

PCN Number:	20140114000A	PCN Date:	03/03/2014																									
Title:	Qualification of DFAB for (TLC5951RHAR/T) and RFAB, Carsem (Assembly) and MLA (Test) for (TPA6133A2RTJR/T)																											
Customer Contact:	PCN Manager	Phone:	+1(214)480-6037																									
Dept:	Quality Services																											
*Proposed 1st Ship Date:	4/14/2014	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"/>	Assembly Materials																									
<input type="checkbox"/>		<input type="checkbox"/>	Electrical Specification																									
<input checked="" type="checkbox"/>	Test Site	<input type="checkbox"/>	Mechanical Specification																									
<input type="checkbox"/>		<input type="checkbox"/>	Packing/Shipping/Labeling																									
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Test Process																									
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Material																									
<input checked="" type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Wafer Bump Process																									
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Materials																									
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process																									
<input type="checkbox"/>		<input type="checkbox"/>	Part number change																									
PCN Details																												
Description of Change:																												
<p>The purpose of Rev A is to correct the Assembly Site for the devices listed in Group 2 in the product affected section of this notification.</p> <p>This change notification is to announce additional Fab and Assembly/Test site options for the products shown in Groups 1 and 2 below.</p> <p>Group 1 Device (TLC5951RHAR/T): Fab Only Change</p> <table border="1"> <thead> <tr> <th>Current</th> <th>New</th> </tr> </thead> <tbody> <tr> <td>Site/Process/Wafer Diameter</td> <td>Site/Process/Wafer Diameter</td> </tr> <tr> <td>CFAB/LBC4 Process/200mm</td> <td>DFAB/LBC4 Process/200mm</td> </tr> </tbody> </table> <p>Group 2 Device (TPA6133A2RTJR/T): Fab & A/T Change (Note: The LBC7 process was previously qualified at RFAB in 10/2010. The QFN package was previously qualified at Carsem (CSZ) in 09/2013. Details are provided in the Qual Data Section of this document.)</p> <table border="1"> <thead> <tr> <th>Current Fab</th> <th>Additional Fab</th> </tr> </thead> <tbody> <tr> <td>Site/Process/Wafer Diameter</td> <td>Site/Process/Wafer Diameter</td> </tr> <tr> <td>MIHO/LBC7 Process/200mm</td> <td>RFAB/LBC7 Process/300mm</td> </tr> <tr> <th>Current Assembly/Test</th> <th>Additional Assembly/Test</th> </tr> <tr> <td>Clark-A/T</td> <td>CARSEM Assembly/ MLA Test</td> </tr> </tbody> </table> <p>Material Changes</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Current</th> <th>New</th> </tr> </thead> <tbody> <tr> <td></td> <td>Clark-A/T</td> <td>CARSEM</td> </tr> <tr> <td>Bond Wire Composition</td> <td>Cu</td> <td>Au</td> </tr> </tbody> </table> <p>Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.</p> <p>Reason for Change: Continuity of supply.</p> <p>Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative): None</p>				Current	New	Site/Process/Wafer Diameter	Site/Process/Wafer Diameter	CFAB/LBC4 Process/200mm	DFAB/LBC4 Process/200mm	Current Fab	Additional Fab	Site/Process/Wafer Diameter	Site/Process/Wafer Diameter	MIHO/LBC7 Process/200mm	RFAB/LBC7 Process/300mm	Current Assembly/Test	Additional Assembly/Test	Clark-A/T	CARSEM Assembly/ MLA Test	Type	Current	New		Clark-A/T	CARSEM	Bond Wire Composition	Cu	Au
Current	New																											
Site/Process/Wafer Diameter	Site/Process/Wafer Diameter																											
CFAB/LBC4 Process/200mm	DFAB/LBC4 Process/200mm																											
Current Fab	Additional Fab																											
Site/Process/Wafer Diameter	Site/Process/Wafer Diameter																											
MIHO/LBC7 Process/200mm	RFAB/LBC7 Process/300mm																											
Current Assembly/Test	Additional Assembly/Test																											
Clark-A/T	CARSEM Assembly/ MLA Test																											
Type	Current	New																										
	Clark-A/T	CARSEM																										
Bond Wire Composition	Cu	Au																										

Changes to product identification resulting from this PCN:

Current

Chip Site / Assembly Site	Chip Site Code (20L)	Chip Country Code (21L)	Assembly Site Code (22L)	Assembly Country Origin (23L)
CFAB	CU3	CHN		
MIHO	MH8	JPN		
Clark-AT			QAB	PHL

Additional Sites

Chip Site / Assembly Site	Chip Site Code (20L)	Chip Country Code (21L)	Assembly Site Code (22L)	Assembly Country Origin (23L)
DL-LIN	DLN	USA		
RFAB	RFB	USA		
CARSEM			GRS CSZ	MYS CHN

Sample Product Shipping Label (not actual product label)

 TEXAS INSTRUMENTS 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)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
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ASSEMBLY SITE CODES: TI-Clark = I, ~~Carsem GRS = W~~ Carsem CSZ = F

Product Affected:

Group 1 Device: Additional Fab Only (DFAB)	
TLC5951RHAR	TLC5951RHAT
Group 2 Device: Additional Fab (RFAB) and A/T Site (CARSEM/MLA)	
TPA6133A2RTJR	TPA6133A2RTJT

Group 1 Device (TLC5951RHAR) Qualification Data

Qualification Data: Approved 12/18/2013

This qualification has been developed for the validation of this change. The qualification data will validate that the proposed change meets the applicable released technical specifications.

Qualification Device 1: TLC5951RHA (MSL LEVEL3-260C)

Wafer Fab Site:	DFAB	Wafer Fab Process:	LBC4
Wafer Diameter:	200mm		

Qualification: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> Test Results					
Reliability Test	Conditions	Sample Size / Fail			
		Lot#1	Lot#2	Lot#3	
Electrical Characterization	Per datasheet specification	Pass	Pass	Pass	
**High Temp Storage Bake	170C (420 hours)	45/0	45/0	45/0	
ESD CDM	Per datasheet	3/0	3/0	3/0	
ESD HBM	Per datasheet	3/0	3/0	3/0	
Latch-up	Per JESD78	6/0	6/0	6/0	
Early Life Failure Rate	125C (24 hours)	1000/0	1000/0	1000/0	
High Temp Operating Life	140C (480 hours)	80/0	80/0	80/0	
**Temp Cycle	-65/150C (500 cycles)	77/0	77/0	77/0	
**Biased HAST	130C/85%RH (96 hours)	80/0	80/0	80/0	
**Preconditioning: Level 3-260C					

**Group 2 Device (TPA6133A2RTJR/T) Reference Qual Data
Qualification of LBC7 process at RFAB**

Qualification Data: Approved: 10/06/2010					
This qualification has been developed for the validation of this change. The qualification data will validate that the proposed change meets the applicable released technical specifications.					
Qualification Device: TPS51217DSC					
Wafer Fab Site:	RFAB	Metallization:	TiN/AlCu.5/TiN		
Wafer Fab Process:	LBC7	Wafer diameter:	300mm		
Qualification: <input type="checkbox"/> Plan <input checked="" type="checkbox"/> Test Results					
Reliability Test	Conditions	Sample Size /Fail			
		Lot#1	Lot#2	Lot#3	
Electrical Characterization	Per datasheet spec	Pass	Pass	Pass	
Latch-up	(per JESD78)	6/0	6/0	6/0	
**Biased HAST	130C/85%RH (96 Hrs)	77/0	77/0	77/0	
ESD HBM	1000V	3/0	-	-	
ESD CDM	250V	3/0	-	-	
High Temp. Storage Bake	170C (420 Hrs)	77/0	77/0	77/0	
**Autoclave 121C	121C, (96 Hrs)	77/0	77/0	77/0	
**T/C -65C/150C	-65C/+150C (500 Cycles)	77/0	77/0	77/0	
Steady-state Life Test (See Note 1)	135C (635 Hrs)	77/0	77/0	77/0	
**Preconditioning: MSL 2@260C					

Note 1: Life test equivalent conditions

- 125C, 1000hrs
- 135C, 635hrs
- 140C, 480hrs
- 150C, 300hrs

**Group 2 Device (TPA6133A2RTJR/T) Reference Qual Data
Qualification of QFN Package at Carsem (CSZ)**

Qualification Data: Approved 9/09/2013

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: ADS8548SRGCR (MSL3-260C)

Package Construction Details

Assembly Site:	CARSEM SUZHOU	Mold Compound:	SID#441086
# Pins-Designator, Family:	64-RGC, VQFN	Mount Compound:	SID#435143
Lead frame (Finish, Base):	NiPdAu, Cu	Bond Wire:	1.3 Mil Dia., Au

Qualification: Plan Test Results

Reliability Test	Conditions	Sample Size/Fail		
		Lot#1	Lot#2	Lot#3
**High Temp. Storage Bake	170C (420hrs)	77/0	77/0	77/0
**Biased HAST	130C/85%RH (96hrs)	77/0	77/0	77/0
**Autoclave 121C	121C, 2 atm (96 Hrs)	77/0	77/0	77/0
**T/C -65C/150C	-65C/+150C (500 Cyc)	77/0	77/0	77/0
Manufacturability	(per mfg. Site specification)	Pass	Pass	Pass
Moisture Sensitivity	(level 3 @ 260C peak +5/-0C)	12/0	-	-

Notes ** - Preconditioning sequence: Level 3-260C.

Qual Vehicle #2: TLV70028DSER (MSL1-260C)

Package Construction Details

Assembly Site:	CARSEM SUZHOU	Mold Compound:	SID#441086
# Pins-Designator, Family:	6-DSE, WSON	Mount Compound:	SID#435933
Lead frame (Finish, Base):	NiPdAu, Cu	Bond Wire:	0.8 Mil Dia., Au

Qualification: Plan Test Results

Reliability Test	Conditions	Sample Size/Fail		
		Lot#1	Lot#2	Lot#3
**High Temp. Storage Bake	170C (420hrs)	76/0	77/0	77/0
**Autoclave 121C	121C, 2 atm (96 Hrs)	77/0	77/0	77/0
**T/C -65C/150C	-65C/+150C (500 Cyc)	77/0	77/0	77/0
Salt Atmosphere	24 hrs	25/0	25/0	25/0
Manufacturability	(per mfg. Site specification)	Pass	Pass	Pass
Solderability	SnPb	22/0	22/0	22/0
Solderability	Pb-free	22/0	22/0	22/0
Moisture Sensitivity	(level 1 @ 260C peak +5/-0C)	12/0	-	-

Notes ** - Preconditioning sequence: Level 1-260C.

Qual Vehicle # 3: TLVDC3120IRHBR (MSL2-260C)**Package Construction Details**

Assembly Site:	CARSEM SUZHOU	Mold Compound:	SID#441086
# Pins-Designator, Family:	32-RHB, VQFN	Mount Compound:	SID#435143
Lead frame (Finish, Base):	NiPdAu, Cu	Bond Wire:	1.0 Mil Dia., Au

Qualification: Plan Test Results

Reliability Test	Conditions	Sample Size/Fail		
		Lot#1	Lot#2	Lot#3
**High Temp. Storage Bake	170C (420hrs)	77/0	77/0	77/0
**Autoclave 121C	121C, 2 atm (96 Hrs)	77/0	77/0	77/0
**T/C -65C/150C	-65C/+150C (500 Cyc)	77/0	77/0	77/0
Manufacturability	(per mfg. Site specification)	Pass	Pass	Pass
Moisture Sensitivity	(level 2 @ 260C peak +5/-0C)	12/0	-	-

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

Qual Vehicle # 4: TPA6130A2RTJR (MSL2-260C)**Package Construction Details**

Assembly Site:	CARSEM SUZHOU	Mold Compound:	SID#441086
# Pins-Designator, Family:	20-RTJ, WQFN	Mount Compound:	SID#435143
Lead frame (Finish, Base):	NiPdAu, Cu	Bond Wire:	1.0 Mil Dia., Au

Qualification: Plan Test Results

Reliability Test	Conditions	Sample Size/Fail		
		Lot#1	Lot#2	Lot#3
**High Temp. Storage Bake	170C (420hrs)	77/0	77/0	77/0
**Autoclave 121C	121C, 2 atm (96 Hrs)	77/0	77/0	77/0
**T/C -65C/150C	-65C/+150C (500 Cyc)	77/0	77/0	77/0
Solderability	SnPb	22/0	22/0	22/0
Manufacturability	(per mfg. Site specification)	Pass	Pass	Pass
Salt Atmosphere	24 Hrs	22/0	22/0	22/0
Moisture Sensitivity	(level 2 @ 260C peak +5/-0C)	12/0	-	-

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

Qual Vehicle # 5: TPS51728RHAR (MSL3-260C)**Package Construction Details**

Assembly Site:	CARSEM SUZHOU	Mold Compound:	SID#441086
# Pins-Designator, Family:	40-RHA, VQFN	Mount Compound:	SID#435143
Lead frame (Finish, Base):	NiPdAu, Cu	Bond Wire:	1.0 Mil Dia., Au

Qualification: Plan Test Results

Reliability Test	Conditions	Sample Size/Fail		
		Lot#1	Lot#2	Lot#3
**High Temp. Storage Bake	170C (420hrs)	77/0	77/0	77/0
**Autoclave 121C	121C, 2 atm (96 Hrs)	77/0	77/0	77/0
**T/C -65C/150C	-65C/+150C (500 Cyc)	77/0	77/0	77/0
Manufacturability	(per mfg. Site specification)	Pass	Pass	Pass
Moisture Sensitivity	(level 3 @ 260C peak +5/-0C)	12/0	-	-

Notes ** - Preconditioning sequence: Level 3-260C.

Qual Vehicle # 6: TPS62590DRVR (MSL1-260C)**Package Construction Details**

Assembly Site:	CARSEM SUZHOU	Mold Compound:	SID#441086
# Pins-Designator, Family:	6-DRV, WSON	Mount Compound:	SID#435143
Lead frame (Finish, Base):	NiPdAu, Cu	Bond Wire:	1.3 Mil Dia., Au

Qualification: Plan Test Results

Reliability Test	Conditions	Sample Size/Fail		
		Lot#1	Lot#2	Lot#3
Electrical Characterization	-	30/0	-	-
**High Temp. Storage Bake	170C (420hrs)	76/0	76/0	76/0
**Autoclave 121C	121C, 2 atm (96 Hrs)	77/0	77/0	76/0
**T/C -65C/150C	-65C/+150C (500 Cyc)	77/0	77/0	77/0
Manufacturability	(per mfg. Site specification)	Pass	Pass	Pass
Moisture Sensitivity	(level 1 @ 260C peak +5/-0C)	12/0	-	-

Notes ** - Preconditioning sequence: Level 1-260C.

Qual Vehicle # 7: UCD9211RHAR (MSL3-260C)**Package Construction Details**

Assembly Site:	CARSEM SUZHOU	Mold Compound:	SID#441086
# Pins-Designator, Family:	40-RHA, VQFN	Mount Compound:	SID#435143
Lead frame (Finish, Base):	NiPdAu, Cu	Bond Wire:	1.0 Mil Dia., Au

Qualification: Plan Test Results

Reliability Test	Conditions	Sample Size/Fail		
		Lot#1	Lot#2	Lot#3
**High Temp. Storage Bake	170C (420hrs)	77/0	77/0	77/0
**Autoclave 121C	121C, 2 atm (96 Hrs)	77/0	77/0	77/0
**T/C -65C/150C	-65C/+150C (500 Cyc)	77/0	77/0	77/0
Solderability	SnPb	22/0	22/0	22/0
Solderability	Pb-free	22/0	22/0	22/0
Manufacturability	(per mfg. Site specification)	Pass	Pass	Pass
Moisture Sensitivity	(level 3 @ 260C peak +5/-0C)	12/0	-	-

Notes ** - Preconditioning sequence: Level 3-260C.

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