PCN Number:	20160802000	PCN Date:	08/03/2016
Title:	Wafer Diameter Change for Select DEF-EP Niche Devices in LBC3S Process at DL-LIN		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	01/03/2017	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
		☐	Part number change		

PCN Details

Description of Change:

This change notification is to announce a wafer diameter change for select DEF-EP Niche Devices in LBC3S Process at DL-LIN.

Current	New
Site/Process/Wafer Diameter	**Site/Process/Wafer Diameter**
DL-LIN/LBC3S Process/150mm	**DL-LIN/LBC3S Process/200mm**

The LBC3S process technology/200mm wafer was previously qualified at DL-LIN and has been running successfully since 2000.

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:

Note: This is not a fab site change. No change to the Chip Site Location.

Current

Chip Site	Chip site code (20L)	Chip country code (21L)	Chip Site City
DL-LIN	DLN	USA	Dallas

Sample Product Shipping Label (not actual product label)

Product Affected:
TPS79318DBVREP

Reference Qualification: LBC3s Process at DFAB

Qualification Data: (Approved: 2000)

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.

Qual Vehicle 1: SN104605PN

Wafer Fab Site:	DFAB	Wafer Diameter:	200mm
Wafer Fab Process:	LBC3s		

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

Reliability Test	Conditions	Sample Size / Fail		
		Lot 1	Lot2	Lot 3
**Life Test	155C (240hrs)	116/0	116/0	116/0
**Biased HAST	130C/85%RH (96 Hrs)	77/0	77/0	77/0
**Thermal Shock	-65/+150C (1000 Cycles)	77/0	77/0	77/0
ESD HBM	2.5KV	3/0	3/0	3/0
Electrical Characterization	-	Pass	Pass	Pass
Bond Strength		76/0	76/0	76/0
Die Shear		5/0	5/0	5/0
Manufacturability (Wafer Fab)	Per site spec	Approved	-	-
Manufacturability (Assembly)	(per mfg. Site specification)	Approved	-	-

****Preconditioning: Level 3-235C**

Qual Vehicle 2: SN75976A2DL

Wafer Fab Site:	DFAB	Wafer Diameter:	200mm
Wafer Fab Process:	LBC3s		

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

Reliability Test	Conditions	Sample Size / Fail		
		Lot 1	Lot2	Lot 3
**Life Test	155C (240hrs)	116/0	116/0	116/0
ESD HBM	2.5KV	3/0	3/0	3/0
ESD CDM	1.5KV	3/0	3/0	3/0
Electrical Characterization	-	Pass	Pass	Pass
Latch-Up		5/0	5/0	5/0
Manufacturability (Wafer Fab)	Per site spec	Approved	-	-
Manufacturability (Assembly)	(per mfg. Site specification)	Approved	-	-

****Preconditioning: Level 3-220C**

Qualification Results (2000 and 2002)

Automotive Product Qualification Summary

(As per AEC-Q100 and JEDEC Guidelines)

Supplier Name:	Texas Instruments Inc.	**Supplier Wafer Fabrication Site:**	Texas Instruments Dallas fab (DFAB)
Supplier Code:		**Supplier Die Revision:**	C
Supplier Part Number:	SN104605PN	**Supplier Assembly/Test Site:**	Texas Instruments, Taiwan
Customer Name:		**Supplier Package / Pin:**	PN/ 80
Customer Part Number:		**Pb-Free Lead Frame (Y/N):**	Y

Device Description:		"Green" Mold Compound (Y/N):	Y
MSL Rating:	Level1	Operating Temp Range:	-40C to +125C
Peak Solder Reflow Temp:	220C	Automotive Grade Level (1):	1

Test	#	Reference	Test Conditions	Min Lots (2)	SS / lot (2)	Min Total (2)	Results Lot/pass/fail	Comments: (N/A =Not Applicable)	Exceptions to AEC -Q100
TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS (3)									
PC	A1	JESD22-113 J-STD-020	Preconditioning: SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, HTSL, and HTOL	Performed on ALL SMD devices prior to THB/HAST, AC/UHST, TC and PTC					
THB or HAST	A2	JESD22-A101 JESD22-A110	Temperature Humidity Bias: 85°C/85%/1000 hours Highly Accelerated Stress Test: 130°C/85%/96 hours or 110°C/85%/264 hours	**3**	**77**	231	3/231/0		
AC or UHST	A3	JESD22-A102 JESD22-A118	Autoclave: 121°C/15 psig/96 hours Unbiased Highly Accelerated Stress Test: 130°C/85%/96 hours or 110°C/85%/264 hours	3	**77**	231	3/231/0	QBS to existing 80PN package data	
TC	A4	JESD22-A104	Temperature Cycle: -65°C/+150°C/500 cycles Post Temperature Cycle Bond Pull: 3 grams minimum	3 1	**77** **5**	231 5	3/231/0 1/5/0	QBS to existing 80PN package data	
TEST GROUP B – ACCELERATED LIFETIME SIMULATION TESTS (3)									
HTOL	B1	JESD22-A108	High Temp Operating Life: 125°C/1000 hours 150°C/408 hours	3	**77**	231	3/348/0		
ELFR	B2	AEC-Q100-008	Early Life Failure Rate:	3	800	2400	1/800/0	**QBS to MAX32431 PWG4DL**	One lot of ELFR.
TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS (3)									
WBS	C1	AEC-Q100-001	Wire Bond Shear Test: (Cpk > 1.67)	30 bonds	5 parts min.	30 bonds	Pass		
WBP	C2	Mil-Std-883 Method 2011	Wire Bond Pull: Each bonder used (Cpk > 1.67)	30 bonds	5 parts min.	30 bonds	Pass		
SD	C3	JESD22-B102	Solderability: (>95% coverage) 8 hr steam age (1 hour for Au-plated leads)	1	30	30	1/30/0	QBS to existing 80PN package data	
PD	C4	JESD22-B100 JESD22-B108	Physical Dimensions: (Cpk > 1.67)	3	10	30	3/10/0	QBS to existing 80PN package data	
TEST GROUP E- ELECTRICAL VERIFICATION									
TEST	E1	User/Supplier Specification	Pre and Post Stress Electrical Test:	All	All	All	Pass		
HBM	E2	AEC-Q100-002	Electrostatic Discharge, Human Body Model: (2kV - H2 or better)	1	See Test Method			QBS to SN75976A2 DL	
MM	E2	AEC-Q100-003	Electrostatic Discharge, Machine Model: (200V – M3 or better)	1	See Test Method			QBS to SN75976A2 DL	
CDM	E3	AEC-Q100-101	Electrostatic Discharge, Charged Device Model: (750V corner leads, 500V for all other pins)	1	See Test Method		Pass	QBS to SN75976A2 DL	
LU	E4	AEC-Q100-004	Latch-Up:	1	6	6		QBS to SN75976A2 DL	
ED	E5	AEC-Q100-009	Electrical Distributions: (Cpk > 1.67)	1	30	30	Pass		

(1) Grade 0 (or A): -40°C to +150°C ambient operating temperature range
Grade 1 (or Q): -40°C to +125°C ambient operating temperature range
Grade 2 (or T): -40°C to +105°C ambient operating temperature range
Grade 3 (or I): -40°C to +85°C ambient operating temperature range
Grade 4 (or C): -0°C to +150°C ambient operating temperature range

(2) These are recommended minimum lot/sample sizes. Lot/sample size may be reduced depending on available data.

(3) Generic data may be used.

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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