12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20141119000A
Qualification of Alternate Assembly/Test Sites for Selected devices in the TSSOP Package
Change Notification / Sample Request

Dear Customer:

Revision A is to update the BOM differences as a result of adding ASESH as an additional assembly site for the listed devices in Group 1.

This is an announcement of a change to a device that is currently offered by Texas Instruments. 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.

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

PCN# 20141119000A
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:	20141119000A	PCN Date:	01/20/2015
Title:	Qualification of ASE Shanghai as an alternate Assembly/Test Site for Selected devices in the TSSOP Package		
Customer Contact:	PCN Manager	Phone:	Dept: Quality Services
Proposed 1st Ship Date:	03/03/2015	Estimated Sample Availability:	Provided upon Request

Change Type:

☒	Assembly Site	☐	Assembly Process	☒	Assembly Materials
☐	Design	☐	Electrical Specification	☐	Mechanical Specification
☒	Test Site	☐	Packing/Shipping/Labeling	☐	Test Process
☐	Wafer Bump Site	☐	Wafer Bump Material	☐	Wafer Bump Process
☐	Wafer Fab Site	☐	Wafer Fab Materials	☐	Wafer Fab Process
		☐	Part number change		

PCN Details

Description of Change:

Revision A is to update the BOM differences as a result of adding ASEH as an additional assembly site for the listed devices in Group 1. ASESH will be manufacturing devices with Matte Sn lead finish. These modifications are highlighted and **bolded** below.

Texas Instruments is pleased to announce the qualification of ASE Shanghai (ASES) as an alternate Assembly and Test site for the devices listed below in Group 1 and TI Taiwan (TAI) as an additional Assembly site for the devices in Group 2. Group 2 devices will have identical BOMs between the 2 sites. For group 1, BOM differences are noted in the table below:

What	MLA	AP1	ASESH
Mold Compound	4206193	SID# 101325962	**SID#EN2000508**
Mound Compound	4042500	SID#101306338	**SID#EY1000063**
Lead Finish	**NiPdAu**	**NiPdAu**	**Matte Sn**

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

Upon expiry of this PCN TI will combine lead free solutions in a single *standard part number*, for example; *AM26C31IPWR* – can ship with both Matte Sn and NiPdAu/Ag.

Example:

- **Customer order for 7500units of AM26C31IPWR with 2500 units SPQ (Standard Pack Quantity per Reel).**

- **TI can satisfy the above order in one of the following ways.**
  - **I. 3 Reels of NiPdAu finish.**
  - **II. 3 Reels of Matte Sn finish**
  - **III. 2 Reels of Matte Sn and 1 reel of NiPdAu finish.**
  - **IV. 2 Reels of NiPdAu and 1 reel of Matte Sn finish.**

Reason for Change:

Continuity of Supply

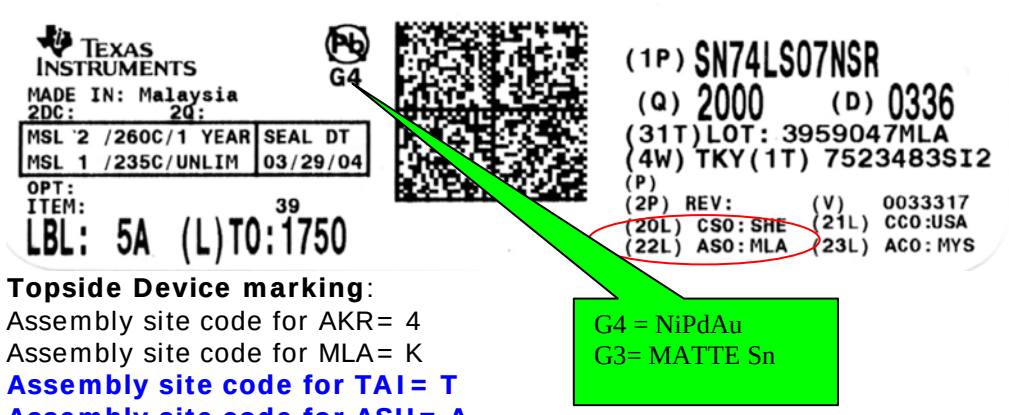
Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):

None

Changes to product identification resulting from this PCN:

Assembly Site		
Amkor Philippines	Assembly Site Origin (22L)	ASO: AKR
TI Malaysia	Assembly Site Origin (22L)	ASO: MLA
TI Taiwan	**Assembly Site Origin (22L)**	**ASO: TAI**
ASE Shanghai	**Assembly Site Origin (22L)**	**ASO: ASH**

Sample product shipping label (not actual product label)



Topside Device marking:
Assembly site code for AKR= 4
Assembly site code for MLA= K
Assembly site code for TAI= T
Assembly site code for ASH= A

Product Affected

Qualification Group #1 Devices (ASESH assembly):

AM26C31IPWR	MAX3232IPWR	SN74HC125PWR	SN74HC32PWR
CD4066BPWR	SN74ACT08PWR	SN74HC138PWR	SN74HC595PWR
CD4069UBPWR	SN74AHCT125PWR	SN74HC14PWR	SN74HCT04PWR
CD4541BPWR	SN74HC00PWR	SN74HC164PWR	SN74HCT138PWR
CD74HC123PWR	SN74HC02PWR	SN74HC166PWR	SN74HCT14PWR
LM239PWR	SN74HC04PWR	SN74HC174PWR	SN74HCT32PWR
LM339APWR	SN74HC05PWR	SN74HC259PWR	SN74HCU04PWR
MAX232ECPWR	SN74HC08PWR		

Qualification Group #2 Devices (TAI assembly):

DRV8833PWP	DRV8833PWPR

Qualification Group #1 Data:

Qualification Report

MAX232ECPWR Qual (ASESH 14 and 16 pins TSSOP Offload)
Approved 09/22/2014

Product Attributes

Attributes	Qual Device: MAX232ECPWR	QBS Package: RC4558PWR	QBS Package: SN74LV14APWR	QBS Package: SN74LVC14APWR	QBS Package: ULN2003APW	QBS Package: LMV324IPWR	QBS Package: SN74AHC595PWR	QBS Package: SN74CBT3306PWR	QBS Package: SN74CBTLV3245APWR
Assembly Site	ASESH	ASE SHANGHAI	ASESH	ASE-SH	ASESH	ASE SHANGHAI	ASE SHANGHAI	ASE SHANGHAI	ASE SHANGHAI
Package Family	TSSOP	TSSOP	TSSOP	TSSOP	TSSOP	TSSOP	TSSOP	TSSOP	TSSOP
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 Supplier	DFAB	SFAB	SFAB	FFAB	SFAB	FFAB	SFAB	SFAB	FFAB
Wafer Fab Process	LBC3S	JI-SLM	EPIC1-S_SLM	P-9750 TLM	JI-SLM	BCB	EPIC1S DLM	50C24X2	ASL3C

- QBS: Qual By Similarity
- Qual Device MAX232ECPWR is qualified at LEVEL1-260C

Qualification Results

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

Type	Test Name / Condition	Duration	QBS Package: RC4558PWR	QBS Package: SN74LV14APWR	QBS Package: SN74LVC14APWR	QBS Package: ULN2003APW	QBS Package: LMV324IPWR	QBS Package: SN74AHC595PWR	QBS Package: SN74CBT3306PWR	QBS Package: SN74CBTLV3245APWR
HAST	Biased HAST, 130C/85%RH	96 Hours	1/77/0	1/77/0	1/77/0	1/77/0	2/158/0	1/77/0	1/77/0	1/77/0
THB	Temperature Humidity Bias 85C/85%RH	1000 Cycles	-	-	-	-	-	-	-	-
AC	Autoclave 121C	96 Hours	-	-	-	-	-	-	-	-
UHAST	Unbiased HAST 130C/85%RH	96 Hours	1/77/0	1/77/0	1/77/0	1/77/0	1/77/0	1/77/0	1/77/0	1/77/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	1/77/0	1/77/0	1/77/0	1/77/0	1/77/0	1/77/0	1/77/0
HTSL	High Temp. Storage Bake 170C	420 Hours	-	-	-	-	1/77/0	1/77/0	1/77/0	1/77/0
HTSL	High Temp. Storage Bake 150C	1000 Hours	1/77/0	1/77/0	1/77/0	1/77/0	-	-	-	-
HTOL	Life Test, 150C	300 hours	1/77/0	1/77/0	1/77/0	1/77/0	2/164/0	1/77/0	1/77/0	1/77/0
WBS	Ball Bond Shear	Wires	-	-	-	-	-	-	-	-
WBP	Bond Pull	Wires	-	-	-	-	-	-	-	-
PD	Physical Dimensions	--	-	-	-	-	-	-	-	-
HBM	ESD - HBM	1000 V	-	-	-	-	-	-	-	-
CDM	ESD - CDM	250 V	-	-	-	-	-	-	-	-
LU	CMOS Latchup	(per JESD78 class II)	-	-	-	-	-	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
	Bond Strength	Wires	1/76/0	1/76/0	1/76/0	1/76/0	2/160/0	1/77/0	1/77/0	1/77/0

- 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 Group #2 Data:

Reference Qualification Data: Approved April 2012			
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**.**			
Qualification Device: DRV8812A1PWP (MSL1-260C)			
Package Construction Details			
Assembly Site:	TAI A/T	Mold Compound:	4205443
# Pins-Designator, Family:	28-PWP, TSSOP	Mount Compound:	4208458
Lead Frame Material/Finish:	Cu, NiPdAu	Bond Wire:	1.3 Mil Dia., Cu
Qualification: ☐ **Plan** ☒ **Test Results**			
Reliability Test	Conditions		Sample Size / Fail
Electrical Characterization	Per Datasheet Limits		Pass
**Autoclave 121C	121C, 2 atm (96 Hrs)		77/0
**T/C -65C/150C	-65C/+150C (500 Cyc)		77/0
ESD HBM	500V, 1000V, 1500V		3/0
ESD CDM	200V, 500V		3/0
Latch-up	(per JESD78)		6/0
Notes: **Tests require preconditioning sequence: MSL1-260C			

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