12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20141208000A
Assembly site move from Amkor K1 to Amkor P1
for Select Devices
Change Notification / Sample Request

Dear Customer:

Revision A is to update the description of change to provide correction on the included BOM comparison table. We apologize for any inconvenience this may have caused.

Amkor K1 (Korea) is closing its facility by 2015. This product change announcement is to support transfer of products in the QFN package to alternate sites. The details of this change are on the following pages.

We request you acknowledge receipt of this notification within **30** days of the date of this notice. Lack of acknowledgement of this notice within 30 days constitutes acceptance of the change. If you require samples or additional data to support your evaluation, please request within 30 days to ensure you can complete your evaluation and product transfer to the new site can be completed prior to the Amkor K1 site closure.

The changes discussed within this PCN will not take effect any earlier than **90** days from the date of this notification, unless customer agreement has been reached on an earlier implementation of the change. This notification period is per TI's standard process.

This notice does not change the end-of-life status of any product. Should product affected be on a previously issued product withdrawal/discontinuance notice, this notification does not extend the life of that product or change the life time buy offering/discontinuance plan.

For questions regarding this notice, contact your local Field Sales Representative or the PCN Manager (PCN_ww_admin_team@list.ti.com).

Sincerely,

PCN Team
SC Business Services
Phone: +1(214) 480-6037
Fax: +1(214) 480-6659

PCN# 20141208000A
Attachment: 1

Products Affected:

According to our records, there are the affected device(s) that you have purchased within the past twenty-four (24) months. Technical details of this Product Change follow on the next page(s).

PCN Number:	20141208000A	PCN Date:	02/06/2015
Title:	Assembly site move from Amkor K1 to Amkor P1 for Select Devices		
Customer Contact:	PCN Manager	Phone: +1(214)480-6037	Dept: Quality Services
Proposed 1st Ship Date:	03/16/2015	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:

Revision A is to update the description of change to provide correction on the included BOM comparison table below as follows. We apologize for any inconvenience this may have caused.

Group 1:

- No material difference for Mount Compound between Amkor K1 and Amkor P1
- Mold compound part no. updated
- Remove Au wire option for Amkor P1

Group 2: No material difference between Amkor K1 and Amkor P1

Assembly site move from Amkor K1 to Amkor P1 for Select Devices. Material differences are as follows:

Group 1 Device

	Amkor K1	Amkor P1
Mount Compound	~~101361223~~	~~4208458~~
Mold Compound	101319571	~~4211649~~ 101377289
Wire type	Au	~~Au~~, Cu
Lead Finish	Matte Sn	NiPdAu

Group 2 Device

	Amkor K1	Amkor P1
Mount Compound	~~101361223~~	~~4208458~~
Mold Compound	~~101319571~~	~~4211649~~

Reason for Change:

Closure of the Amkor K1 assembly facility. Continuity of supply.

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None.

Changes to product identification resulting from this PCN:

Sample Product Shipping Label (not actual product label)

Group 1: Assembly Site

Amkor K1	Assembly Site Origin (22L)	ASO: AMN
Amkor P1	Assembly Site Origin (22L)	ASO: AKR

ASSEMBLY SITE CODES: AMN =7, AKR = 4

Product Affected Group: Group 1

MSP430F133IRTDR	MSP430F1491IRTDR	MSP430F1610IRTDT	MSP430F412IRTDT
MSP430F133IRTDT	MSP430F1491IRTDT	MSP430F1611IRTDR	MSP430F413IRTDR
MSP430F135IRTDR	MSP430F149IRTDR	MSP430F1611IRTDT	MSP430F413IRTDT
MSP430F135IRTDT	MSP430F149IRTDRG4	MSP430F1612IRTDR	MSP430F415IRTDR
MSP430F1471IRTDR	MSP430F149IRTDT	MSP430F1612IRTDT	MSP430F415IRTDT
MSP430F1471IRTDT	MSP430F155IRTDR	MSP430F167IRTDR	MSP430F417IRTDR
MSP430F147IRTDR	MSP430F155IRTDT	MSP430F167IRTDT	MSP430F417IRTDT
MSP430F147IRTDT	MSP430F156IRTDR	MSP430F168IRTDR	MSP430V119IRTDR
MSP430F1481IRTDR	MSP430F156IRTDT	MSP430F168IRTDT	MSP430V170IRTDR
MSP430F1481IRTDT	MSP430F157IRTDR	MSP430F169IRTDR	
MSP430F148IRTDR	MSP430F157IRTDT	MSP430F169IRTDT	
MSP430F148IRTDT	MSP430F1610IRTDR	MSP430F412IRTDR	

Product Affected Group: Group 2

CC2560ARVMR	CC2564NSRVMR	CC2567RVMR
CC2560ARVMT	CC2564NSRVMT	CC2567RVMT
CC2564BRVMR	CC2564RVMR	CC2569RVMR
CC2564BRVMT	CC2564RVMT	CC2569RVMT

Group 1 Qualification Report
MSP430F1611 AMKOR K1 to P1 Assembly Transfer and Cu Wire Conversion

Product Attributes

Attributes	MSP430F1611IRTD Cu Wire	MSP430F1611IRTD Au Wire
Assembly Site	AMKOR P1	AMKOR P1
Package Family	QFN, 9.0 X 9.0 MM, 0.5MM Lead Pitch	QFN, 9.0 X 9.0 MM, 0.5MM Lead Pitch
Flammability Rating	UL 94-V0	UL 94-V0
Wafer Fab Site	TSMC FAB 3	TSMC FAB 3
Wafer Fab Process	TSMC035UM	TSMC035UM

- Qual Device MSP430F1611IRTD qualified at LEVEL3-260C

Qualification Results

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

Type	Test Name / Condition	Duration	MSP430F1611IRTD Cu Wire	MSP430F1611IRTD Au Wire
HAST	HAST 110C/85% RH	264 Hours	3/231/0	3/231/0
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0
TC	Temp Cycle -65/150C	500 Cycles	3/231/0	3/231/0
HTSL	Bake 170C	420 Hours	3/231/0	3/231/0
SATM	Salt Atmosphere Testing	24 Hours	-	3/66/0
WBS	Wire Bond Shear	Per Assy Site Specifications	3/90/Pass	3/90/Pass
WBP	Wire Bond Pull	Per Assy Site Specifications	3/90/Pass	3/90/Pass
SD	Pb Free Surface Mount Solderability	Per Assy Site Specifications	-	1/22/Pass
PD	Physical Dimensions	Per Assy Site Specifications	-	1/5/Pass
XRAY	X-RAY	Per Assy Site Specifications	1/5/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

Group 2 Qualification Report
Qualification of Orca Offload from Amkor K1 to Amkor P1

Product Attributes

	Qual Device: BL6450QRVMR	QBS Device: BL6450QRVMR	QBS Device: BL6450QRVMR
Die Attributes			
Wafer Fab Site	TSMC F-14	TSMC F-14	TSMC F-14
Wafer Fab Process	1218C021.M6RF	1218C021.M6RF	1218C021.M6RF

Package Attributes			
Assembly Site	Amkor P1	Amkor K1	Amkor K1
Package Family	PVQFN	PVQFN	WSP
Package Designator	RVM	RVM	YFV
Package Size (mils)	314.96 X 314.96	314.96 X 314.96	116.42 x 129.68
Body Thickness (mils)	0.85	0.85	19.68
Pin Count	76	76	54
Bump Composition	-	-	Sn/Ag/Cu (LF35)
Lead Frame Material	Cu	Cu	-
Lead Finish	NiPdAu	NiPdAu	-
Lead Pitch (mils)	0.6	0.6	-
Mount Compound	101340002	101340002	-
Mold Compound	101317124	101317124	-
Bond Wire Composition	Au	Au	-
Bond Wire Diameter (mils)	0.7	0.7	-
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0

- Qual Devices qualified at LEVEL3-260C

Qualification Plan

Type	#	Test Name / Condition	Duration	Qual Device: BL6450QRVMR Expected Date	QBS Device: BL6450QRVMR	QBS Device: BL6450QRVMR
Test Group A - Accelerated Environment Stress Test						
PC	A1	PreCon Level 3	3 Cyc/260C +5 / -0C	2/28/2015	-	-
THB	A2	THB 85/85 (Automotive)	1000 Hr	2/28/2015	-	-
UHAST	A3	Unbiased HAST 130C/85%RH	96 Hr	2/28/2015	-	-
TC	A4	Temperature Cycle, -50/150C	500 Cyc	2/28/2015	-	-
HTSL	A6	High Temp Storage Bake 150C	1000 Hr	2/28/2015	-	-
Test Group B - Accelerated Lifetime Simulation Test						
HTOL	B1	HTOL, 125C	1000 Hr	-	3/230/0	-
ELFR	B2	Early Life Failure Rate, 125C	8 Hr	-	3/1197/0	-
ELFR	B2	Early Life Failure Rate, 125C	48 Hr	-	3/1197/0	-
Test Group C - Package Assembly Integrity Tests						
WBS	C1	Wire Bond Shear (Ppk > 1.67 and Cpk > 1.33)	30 bonds/5 devices	2/28/2015	-	-
WBP	C2	Wire Bond Pull (Ppk > 1.67 and Cpk > 1.33)	30 bonds/5 devices	2/28/2015	-	-
SD	C3	Solderability >95% Lead Coverage	8 Hr/steam age	2/28/2015	-	-
PD	C4	Physical Dimensions (Cpk>1.33 Ppk>1.67)		2/28/2015	-	-
SBS	C5	Solder Ball Shear (Ppk > 1.67 and Cpk > 1.33)	Post HTSL/Bump	N/A	-	-
SBS	C5	Solder Ball Shear (Ppk > 1.67 and Cpk > 1.33)	Time Zero/Bump	N/A	-	-
SBS	C5	Solder Ball Shear (Ppk > 1.67 and Cpk > 1.33)	Post 500 Temp Cyc/Bump	N/A	-	-
LI	C6	Lead Integrity		N/A	-	-
Test Group E - Electrical Verification						
HBM	E2	ESD - HBM - Q100 all pins	500V	-	1/3/0	-
CDM	E3	ESD - CDM - Q100	250V, 750V (corner pins)	-	1/3/0	-
LU	E4	Latch- Up	Ta(max)	-		3/18/0
ED	E5	Electrical Distributions		-	3/30/Pass	-
CHAR	E7	Characterization		-	1/30/Pass	-

- Preconditioning will be performed for Unbiased HAST, unbiased/Biased HAST, Temperature Cycle, 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
- 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.

Location	E-Mail
USA	PCNAmericasContact@list.ti.com
Europe	PCNEuropeContact@list.ti.com
Asia Pacific	PCNAsiaContact@list.ti.com
Japan	PCNJapanContact@list.ti.com