

PCN Number:	20180227000A	PCN Date:	April 18, 2018
Title:	Qualification of Carsem Suzhou (CSZ) as additional Assembly Site / Assembly and Test Site for Select Devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	July 18, 2018	Estimated Sample Availability:	Date Provided at Sample request
Change Type:			
<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 type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Site
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Material
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Site
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Materials
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process

PCN Details

Description of Change:

Revision A is to announce the addition of new devices that were not included on the original PCN notification. These new devices are highlighted and under **Group 3** in the device list below. The expected first shipment date for these new devices will be 90 days from this notice for these newly added devices only.

Qualification of Carsem Suzhou (CSZ) as additional Assembly Site / Assembly and Test Site for Select Devices. Assembly differences are shown in the following table:

Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly City
TI Clark	QAB	PHL	Angeles City, Pampanga
TI Malaysia	MLA	MYS	Kuala Lumpur
UTAC Thailand	NS2	THA	Bangkok
Carsem Suzhou	CSZ	CHN	Jiangsu

Group 1 Device: (Assembly Site)

	TI Clark	Carsem Suzhou
Mount compound	4207123	435143

Group 2 Device: (Assembly and Test Site)

	TI Malaysia	Carsem Suzhou
Mount compound	4205846	443156
Wire type	Au	Cu
Lead finish	NiPdAu	NiPdAuAg

Group 3 Device: (Assembly and Test Site)

	UTAC Thailand	Carsem Suzhou
Mount compound	PZ0076	435933

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

Reason for Change:

Continuity of Supply

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
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release. Upon production release the revised reports can be obtained from the [TI Eco-Info website](#). There is no impact to the material meeting current regulatory compliance requirements with this PCN change.

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

None

Changes to product identification resulting from this PCN:

Assembly Site		
TI Clark Philippines	Assembly Site Origin (22L)	ASO: QAB
TI Malaysia	Assembly Site Origin (22L)	ASO: MLA
UTAC Thailand	Assembly Site Origin (22L)	ASO: NS2
Carsem Suzhou	Assembly Site Origin (22L)	ASO: CSZ

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:
 ITEM: 39
 LBL: 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

TPS2388RTQR	TPS2388RTQT
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Product Affected: Group 2

TLC5951RHAR	TLC5951RHAT
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Product Affected: Group 3

TPS3700DSER	TPS3700DSET
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Group 1 Qualification Report

TPS2388RTQ (RFAB/LBC8), Offload to CARZ as second source AT
 Approve Date 23-Feb-2018

Product Attributes

Attributes	Qual Device: <u>TPS2388RTQ RFAB</u>	QBS Product Reference: <u>TPS2388RTQ</u>	QBS Product Reference: <u>TPS2388RTQ</u>	QBS Process Reference: <u>SN96019PFP</u>
Assembly Site	CARZ	TI-CLARK	TI-CLARK	PHI (TIPI)
Package Family	QFN	QFN	QFN	HTQFP
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	RFAB	DMOS5	RFAB	RFAB
Wafer Process	LBC8	LBC8	LBC8	LBC8

Attributes	QBS Package Reference: <u>ADS8548SRGCR</u>	QBS Package Reference: <u>TMP461AIRUN</u>	QBS Package Reference: <u>TPS51217DSCR</u>	QBS Package Reference: <u>TPS51220RHBR</u>
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Assembly Site	CARSEM SUZHOU	CARSEM SUZHOU	CARSEM SUZHOU	CARSEM SUZHOU
Package Family	VQFN	WQFN	WSON	VQFN
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	DMOS5	DMOS5	RFAB	RFAB
Wafer Process	50HPA07HF.03DR	LBC8LV	LBC7	LBC7X3

- QBS: Qual By Similarity

- Qual Device TPS2388RTQ RFAB is qualified at LEVEL3-260C

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TPS2388RTQ RFAB	QBS Product Reference: TPS2388RTQ	QBS Product Reference: TPS2388RTQ	QBS Process Reference: SN96019PFP
AC	Autoclave 121C	96 Hours	3/231/0	-	-	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	Pass
HAST	Biased HAST, 130C/85%RH	96 Hours	-	1/77/0	-	3/231/0
HBM	ESD - HBM	4000 V	-	-	1/3/0	-
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	1/3/0	3/9/0
HTOL	Life Test, 145C	400 Hours	-	1/77/0	1/77/0	-
HTOL	Life Test, 125C	1000 Hours	-	-	-	3/239/0
HTOL	Life Test, 150C	300 Hours	-	-	-	-
HTSL	High Temp. Storage Bake, 150C	500 Hours	-	-	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	1/77/0	-	3/231/0
LU	Latch-up	(per JESD78)	-	1/6/0	1/6/0	1/6/0
PD	Physical Dimensions	--	-	1/30/0	-	-
SD	Solderability	Pb Free	-	-	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	1/77/0	1/77/0	3/231/0
UHASt	Unbiased HAST, 130C/85%RH	96 Hours	-	1/77/0	-	-
WBP	Bond Pull	Wires	-	1/76/0	-	-

Type	Test Name / Condition	Duration	QBS Package Reference: ADS8548SRGCR	QBS Package Reference: TMP461AIRUN	QBS Package Reference: TPS51217DSCR	QBS Package Reference: TPS51220RHBR
AC	Autoclave 121C	96 Hours	3/231/0	-	3/231/0	-
ED	Electrical Characterization	Per Datasheet Parameters	-	Pass	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-	-	1/77/0
HBM	ESD - HBM	4000 V	-	1/3/0	-	-
CDM	ESD - CDM	1500 V	-	-	-	-
HTOL	Life Test, 145C	400 Hours	-	-	-	-
HTOL	Life Test, 125C	1000 Hours	-	-	-	-

HTOL	Life Test, 150C	300 Hours	-	-	3/231/0	-
HTSL	High Temp. Storage Bake, 150C	500 Hours	-	-	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	3/231/0	-	3/231/0	-
LU	Latch-up	(per JESD78)	-	1/6/0	-	-
PD	Physical Dimensions	--	-	3/45/0	-	-
SD	Solderability	Pb Free	-	3/66/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	-
UHASt	Unbiased HAST, 130C/85%RH	96 Hours	-	3/231/0	-	-
WBP	Bond Pull	Wires	-	-	-	-

- 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

THIS INFORMATION RELATING TO QUALITY AND RELIABILITY IS PROVIDED "AS IS." Product information detailed in this report may not accurately reflect TI's current product materials, processes and testing used in the construction of the TI products. Customers are solely responsible to conduct sufficient engineering and additional qualification testing to determine whether a device is suitable for use in their applications. Using TI products outside limits stated in TI's datasheet may void TI's warranty. See TI's Terms of Sale at "<http://www.ti.com/lscs/ti/legal/termsofsale.page>"

Group 2 Qualification Report

TLC5951RHA – MLA to CARZ A/T Offload Qualification

Approve Date 21-Feb-2018

Product Attributes

Attributes	Qual Device: TLC5951RHA	QBS Product Reference: TLC5951RTA	QBS Product/Process Reference: TLC5951RHA	QBS Process Reference: SN104982PZP
Die Revision	A	A	A	-
Wafer Fab Supplier	DFAB	DFAB	DFAB	DFAB
Wafer Process	LBC4	LBC4	LBC4	LBC4
Passivation	11.5kA Nitride	11.5kA Nitride	11.5kA Nitride	11.5kA Nitride

- QBS: Qual By Similarity

- Qual Device TLC5951RHA is qualified at LEVEL3-260C

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TLC5951RHA	QBS Product Reference: TLC5951RTA	QBS Product/Process Reference: TLC5951RHA	QBS Process Reference: SN104982PZP
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	1/30/0	3/90/0	3/90/0

ELFR	Early Life Failure Rate, 125C	24 Hours	-	-	3/3000/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0
HAST	Biased HAST, 110C/85%RH	264 Hours	3/231/0	-	-	-
HBM	ESD - HBM	1500 V	-	1/3/0	-	-
HBM	ESD - HBM	2000 V	-	1/3/0	-	-
HBM	ESD - HBM	3000 V	-	1/3/0	-	-
CDM	ESD - CDM	500 V	1/3/0	1/3/0	-	-
CDM	ESD - CDM	1000 V	1/3/0	1/3/0	-	-
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	-	-
HTOL	Life Test, 125C	1000 Hours	1/77/0	1/77/0	-	3/231/0
HTOL	Life Test, 140C	480 Hours	-	-	3/231/0	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	1/77/0	1/45/0	3/135/0	-
LU	Latch-up	(per JESD78)	1/6/0	1/6/0	3/15/0	3/15/0
PC	Pre Conditioning	Level 3-260C	3/308/0	3/738/0	-	-
PD	Physical Dimensions	-	3/60/0	3/60/0	-	-
SD	Solderability	Pb Free	3/15/0	3/15/0	3/66/0	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	1/77/0
TS	Thermal Shock - 65/150C	500 Cycles	-	-	-	3/231/0
UHAS T	Unbiased HAST, 130C/85%RH	96 Hours	-	3/231/0	-	-
UHAS T	Unbiased HAST, 110C/85%RH	264 Hours	3/231/0	-	-	-
WBP	Bond Pull	Wires	3/108/0	3/108/0	-	-
WBS	Bond Shear	Wires	3/108/0	3/108/0	-	-
MQ	Manufacturing (Assembly)	-	3/Pass	3/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

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Group 3 Qualification Report

TPS3700DSER-S Qualification – LBC7 Process/MIHO8, 6pin WSON at Carsem-CARZ
Approve Date 28-July-2017

Product Attributes

Attributes	Qual Device: TPS3700DSER-S
Assembly Site	CARZ
Package Family	WSON
Flammability Rating	UL 94 V-0
Wafer Fab Supplier	MIHO8
Wafer Fab Process	LBC7

- QBS: Qual By Similarity

- Qual Device TPS3700DSER-S 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: TPS3700DSER-S
CDM	ESD - CDM	1500 V	3/9/0
ELFR	Early Life Failure Rate, 125C	48 Hours	2/2000/0
HAST	Biased HAST, 130C/85%RH	96 Hours	1/77/0
HBM	ESD - HBM	3000 V	3/9/0
HTOL	Life Test, 150C	300 Hours	1/77/0
LU	Latch-up	(Per JESD78)	3/18/0
PC	Preconditioning	Level 1-260C	1/Pass
SD	Surface Mount Solderability	Pb Free Solder	1/60/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	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

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