

PCN Number:	20140130001B	PCN Date:	06/23/2014
Title:	Hybrid Au/Cu wire bond flow for NFBGA Shiva and Freon Devices		
Customer Contact:	PCN Manager	Phone:	+1(214)480-6037
Dept:	Quality Services		
Proposed 1st Ship Date:	09/23/2014	Estimated Sample Availability:	Date provided at sample request.
Change Type:			
<input type="checkbox"/>	Assembly Site	<input checked="" type="checkbox"/>	Design
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet
<input checked="" type="checkbox"/>	Assembly Materials	<input checked="" type="checkbox"/>	Part number change
<input type="checkbox"/>	Mechanical Specification	<input type="checkbox"/>	Test Site
<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Site
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Material
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Site
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Materials
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process
PCN Details			
Description of Change:			
<p>The purpose of Revision B is to communicate a design revision change and part number change for the Freon devices listed in the Product Affected Section of this document. Previous sample requests will be built with the new design revision and the new part number.</p>			
Design Change:			
Description of Design Change		Benefit of Change	
Increased the range of the temperature compensation DAC.		Improved USB performance over temperature.	
<p>This is to Qualify a Hybrid Au/Cu wire bond flow for NFBGA Shiva and Freon Devices. See table below for reference:</p>			
Material Set	From	To	
Wire diam (Mils)	0.8mil Au wire	0.8mil Au/Cu wire	
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 Fit, Form, Function, Quality or Reliability (positive / negative):			
None.			

Changes to product identification resulting from this PCN:

Die Rev designator will change as shown in the table and sample label below:

New

Die Rev [2P]
E

Sample Product Shipping Label (not actual product label)

 **TEXAS
INSTRUMENTS**

MADE IN: Malaysia
2DC: 2Q:

MSL 2 /260C/1 YEAR	SEAL DT
MSL 1 /235C/UNLIM	03/29/04

OPT:
ITEM:

39
LBL: 5A (L)T0:1750


G4



(1P) **SN74LS07NSR**
(Q) **2000** (D) **0336**
(31T) LOT: 3959047MLA
(4W) TKY(1T) 7523483SI2
(P)
(2P) **REV:** (V) 0033317
(20L) CS0: SHE (21L) CCO:USA
(22L) AS0: MLA (23L) ACO: MYS

Product Affected:			
Current Part Number	New Part Number	Current Part Number	New Part Number
AM1802BZCED3	AM1802EZCED3	OMAPL132DZWTA2	OMAPL132EZWTA2
AM1802BZWTD3	AM1802EZWTD3	OMAPL132DZWTA2R	OMAPL132EZWTA2R
AM1806BZCE3	AM1806EZCE3	OMAPL132EZWTA2R	No Part Number Change
AM1806BZCE4	AM1806EZCE4	OMAPL138AZCEA3	OMAPL138EZCEA3
AM1806BZCEA3	AM1806EZCEA3	OMAPL138AZWT3	OMAPL138EZWT3
AM1806BZCED4	AM1806EZCED4	OMAPL138AZWT3SRT	OMAPL138EZWT3SRT
AM1806BZWT3	AM1806EZWT3	OMAPL138BZCE3	OMAPL138EZCE3
AM1806BZWT4	AM1806EZWT4	OMAPL138BZCE4	OMAPL138EZCE4
AM1806BZWTD4	AM1806EZWTD4	OMAPL138BZCEA3	OMAPL138EZCEA3
AM1808BZCE3	AM1808EZCE3	OMAPL138BZCEA3D	OMAPL138EZCEA3D
AM1808BZCE4	AM1808EZCE4	OMAPL138BZCEA3E	OMAPL138EZCEA3E
AM1808BZCEA3	AM1808EZCEA3	OMAPL138BZCEA3R	OMAPL138EZCEA3R
AM1808BZCED4	AM1808EZCED4	OMAPL138BZCED4	OMAPL138EZCED4
AM1808BZWT3	AM1808EZWT3	OMAPL138BZCED4E	OMAPL138EZCED4E
AM1808BZWT4	AM1808EZWT4	OMAPL138BZCEML	OMAPL138EZCEML
AM1808BZWTA3	AM1808EZWTA3	OMAPL138BZWT3	OMAPL138EZWT3
AM1808BZWTD4	AM1808EZWTD4	OMAPL138BZWT4	OMAPL138EZWT4
AM1808BZWTT3	AM1808EZWTT3	OMAPL138BZWTA3	OMAPL138EZWTA3
AM1810BZWTA3	AM1810EZWTA3	OMAPL138BZWTA3CS	OMAPL138EZWTA3CS
AM3505AZCN	Not Freon - no PN change	OMAPL138BZWTA3E	OMAPL138EZWTA3E
AM3505AZCNA	Not Freon - no PN change	OMAPL138BZWTA3R	OMAPL138EZWTA3R
AM3505AZCNA3	Not Freon - no PN change	OMAPL138BZWTA4	OMAPL138EZWTA4
AM3505AZCNC	Not Freon - no PN change	OMAPL138BZWTD4	OMAPL138EZWTD4
AM3517AZCN	Not Freon - no PN change	OMAPL138BZWTD4E	OMAPL138EZWTD4E
AM3517AZCNA	Not Freon - no PN change	OMAPL138BZWTRB	OMAPL138EZWTRB
AM3517AZCNA3	Not Freon - no PN change	OMAPL138CZWTA3RW	OMAPL138EZWTA3RW
D840K002BZCE300	D840K002EZCE300	OMAPL138CZWTD4RW	OMAPL138EZWTD4RW
D840K002BZCE400	D840K002EZCE400	OMAPL138DZCEA3	OMAPL138EZCEA3
D840K002BZCE456	D840K002EZCE456	OMAPL138DZCEA3R	OMAPL138EZCEA3R
D840K002BZWT300	D840K002EZWT300	OMAPL138DZWTA3	OMAPL138EZWTA3
D840K002BZWT400	D840K002EZWT400	OMAPL138DZWTA3R	OMAPL138EZWTA3R
D840K002BZWT456	D840K002EZWT456	OMAPL138EZCEA3R	No Part Number Change
D840K012BZCE400	D840K012EZCE400	OMAPL138EZWTA3R	No Part Number Change
D840K012BZCE456	D840K012EZCE456	RZTHC6748	TMS320C6748EZWT3
D840K012BZWT300	D840K012EZWT300	TMS320DM6437ZWTS6	Not Freon - no PN change
D840K012BZWT400	D840K012EZWT400	TMS320C6742BZCE2	TMS320C6742EZCE2
D840K012BZWT456	D840K012EZWT456	TMS320C6742BZWT2	TMS320C6742EZWT2
D840K022BZCE456	D840K022EZCE456	TMS320C6742BZWTA2	TMS320C6742EZWTA2
D840K022BZWT300	D840K022EZWT300	TMS320C6746AZWT3	TMS320C6746EZWT3
D840K022BZWT456	D840K022EZWT456	TMS320C6746BZCE3	TMS320C6746EZCE3
D850K002BZCE300	D850K002EZCE300	TMS320C6746BZCEA3	TMS320C6746EZCEA3

D850K002BZCE400	D850K002EZCE400	TMS320C6746BZCED4	TMS320C6746EZCED4
D850K002BZCE456	D850K002EZCE456	TMS320C6746BZWT3	TMS320C6746EZWT3
D850K002BZWT300	D850K002EZWT300	TMS320C6746BZWT3CS	TMS320C6746EZWT3CS
D850K002BZWT400	D850K002EZWT400	TMS320C6746BZWT4	TMS320C6746EZWT4
D850K002BZWT456	D850K002EZWT456	TMS320C6746BZWTA3	TMS320C6746EZWTA3
D850K012BZCE300	D850K012EZCE300	TMS320C6746BZWTD4	TMS320C6746EZWTD4
D850K012BZCE400	D850K012EZCE400	TMS320C6748AZCE3	TMS320C6748EZCE3
D850K012BZCE456	D850K012EZCE456	TMS320C6748AZWT3	TMS320C6748EZWT3
D850K012BZWT300	D850K012EZWT300	TMS320C6748BZCE3	TMS320C6748EZCE3
D850K012BZWT400	D850K012EZWT400	TMS320C6748BZCE4	TMS320C6748EZCE4
D850K012BZWT456	D850K012EZWT456	TMS320C6748BZCEA3	TMS320C6748EZCEA3
D850K018BZWT400	D850K018EZWT400	TMS320C6748BZCEA3E	TMS320C6748EZCEA3E
D850K022BZCE300	D850K022EZCE300	TMS320C6748BZCED4	TMS320C6748EZCED4
D850K022BZCE400	D850K022EZCE400	TMS320C6748BZCED4E	TMS320C6748EZCED4E
D850K022BZCE456	D850K022EZCE456	TMS320C6748BZWT3	TMS320C6748EZWT3
D850K022BZWT300	D850K022EZWT300	TMS320C6748BZWT3CS	TMS320C6748EZWT3CS
D850K022BZWT400	D850K022EZWT400	TMS320C6748BZWT4	TMS320C6748EZWT4
D850K022BZWT456	D850K022EZWT456	TMS320C6748BZWTA3	TMS320C6748EZWTA3
DCHGC6748	TMS320C6748EZWT3	TMS320C6748BZWTA3E	TMS320C6748EZWTA3E
M1OMAPL138DZCE	M1OMAPL138EZCE	TMS320C6748BZWTD4	TMS320C6748EZWTD4
M1OMAPL138DZCER	M1OMAPL138EZCER	TMS320C6748BZWTD4E	TMS320C6748EZWTD4E
M1OMAPL138EZCER	No Part Number Change	TNETV138BINZWT4	TNETV138EINZWT4
M1OMAPL138ZCE	M1OMAPL138EZCE	XAM1808BZCE4	AM1808EZCE4
M1OMAPL138ZCER	M1OMAPL138EZCER	XOMAPL138BZCE	OMAPL138EZCE3
OMAPL132BZWT2	OMAPL132EZWT2	XOMAPL138EZCEA3R	OMAPL138EZCEA3R
OMAPL132BZWTA2	OMAPL132EZWTA2	XOMAPL138EZWTA3	OMAPL138EZWTA3
OMAPL132BZWTA2E	OMAPL132EZWTA2E	XOMAPL138EZWTA3R	OMAPL138EZWTA3R
OMAPL132BZWTA2R	OMAPL132EZWTA2R		

FREON C021.M - PG2.3 (Revision E Qualification)
Approved 03/12/2014

Product Attributes

Attributes	Qual Device: AM1808BZCE4_PG2.3	Qual Device: OMAPL138BZWTQ3_PG2.3	Qual Device: TMS320C6748BZWTA3E_PG2.1
Operating Temp Range	-40C to 105C	-40C to 105C	-40C to 105C
Automotive Grade Level	Major Change	Major Change	Major Change
Wafer Fab Site	UMC FAB12I	UMC FAB12I	UMC FAB12I
Die Revision	E	E	C
Assembly Site	PHI	PHI	PHI
Package Type	BGA	BGA	BGA
Package Designator	ZCE	ZWT	ZWT
Ball/Lead Count	361	361	361

- QBS: Qual By Similarity
- Qual Device AM1808BZCE4_PG2.3 is qualified at LEVEL3-260C
- Qual Device OMAPL138BZWTQ3_PG2.3 is qualified at LEVEL3-260C
- Qual Device TMS320C6748BZWT3E_PG2.1 is qualified at LEVEL3-260C

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

Type	#	Test Name / Condition	Duration	Qual Device: AM1808BZCE4_PG2.3	Qual Device: OMAPL138BZWTQ3_PG2.3	Qual Device: TMS320C6748BZWT3E_PG2.1
Test Group A - Accelerated Environment Stress Test						
PC	A1	Preconditioning	Level3-260C	-	-	Performed on <u>ALL</u> SMD devices prior to THB/HAST, AC/UHST, TC and PTC
THB	A2	Biased Temperature and Humidity, 85C/85%RH	1000 hours	-	-	3/78/0
UHAST	A3	Unbiased HAST 110C/85%RH	264 hours	-	-	3/231/0
TC	A4	Temperature Cycle, -55/125C	1000 cycles	-	-	3/231/0
HTSL	A6	High Temp Storage Bake 150C	1000 hours	-	-	3/231/0
Test Group C - Package Assembly Integrity Tests						
WBS	C1	Wire Bond Shear (Ppk > 1.67 and Cpk > 1.33)	30 Bonds / 5 Parts Minimum	-	-	3 / Pass
WBP	C2	Wire Bond Pull (Ppk > 1.67 and Cpk > 1.33)	30 Bonds / 5 Parts Minimum	-	-	3 / Pass
Test Group E - Electrical Verification						
CDM	E3	ESD - CDM (JEDEC)	+/-250V	1/3/0	-	-
CDM	E3	ESD - CDM (JEDEC)	+/-500V	1/3/0	-	-
CDM	E3	ESD - CDM (JEDEC)	+/-750V	1/3/0	-	-
CDM	E3	ESD - CDM - Q100	+/-750V (corner BGA)	-	1/3/0	-
CDM	E3	ESD - CDM - Q100	+/-250V	-	1/3/0	-
CDM	E3	ESD - CDM - Q100	+/-500V	-	1/3/0	-
ED	E5	Electrical Characterization.	PLL frequency shift eval on ATE	1 / Pass	-	-

Additional Tests					
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	1 / Pass	-	-
MQ	Manufacturability (Auto Assembly)	(per automotive requirements)	-	1 / Pass	-

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST & TC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or A): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I) : -40°C to +85°C

Grade 4 (or C): -40°C to +70°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold : HTOL

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Qualification Data					
This qualification has been specifically developed for the validation of this change. The qualification data validates that the proposed change meets the applicable released technical specifications.					
Qual Vehicle 1: AM3517ZCN (MSL 3-260C)					
Package Construction Details					
Assembly Site:	TI-PHI	Mold Compound:	4205283		
# Pins-Designator, Family:	491-ZCN, BGA	Mount Compound:	4205412		
Solder Ball composition	SnAgCu	Bond Wire:	0.80Mil Au/Cu		
Qualification: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> Test Results					
Reliability Test	Conditions	Sample Size/Fail			
		Lot#1	Lot#2	Lot#3	
** Biased HAST	130C/85%RH (264 HRS)	77/0	77/0	77/0	
**Unbiased HAST	130C/85%RH (192 HRS)	77/0	77/0	77/0	
**T/C	-55C/+125C (1000 Cyc)	77/0	77/0	77/0	
**High Temp Storage Bake	150C (1000 Hrs)	20/0	20/0	20/0	
ESD CDM	+/- 250V	3/0	3/0	3/0	
Manufacturability	(per mfg. Site specification)	Pass	-	-	
Notes **- Preconditioning sequence: Level 3-260C.					

Qual Vehicle 2: AM1808BZCE4 (MSL 3-260C)				
Package Construction Details				
Assembly Site:	TI-PHI	Mold Compound:	4208515	
# Pins-Designator, Family:	361-ZCE, BGA	Mount Compound:	4205412	
Solder Ball composition	SnAgCu	Bond Wire:	0.80Mil Au/Cu	
Qualification: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> Test Results				
Reliability Test	Conditions		Sample Size/Fail	
ESD CDM	+/- 250V; +/- 500v; +/- 750V		3/0	
Manufacturability	(per mfg. Site specification)		Pass	
Qual Vehicle 3: OMAPL138BZWTQ3 (MSL 3-260C)				
Package Construction Details				
Assembly Site:	TI-PHI	Mold Compound:	4208515	
# Pins-Designator, Family:	361-ZWT, BGA	Mount Compound:	4205412	
Solder Ball composition	SnAgCu	Bond Wire:	0.80Mil Au/Cu	
Qualification: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> Test Results				
Reliability Test	Conditions		Sample Size/Fail	
ESD CDM	+/- 250V; +/- 500v; +/- 750V		3/0	
Manufacturability	(per mfg. Site specification)		Pass	
Qual Vehicle 4: TMS320C6748BZWTA3E (MSL 3-260C)				
Package Construction Details				
Assembly Site:	TI-PHI	Mold Compound:	4208515	
# Pins-Designator, Family:	361-ZWT, BGA	Mount Compound:	4205412	
Solder Ball composition	SnAgCu	Bond Wire:	0.80Mil Au/Cu	
Qualification: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> Test Results				
Reliability Test	Conditions	Sample Size/Fail		
		Lot#1	Lot#2	Lot#3
** Biased Temp and Humidity	85C/85%RH (1000 Hrs)	26/0	26/0	26/0
**Unbiased HAST	110C/85%RH (264 Hrs)	77/0	77/0	77/0
**T/C	-55C/+125C (1000 Cyc)	77/0	77/0	77/0
**High Temp Storage Bake	150C (1000 Hrs)	77/0	77/0	77/0
Notes **- Preconditioning sequence: Level 3-260C.				

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