

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:			
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process
<input type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification
<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material
<input type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Wafer Fab Materials
<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Assembly Materials
<input type="checkbox"/>		<input type="checkbox"/>	Mechanical Specification
<input type="checkbox"/>		<input type="checkbox"/>	Test Process
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>		<input type="checkbox"/>	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
 MADE IN: Malaysia
 2DC: 2d:
 MSL 2 /260C/1 YEAR SEAL DT
 MSL 1 /235C/UNLIM 03/29/04
 OPT: 39
 ITEM: 5A (L)T0:1750
 (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: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> 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 JEESD78)	-	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 JEESD47 : -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.

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