TEXAS INSTRUMENTS 12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20150210000
Qualification of Carsem Suzhou and TI Malaysia as Additional Assembly Site for Select Devices
Change Notification / Sample Request

Date: 2/16/2015
To: MOUSER PCN

Dear Customer:

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 proposed first ship date is indicated on page 3 of this notification, unless customer agreement has been reached on an earlier implementation of the change.

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

20150210000
Change Notification / Sample Request Attachments

Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
TPD7S019-15DBQR	null
TPS65283-1RGER	null
TPS65283-1RGET	null
TPS65283RGET	null

Technical details of this Product Change follow on the next page(s).

PCN Number:	20150210000	**PCN Date:**	02/16/2015
Title:	Qualification of Carsem Suzhou and TI Malaysia as Additional Assembly Site for Select Devices		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	05/16/2015	**Estimated Sample Availability:**	Date Provided at Sample 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

PCN Details

Description of Change:

Qualification of Carsem Suzhou and TI Malaysia as Additional Assembly Site for Select Devices. Assembly differences are as follows:

Group 1 Device:

	TI Clark	Carsem Suzhou
Mount Compound	4207123	435143

Group 2 Device: No material difference between sites

Reason for Change:

Continuity of Supply

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

None

Changes to product identification resulting from this PCN:

Group 1 : Assembly Site		
TI Clark Philippines	Assembly Site Origin (22L)	ASO: QAB
Carsem Suzhou	Assembly Site Origin (22L)	ASO: CSZ

ASSEMBLY SITE CODES: TI-Clark = I, CSZ = F

Group 2 : Assembly Site		
TI Mexico	Assembly Site Origin (22L)	ASO: MEX
TI Malaysia	Assembly Site Origin (22L)	ASO: MLA

ASSEMBLY SITE CODES: TI-Mexico = M, TI-Malaysia = K

Sample product shipping label (not actual product label)

TEXAS INSTRUMENTS
G4
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)TO:1750

(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

Product Affected Group 1:			
PPS65283-1RGET	SN1406035RGET	TPS65283-1RGET	TPS65283RGET
SN1406035RGER	TPS65283-1RGER	TPS65283RGER	

Product Affected Group 2:
TPD7S019-15DBQR

Group 1 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: TPS51123RGER (MSL2-260C)

Package Construction Details

Assembly Site:	Carsem Suzhou	Mold Compound:	441086
# Pins-Designator, Family:	24-RGE, VQFN	Mount Compound:	435143
Lead Finish, Base	NiPdAu, Cu	Bond Wire:	0.96 Mil Dia. Cu

Qualification: ☐ **Plan** ☒ **Test Results**

Reliability Test	Conditions	Sample Size / Fail		
		Lot 1	Lot 2	Lot3
**Life Test	125C (168 Hrs)	36/0	37/0	38/0
**Autoclave	121C, 2 atm (96 Hrs)	77/0	77/0	77/0
**Temp Cycle, -65C/150C	500 Cycles	77/0	77/0	77/0
**High Temp Storage Bake	170C (420 Hrs)	77/0	77/0	77/0
Manufacturability Qualification (MQ)		Pass	Pass	Pass
Moisture Sensitivity	L2-260C	12/0	12/0	12/0

**- Preconditioning sequence: Level 2-260C.

Qual Vehicle 2: TPA3117D2RHBR (MSL2-260C)

Package Construction Details

Assembly Site:	Carsem Suzhou	Mold Compound:	441086
# Pins-Designator, Family:	32-RHB, VQFN	Mount Compound:	435143
Lead Finish, Base	NiPdAu, Cu	Bond Wire:	1.30 Mil Dia. Cu

Qualification: ☐ **Plan** ☒ **Test Results**

Reliability Test	Conditions	Sample Size / Fail		
		Lot 1	Lot 2	Lot3
Electrical Characterization	-	325/0	325/0	325/0
**Autoclave	121C, 2 atm (96 Hrs)	77/0	77/0	77/0
**Biased HAST	130C/85%RH (96 Hrs)	77/0	77/0	77/0
**Temp Cycle, -65C/150C	500 Cycles	77/0	77/0	77/0
**High Temp Storage Bake	170C (420 Hrs)	77/0	77/0	77/0
Manufacturability Qualification (MQ)		Pass	Pass	Pass
Moisture Sensitivity	L2-260C	12/0	12/0	12/0

**- Preconditioning sequence: Level 2-260C.

Qual Vehicle 3: TPS650240RHBR (MSL2-260C)

Package Construction Details

Assembly Site:	Carsem Suzhou	Mold Compound:	441086
# Pins-Designator, Family:	32-RHB, VQFN	Mount Compound:	435143
Lead Finish, Base	NiPdAu, Cu	Bond Wire:	1.30 Mil Dia. Cu

Qualification: ☐ **Plan** ☒ **Test Results**

Reliability Test	Conditions	Sample Size / Fail		
		Lot 1	Lot 2	Lot3
**Autoclave	121C, 2 atm (96 Hrs)	77/0	77/0	77/0
**Temp Cycle, -65C/150C	500 Cycles	77/0	77/0	77/0
**High Temp Storage Bake	170C (420 Hrs)	77/0	77/0	77/0

Manufacturability Qualification (MQ)		Pass	Pass	Pass
Moisture Sensitivity	L2-260C	12/0	12/0	12/0

**- Preconditioning sequence: Level 2-260C.

Qual Vehicle 4: TPA6132A2RTER (MSL2-260C)

Package Construction Details

Assembly Site:	Carsem Suzhou	Mold Compound:	441086
# Pins-Designator, Family:	16-RTE, WQFN	Mount Compound:	435143
Lead Finish, Base	NiPdAu, Cu	Bond Wire:	0.96 Mil Dia. Cu

Qualification: ☐ **Plan** ☒ **Test Results**

Reliability Test	Conditions	Sample Size / Fail	
		Lot 1	Lot 2
**Autoclave	121C, 2 atm (96 Hrs)	77/0	77/0
**Temp Cycle, -65C/150C	500 Cycles	77/0	77/0
Manufacturability Qualification (MQ)		Pass	Pass
Moisture Sensitivity	L2-260C	12/0	12/0

**- Preconditioning sequence: Level 2-260C.

Qual Vehicle 5: TPS2540RTER (MSL2-260C)

Package Construction Details

Assembly Site:	Carsem Suzhou	Mold Compound:	441086
# Pins-Designator, Family:	16-RTE, WQFN	Mount Compound:	435143
Lead Finish, Base	NiPdAu, Cu	Bond Wire:	1.98 Mil Dia. Cu

Qualification: ☐ **Plan** ☒ **Test Results**

Reliability Test	Conditions	Sample Size / Fail
**Life Test	155C (168 Hrs)	80/0
**Temp Cycle, -65C/150C	500 Cycles	77/0

**- Preconditioning sequence: Level 2-260C.

Group 2 Qualification Data

Product Attributes

Die Attributes	Qual Device: TPD7S019-15DBQR	QBS Process: TS3USB221ARSE	QBS Package: SN74HCT74DR	QBS Package: CD4053BM96	QBS Package: LM358DR	QBS Package: TL494IDR	QBS Package: ULN2003ADR	QBS Package: MAX232DR	QBS Package: SN74LV14ADR
Die Revision	A	A	E	A	E	H	C	B	H
Wafer Fab Site	FFAB	FFAB	SFAB	SFAB	SFAB	SFAB	SFAB	SFAB	SFAB
Wafer Fab Process	50B10.13	50b10.13	50C99.1	CD4K	JI-SLM 20K	JI-LIN 55K	JI-SLM 20K	LBC3S	EPIC1-S_SLM
Package Attributes	**Qual Device: TPD7S019-15DBQR**	**QBS Process: TS3USB221ARSE**	**QBS Package: SN74HCT74DR**	**QBS Package: CD4053BM96**	**QBS Package: LM358DR**	**QBS Package: TL494IDR**	**QBS Package: ULN2003ADR**	**QBS Package: MAX232DR**	**QBS Package: SN74LV14ADR**
Assembly Site	MLA	NSE	MLA	FMX	FMX	FMX	FMX	MLA (TIM)	MLA (TIM)
Package Family	SSOP	QFN	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator	DBQ	RSE	D	D	D	D	D	D	D
Package Size (mils)	192.91 X 236.22	78.74 X 59.05	153.5 X 341.5	390 X 153.5	193 X 153.5	390 X 153.5	390 X 153.5	390 X 153.5	340.5 X 153.5
Body Thickness (mils)	1.75	23.62	62	62	62	62	62	62	62
Pin Count	16	10	14	16	8	16	16	16	14
Lead Frame Material	NiPdAu	Cu	Cu	Cu	Cu	Cu	Cu	Cu base	Cu base
Lead Finish	NiPdAu	NiPdAu	NiPdAu	NiPdAu	NiPdAu	NiPdAu	NiPdAu	NiPdAu	NiPdAu
Lead Pitch (mils)	25	19.68	50	50	50	50	50	50	50
Mount Compound	4147858	PZ0039	4042500	4147858	4147858	4147858	4147858	4042500	4042500
Mold Compound	4211880	CZ0140	4205694	4211880	4211880	4211880	4211880	4211880	4211880
Bond Wire Composition	Cu	Au	Au	Cu	Cu	Cu	Cu	Cu	Cu
Bond Wire Diameter (mils)	0.96	0.6	0.8	0.95	0.95	0.95	0.95	0.95	0.95
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

- QBS: Qual By Similarity
- Qual Device TPD7S019-15DBQR 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: TPD7S019-15DBQR	QBS Process: TS3USB221ARSE	QBS Package: SN74HCT74DR	QBS Package: CD4053BM96	QBS Package: LM358DR	QBS Package: TL494IDR	QBS Package: ULN2003ADR	QBS Package: MAX232DR	QBS Package: SN74LV14ADR
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	-	1/77/0	1/77/0	3/229/0	1/77/0	3/231/0	1/77/0
AC	Autoclave 121C	96 Hours	3/231/0	3/231/0	3/231/0	1/77/0	1/77/0	3/231/0	3/231/0	3/231/0	1/77/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	1/77/0	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
HTSL	High Temp. Storage Bake, 150C	1000 Hours	-	3/231/0	-	-	-	-	-	-	3/231/0
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	-	1/77/0	1/77/0	3/231/0	3/231/0	3/231/0	-
TS	Thermal Shock -65/150C	500 Cycles	-	-	3/231/0	1/77/0	3/231/0	3/231/0	3/231/0	-	-
HTOL	Life Test, 150C	300 Hours	-	3/231/0	-	1/77/0	1/77/0	3/231/0	1/77/0	3/231/0	1/77/0
SD	Solderability	SnPb	-	-	3/66/0	-	-	-	-	-	-
SD	Solderability	Pb-Free	-	-	3/66/0	-	-	-	-	-	-
PD	Physical Dimensions	--	-	-	3/30/0	-	-	-	-	-	-
HBM	ESD - HBM -HIGH	12000 V	-	3/9/0	-	-	-	-	-	-	-
HBM	ESD - HBM	7000 V	-	3/9/0	-	-	-	-	-	-	-
CDM	ESD - CDM	1500 V	-	3/9/0	-	-	-	-	-	-	-
LU	Latch-up	(per JESD78)	-	3/9/0	-	-	-	-	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass
WBP	Bond Strength	Wires	3/228/0	-	3/228/0	1/76/0	1/76/0	3/228/0	1/76/0	3/228/0	1/76/0
LI	Lead Pull to Destruction	Leads	3/66/0	-	3/66/0	-	-	-	-	3/66/0	1/22/0
LI	Lead Pull	Leads	-	-	-	1/22/0	1/22/0	3/66/0	3/66/0	-	-
FLAM	Flammability (IEC 695-2-2)	--	-	-	-	-	-	3/15/0	-	3/15/0	1/5/0
FLAM	Flammability (UL 94V-0)	--	-	-	-	-	-	3/15/0	-	3/15/0	1/5/0
FLAM	Flammability (UL-1694)	--	-	-	-	-	-	3/15/0	-	3/15/0	1/5/0

- 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	PCNAmericasContact@list.ti.com
Europe	PCNEuropeContact@list.ti.com
Asia Pacific	PCNAsiaContact@list.ti.com
Japan	PCNJapanContact@list.ti.com