(top side only)	3/15/0	1/5/0	1/5/0	1/5/0

- 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



TI Information  
Selective Disclosure

**Qualification Report**

**0.8mils PCC wire qualification for QFN package in MLA using C05 PR Tech**

Approved 03/20/2015

**Product Attributes**

Attributes	Qual Device: ADS6445IRGCR	Qual Device: K3LVDS315RGER
Assembly Site	MLA	MLA
Package Family	VQFN	VQFN
Flammability Rating	UL 94 V-0	UL 94 V-0
Wafer Fab Site	DMOS5	DMOS5
Wafer Fab Process	1833C05X5	1833C05X4

- QBS: Qual By Similarity

- Qual Devices are qualified at LEVEL3-260C: ADS6445IRGCR, K3LVDS315RGER

**Qualification Results**

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

Type	Test Name / Condition	Duration	Qual Device: ADS6445IRGCR	Qual Device: K3LVDS315RGER
AC	Autoclave 121C	96 Hours	-	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0
	Crater check	50 pads/lot	Pass	Pass
MQ	Manufacturability	(per mfg Site specification)	Pass	Pass
MSL	Moisture Sensitivity, JEDEC	Level 3-260C	-	3/36/0

- 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

Change Number: C1011084

TI Qualification ID: 20120723-62865

## Qualification Report

**LM46001PWP**  
 Approved 02/26/2015

### Product Attributes

Attributes	Qual Device: LM46001PWP	QBS Product: LM46002PWP	QBS Package: LM43603PWP
Assembly Site	TITL (TAI)	TITL (TAI)	TITL (TAI)
Package Family	PWP	PWP	PWP
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Site	DMOS5	DMOS5	DMOS5
Wafer Fab Process	LBC8	LBC8	LBC8

- QBS: Qual By Similarity
- Qual Device LM46002PWP 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: LM46001PWP	QBS Product: LM46002PWP	QBS Package: LM43603PWP
PC	PreCon Level 2	260C	-	3/616/0	3/536/0
HAST	Biased HAST, 110C/85%RH	264 hours	-	3/231/0	-
THB	Biased Temperature and Humidity, 85C/85%RH	1000 hours	-	1/77/0	-
AC	Autoclave 121C	96 hours	-	1/77/0	3/230/0
TC	Temperature Cycle, -65/150C	500 cycles	-	3/231/0	3/230/0
HTSL	High Temp Storage Bake 150C	1000 hours	-	-	1/76/0
HTOL	Life Test, 150C	300 hours	1/77/0	4/308/0	-
HBM	ESD - HBM	2500V	1/3/0	1/3/0	-
CDM	ESD - CDM	1000V	1/3/0	1/3/0	-
LU	Latch-up	25C	1/6/0	1/6/0	-
ED	Electrical Characterization	Per Datasheet Parameters	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/>

## Qualification Report

**LM46002PWP**  
Approved 02/26/2015

### Product Attributes

Attributes	Qual Device: LM46002PWP	QBS Package: LM43603PWP
Assembly Site	TITL (TAI)	TITL (TAI)
Package Family	PWP	PWP
Flammability Rating	UL 94 V-0	UL 94 V-0
Wafer Fab Site	DMOS5	DMOS5
Wafer Fab Process	LBC8	LBC8

- QBS: Qual By Similarity  
- Qual Device LM46002PWP 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: LM46002PWP	QBS Package: LM43603PWP
PC	PreCon Level 2	260C	3/616/0	3/536/0
HAST	Biased HAST, 110C/85%RH	264 hours	3/231/0	-
THB	Biased Temperature and Humidity, 85C/85%RH	1000 hours	1/77/0	-
AC	Autoclave 121C	96 hours	1/77/0	3/230/0
TC	Temperature Cycle, -65/150C	500 cycles	3/231/0	3/230/0
HTSL	High Temp Storage Bake 150C	1000 hours	-	1/76/0
HTOL	Life Test, 150C	300 hours	4/308/0	-
HBM	ESD - HBM	2500V	1/3/0	-
CDM	ESD - CDM	1000V	1/3/0	-
LU	Latch-up	25C	1/6/0	-
ED	Electrical Characterization	Per Datasheet Parameters	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

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	<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>