

<b>PCN Number:</b>	20160627001A	<b>PCN Date:</b>	08/19/2016
<b>Title:</b>	Qualification of AMKOR P1 as Additional Assembly and Test Site for Select SOIC Package Devices		

<b>Customer Contact:</b>	<a href="#">PCN Manager</a>	<b>Dept:</b>	Quality Services
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<b>Change Type:</b>			
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change
<input type="checkbox"/>	Mechanical Specification	<input checked="" type="checkbox"/>	Test Site
<input checked="" type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process
		<input type="checkbox"/>	Wafer Bump Site
		<input type="checkbox"/>	Wafer Bump Material
		<input type="checkbox"/>	Wafer Bump Process
		<input type="checkbox"/>	Wafer Fab Site
		<input type="checkbox"/>	Wafer Fab Materials
		<input type="checkbox"/>	Wafer Fab Process

### PCN Details

#### Description of Change:

Revision A is to update the description of change to provide correction on the pin 1 marking change. Only 14pin SOIC devices in the Product Affected Section Group 2 are affected for the embossed pin 1 ID change. We apologize for any inconvenience this may have caused.

Texas Instruments Incorporated is announcing the qualification of AMKOR P1 as Additional Assembly and Test Site for select devices listed in the "Product Affected" Section. Current assembly sites and Material differences are as follows.

Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly Site City
TI Mexico	MEX	MX	Aguascalientes
TI Malaysia	MLA	MY	Kuala Lumpur
AESH	ASH	CN	Shanghai
<b>Amkor P1</b>	<b>AKR</b>	<b>PH</b>	<b>Cupang, Muntinlupa City</b>

#### Group 1 Device:

##### Material Differences:

	TI Mexico	TI Malaysia	AESH	AMKOR P1
Mount Compound	4147858	4042500	EY1000063	101375281
Mold Compound	4211880	4211880	EN20000509	101380756
Lead Finish	NiPdAu	NiPdAu	Matte Sn	Matte Sn

#### Group 2 Device:

##### Material Differences:

	TI Mexico	TI Malaysia	AESH	AMKOR P1
Mount Compound	4147858	4042500	EY1000063	101375281
Mold Compound	4211880	4211880	EN20000509	101388369
Lead Finish	NiPdAu	NiPdAu	Matte Sn	Matte Sn

#### Pin 1 Marking Change for 14 pin Devices only:

**Sample Marking:**



Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.

**Reason for Change:**

Continuity of supply.

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

None

**Anticipated impact on Material Declaration**

<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> .
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**Changes to product identification resulting from this PCN:**

Assembly Site			
TI Mexico	Assembly Site Origin (22L)	ASO: MEX	ECAT: G4
TI Malaysia	Assembly Site Origin (22L)	ASO: MLA	ECAT: G4
ASESH	Assembly Site Origin (22L)	ASO: ASH	ECAT: G3
Amkor P1	Assembly Site Origin (22L)	ASO: AKR	ECAT: G3

Sample product shipping label (not actual product label)

MADE IN: Malaysia  
2DC: 2Q:

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

OPT: 39  
ITEM: LBL: 5A (L) TO: 1750

**G4**

ECAT: G4 = NiPdAu  
ECAT: G3 = Matte Sn

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

ASSEMBLY SITE CODES: TI-Mexico = M , TI-Malaysia = K , ASESH = A , AP1 = 4

**Group 1 Product Affected:**

LM258ADR	LM293ADR	LM393ADR
LM293DRG3	LM293DR	SA555DR

**Group 2 Product Affected:**

LM239ADR	LM339ADR
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# Qualification Report

Phase 2 - Amkor SOIC - 8D and 14D Offload (PCC Cu Wire, Matte Sn finish)  
Approve Date 16-Jun-2016

## Product Attributes

Attributes	Qual Device: LM339ADR	QBS Product Reference: NE5532P	QBS Package Reference: LM324ADR	QBS Package Reference: LM358DR	QBS Package Reference: LM393DR
Assembly Site	AP1	NFME	AP1	AP1	AP1
Package Family	SOIC	PDIP	SOIC	SOIC	SOIC
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	SFAB	SFAB	SFAB	SFAB	SFAB
Wafer Process	J11	J11	J11	J11	J11

- QBS: Qual By Similarity
- Qual Device LM339ADR is qualified at LEVEL1-260C

## Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: LM339ADR	QBS Product Reference: NE5532P	QBS Package Reference: LM324ADR	QBS Package Reference: LM358DR	QBS Package Reference: LM393DR
AC	Autoclave 121C	96 Hours	-	-	3/231/0	3/231/0	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	-	3/Pass	1/Pass	1/Pass	1/Pass
FLAM	Flammability (IEC 695-2-2)	--	-	-	3/15/0	3/15/0	3/15/0
FLAM	Flammability (UL 94V-0)	--	-	-	3/15/0	3/15/0	3/15/0
FLAM	Flammability (UL-1694)	--	-	-	3/15/0	3/15/0	3/15/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0	3/231/0
HTOL	Life Test, 150C	300 Hours	-	3/231/0	3/231/0	3/231/0	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	3/229/0	3/229/0	3/231/0
HTSL	High Temp. Storage Bake, 150C	1000 Hours	-	3/231/0	-	-	-
LI	Lead Fatigue	Leads	-	3/66/0	3/66/0	3/66/0	3/66/0
LI	Lead Pull to Destruction	Leads	-	3/66/0	3/66/0	3/66/0	3/66/0
PD	Physical Dimensions	--	-	3/15/0	3/60/0	3/60/0	3/60/0

SD	Solderability	Pb-Free	-	3/66/0	3/66/0	3/66/0	3/66/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0	3/231/0	3/230/0	3/231/0
TS	Thermal Shock - 65/150C	500 Cycles	-	3/231/0	-	-	-
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	3/231/0	-	-	-
WBP	Bond Pull	Wires	-	-	3/228/0	3/228/0	3/228/0
WBP	Bond Strength	Wires	-	3/231/0	-	-	-
WBS	Ball Bond Shear	Wires	-	3/231/0	3/228/0	3/228/0	3/228/0
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	1/Pass	3/Pass	1/Pass	1/Pass	1/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>
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Asia Pacific	<a href="mailto:PCNAsiaContact@list.ti.com">PCNAsiaContact@list.ti.com</a>
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