

PCN Number:	20211019000.1	PCN Date:	October 21, 2021
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly BOM options for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Jan 21, 2022	Estimated Sample Availability:	Date provided at sample request.
Change Type:			
<input type="checkbox"/>	Assembly Site	<input checked="" type="checkbox"/>	Assembly Process
<input checked="" type="checkbox"/>	Design	<input checked="" type="checkbox"/>	Assembly Materials
<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Electrical Specification
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Mechanical Specification
<input checked="" type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Packing/Shipping/Labeling
		<input type="checkbox"/>	Test Process
		<input type="checkbox"/>	Wafer Bump Material
		<input type="checkbox"/>	Wafer Bump Process
		<input checked="" type="checkbox"/>	Wafer Fab Materials
		<input checked="" type="checkbox"/>	Wafer Fab Process
		<input type="checkbox"/>	Part number change

PCN Details

Description of Change:

Texas Instruments is pleased to announce the qualification of a new fab & process technology (RFAB, LBC7) and assembly BOM options (HNA or HFTF) for selected devices as listed below in the product affected section. Construction differences are noted below:

Current Fab Site			Additional Fab Site		
Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter
SFAB	EPIC1ZS	150 mm	RFAB	LBC7	300 mm

The die was also changed as a result of the process change.

Construction differences are noted below:

Group 1 Devices:

	Current	Additional
Mount Compound	SID#400728	SID#400180
Mold Compound	SID#450420	SID#450596
Top Protective Layer	Nitride	Nitride/Oxide
Bond wire Composition, Diameter	Au, 1.0 mil	Cu, 0.8 mil

Group 2 Devices:

	Current	Additional
Top Protective Layer	Nitride	Nitride/Oxide
Bond wire Composition, Diameter	Cu, 1.0 or Au, 0.8 mil	Cu, 0.8 mil

The datasheets will be changing as a result of the above mentioned changes. The datasheet change details can be reviewed in the datasheet revision history. The link to the revised datasheet is available in the table below.



Changes from Revision M (April 2019) to Revision N (October 2021)	Page
• Globally changed instances of legacy terminology to controller and target where I2C is mentioned.....	1
• Changed the <i>Thermal Information</i> table values for the DCT and DCU packages.....	6
• Changed the MIN and MAX values of V_{IK} in the <i>Electrical Characteristics</i> table.....	6
• Changed t_{PHL} to show the package values in the <i>Switching Characteristics AC Performance (Translating Down)</i> ($EN = 3.3 V$) table.....	7

- Changed t_{PHL} to show the package values in the *Switching Characteristics AC Performance (Translating Down) (EN = 2.5 V)* table.....7
- Changed t_{PHL} to show the package values in the *Switching Characteristics AC Performance (Translating Up) (EN = 3.3 V)* table.....7
- Changed t_{PHL} to show the package values in the *Switching Characteristics AC Performance (Translating Up) (EN = 2.5 V)* table.....7

Products	Current Datasheet Number	New Datasheet Number	Link to full datasheet
PCA9306DCT/DCU	SCPS113M	SCPS113N	https://www.ti.com/lit/ds/symlink/pca9306.pdf

E4/G4 versions of the devices are included in EOL notice PDN# 20211019001.3

Qual details are provided in the Qual Data Section.

Reason for Change:

These changes are part of our multiyear plan to transition products from our 150-millimeter factories to newer, more efficient manufacturing processes and technologies, underscoring our commitment to product longevity and supply continuity.

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

None

Impact on Environmental Ratings

Checked boxes indicate the status of environmental ratings following implementation of this change. If below boxes are checked, there are no changes to the associated environmental ratings.

RoHS	REACH	Green Status	IEC 62474
<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change

Changes to product identification resulting from this PCN:

Fab Site Information:

Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City
SH-BIP-1	SHE	USA	Sherman
RFAB	RFB	USA	Richardson

Die Rev:

Current	New
Die Rev [2P]	Die Rev [2P]
-	A

Sample product shipping label (not actual product label)

Product Affected:**Group 1 - RFAB/Process migration, Die Rev, Datasheet and BOM updates:**

PCA9306DCTR	PCA9306DCTT
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Group 2 - RFAB/Process migration, Die Rev, Datasheet & BOM updates:

PCA9306DCUR	PCA9306DCUT
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Qualification Report**Approve Date 23-Aug-2021****Qualification Results****Data Displayed as: Number of lots / Total sample size / Total failed**

Type	Test Name / Condition	Duration	Qual Device: PCA9306DCU	QBS Product Reference: TCA39306DCU	QBS Process Reference: TPS51217DSC	QBS Package Reference: SN74LVC1G123DCU
AC	Autoclave 121C	96 Hours	-	1/77/0	3/231/0	3/231/0
CDM	ESD - CDM	1500 V	-	1/3/0	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	-	-
HAST	Biased HAST 130C/85%RH	96 Hours	-	-	3/231/0	3/231/0
HBM	ESD - HBM	5000 V	-	1/3/0	-	-
HTOL	Life Test, 125C	1000 Hours	-	-	-	3/231/0
HTOL	Life Test, 135C	635 Hours	-	-	3/231/0	-
HTSL	High Temp Storage Bake 170C	420 Hours	-	1/77/0	3/231/0	3/231/0
LU	Latch-up	(Per JESD78)	-	1/3/0	-	-
TC	Temperature Cycle - 65/150C	500 Cycles	-	1/77/0	3/231/0	3/231/0
WBP	Bond Pull	Wires	-	3/228/0	-	3/228/0
WBS	Ball Bond Shear	Wires	-	3/228/0	-	3/228/0

- QBS: Qual by Similarity

- Qual Device PCA9306DCU is qualified at LEVEL1-260C

- 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

Qualification Report

Approve Date 01-Oct-2021

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: PCA9306DCT	QBS Product Reference: TCA39306DCU	QBS Process Reference: TP551217DSC	QBS Package Reference: SN74AXC2T45DCTR	QBS Package Reference: TP525221DBV
AC	Autoclave 121C	96 Hours	-	3/231/0	3/231/0	-	3/231/0
CDM	ESD - CDM	1500 V	1/3/0	-	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	-	-	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	1/77/0	3/231/0
HBM	ESD - HBM	4000 V	-	1/3/0	-	-	-
HTOL	Life Test, 135C	635 Hours	-	-	3/231/0	-	-
HTOL	Life Test, 140C	480 Hours	-	-	-	-	1/77/0
HTSL	High Temp Storage Bake 170C	420 Hours	-	3/231/0	3/231/0	1/77/0	3/231/0
LU	Latch-up	(Per JESD78)	-	1/6/0	-	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0	3/231/0	1/77/0	3/231/0
UHAST	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	1/77/0	-
WBP	Bond Pull	Wires	1/76/0	3/228/0	-	-	-
WBS	Ball Bond Shear	Wires	1/76/0	3/228/0	-	-	-

- QBS: Qual By Similarity

- Qual Device PCA9306DCT is qualified at LEVEL1-260C

- 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

Qualification Report

Approve Date 17-Sep-2021

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: PCA9306DCU	QBS Product Reference: TCA39306DCU	QBS Process Reference: TP551217DSC	QBS Package Reference: 7A3Q3306ADCUR	QBS Package Reference: TP577301DGK
PC	PreCon Level 1	Level 1-260C	-	No Fails	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	-	-
HAST	Biased HAST 130C/85%RH	96 Hours	-	-	3/231/0	-	3/231/0
AC	Autoclave 121C	96 Hours	-	3/231/0	3/231/0	3/231/0	3/231/0
TC	Temperature Cycle -65/150	500 Cycles	-	3/231/0	3/231/0	3/231/0	3/231/0
HTSL	High Temp Storage Bake 170C	564 Hours	-	1/77/0	-	-	-
HTSL	High Temp Storage Bake, 170C	420 Hours	-	2/154/0	3/231/0	-	3/231/0
HTOL	Life Test, 135C	635 Hours	-	-	3/231/0	-	-
HTOL	Life Test, 155C	240 Hours	-	-	-	-	3/231/0
HBM	ESD - HBM	2000 V	-	-	3/9/0	-	-
HBM	ESD - HBM	4000 V	-	1/3/0	-	-	-
CDM	ESD - CDM	1500 V	-	1/3/0	3/9/0	-	-
LU	Latch-up	(Per JESD78)	-	1/6/0	3/18/0	-	-
MSL	Moisture Sensitivity, JEDEC	Level 1-260C	-	1/12/0	-	3/12/0	1/12/0
WBP	Bond Pull	Wires	-	3/228/0	1/76/0	3/228/0	-
WBS	Ball Bond Shear	Wires	-	3/228/0	1/76/0	3/228/0	-

- QBS: Qual By Similarity

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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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