

<b>PCN Number:</b>	20151016001		<b>PCN Date:</b>	10/22/2015																				
<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																					
<b>Proposed 1<sup>st</sup> Ship Date:</b>	01/22/2016	<b>Estimated Sample Availability:</b>	Date Provided at Sample request																					
<b>Change Type:</b>																								
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design	<input type="checkbox"/>	Wafer Bump Site																			
<input 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 checked="" type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Site																			
<input checked="" 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>																								
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.																								
<table border="1"> <thead> <tr> <th>Assembly Site</th> <th>Assembly Site Origin</th> <th>Assembly Country Code</th> <th>Assembly Site City</th> </tr> </thead> <tbody> <tr> <td>TI Mexico</td> <td>MEX</td> <td>MX</td> <td>Aguascalientes</td> </tr> <tr> <td>TI Malaysia</td> <td>MLA</td> <td>MY</td> <td>Kuala Lumpur</td> </tr> <tr> <td>AESH</td> <td>ASH</td> <td>CN</td> <td>Shanghai</td> </tr> <tr> <td><b>Amkor P1</b></td> <td><b>AKR</b></td> <td><b>PH</b></td> <td><b>Cupang, Muntinlupa City</b></td> </tr> </tbody> </table>					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>
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Lead Finish	NiPdAu	NiPdAu	Matte Sn	Matte Sn																				
<p>Upon expiration of this PCN, TI will combine lead free solutions in a single <a href="#">standard part number</a>, for example; <a href="#">LM224ADR</a> – can ship with both Matte Sn and NiPdAu. When available customers may specify NiPdAu finish by ordering the part with the G4 suffix, e.g. <a href="#">LM224ADRE4</a>."</p> <p>Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.</p>																								
<b>Reason for Change:</b>																								
Continuity of supply.																								
<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> .																					

**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)

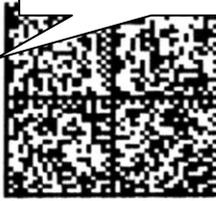


MADE IN: Malaysia  
2DC: 20:

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

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

Pb  
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

**Product Affected:**

LM224ADR	LM2901DR	LM324ADR	LM358DR
LM224DR	LM2901DRG3	LM324DR	LM358DRG3
LM224DRG3	LM2902DR	LM324DRG3	LM393DR
LM239DR	LM2903DR	LM324DR-M	LM393DRG3
LM239DRG3	LM2903DRG3	LM339DR	LM393DR-V1
LM258DR	LM2904DR	LM339DRG3	NE555DR
LM258DRG3	LM2904DRG3	LM358ADR	NE555DRG3

# Qualification Report

## Amkor SOIC - 8D Offload

### Product Attributes

Attributes	Qual Device: LM358DR	Qual Device: LM393DR
Assembly Site	AMKOR AP1	AMKOR AP1
Package Family	SOIC	SOIC
Flammability Rating	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	SFAB	SFAB
Wafer Process	J11	J11

- QBS: Qual By Similarity
- Qual Devices qualified at LEVEL1-260CG: LM358DR, LM393DR

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: LM358DR	Qual Device: LM393DR
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass
FLAM	Flammability (IEC 695-2-2)	--	3/15/0	3/15/0
FLAM	Flammability (UL 94V-0)	--	3/15/0	3/15/0
FLAM	Flammability (UL-1694)	--	3/15/0	3/15/0
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0
HTOL	Life Test, 150C	300 Hours	3/231/0	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	3/229/0	3/231/0
LI	Lead Fatigue	Leads	3/66/0	3/66/0
LI	Lead Pull to Destruction	Leads	3/66/0	3/66/0
PD	Physical Dimensions	--	3/60/0	3/60/0
SD	Solderability	PB Free	3/66/0	3/66/0
TC	Temperature Cycle, -65/150C	500 cycles	3/230/0	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

## Amkor SOIC - 14D Offload

### Product Attributes

Attributes	Qual Device: LM324ADR
Assembly Site	AMKOR P1
Package Family	SOIC
Flammability Rating	UL 94 V-0
Wafer Fab Supplier	SFAB
Wafer Process	J11

- QBS: Qual By Similarity
- Qual Device LM324ADR is qualified at LEVEL1-260CG

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: LM324ADR
AC	Autoclave 121C	96 Hours	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass
FLAM	Flammability (IEC 695-2-2)	--	3/15/0
FLAM	Flammability (UL 94V-0)	--	3/15/0
FLAM	Flammability (UL-1694)	--	3/15/0
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0
HTOL	Life Test, 150C	300 hours	3/231/0
HTSL	High Temp. Storage Bake, 170C	420 Hours	3/229/0
LI	Lead Fatigue	Leads	3/66/0
LI	Lead Pull to Destruction	Leads	3/66/0
PD	Physical Dimensions	--	3/60/0
SD	Solderability	PB-Free	3/66/0
TC	Temperature Cycle -65/150C	500 Cycles	3/231/0
WBP	Bond Pull	Wires	3/228/0
WBS	Ball Bond Shear	Wires	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

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>