

PCN Number:	20220601000.2	PCN Date:	June 01, 2022
Title:	Qualification of new Fab site (RFAB), Datasheet update and additional Assembly BOM options for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Dec 1, 2022	Sample requests accepted until:	Jul 1, 2022*

***Sample requests received after July 1, 2022 will not be supported.**

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:

Texas Instruments is pleased to announce the qualification of an additional fab (RFAB), Datasheet update and assembly BOM options (FMX) for selected devices as listed below in the product affected section.

Current Fab Site			Additional Fab Site		
Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter
MAINEFAB	ABCD6	200 mm	RFAB	ABCD6	300 mm

Construction differences are noted below:

What	Current	Proposed
Bond Wire Composition/Diameter	Au/0.96 mil	Cu/1.0 mil

The datasheets will be changing as a result of the above mentioned changes.

Product Family	Current Datasheet Number	New Datasheet Number
UCC27282-Q1	SLUSDN5B	SLUSDN5C
UCC27284-Q1	SLUSE23A	SLUSE23B

The datasheet change details can be reviewed in the datasheet revision history.

UCC27282-Q1

4 Revision History

Changes from Revision B (March 2021) to Revision C (May 2022) Page

- Updated typical peak pullup/pulldown current from +2.5A/-3.5A to ±3A in Electrical Characteristics..... 5
- Updated I_{HBS} typical leakage to 5.0µA and test voltage from 110V to 100V in Electrical Characteristics..... 5

UCC27284-Q1

4 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Revision A (November 2020) to Revision B (May 2022) Page

- Updated typical peak pullup/pulldown current from +2.5A/-3.5A to ±3A in Electrical Characteristics..... 6
- Updated I_{HBS} typical leakage to 5.0µA and test voltage from 110V to 100V in Electrical Characteristics..... 6

The links to the revised datasheets are available in the table below.

UCC27282-Q1	https://www.ti.com/lit/gpn/UCC27282-Q1
UCC27284-Q1	https://www.ti.com/lit/gpn/UCC27284-Q1

Qual details are provided in the Qual Data Section.

Reason for Change:

Continuity of supply and to accurately reflect device characteristics.

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
☒ No Change	☒ No Change	☒ No Change	☒ 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
MAINEFAB	CUA	USA	South Portland
RFAB	RFB	USA	Richardson

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TI Mexico	MEX	MEX	Aguascalientes

Sample product shipping label (not actual product label)



Group 1 Product Affected: Adding RFAB, BOM change & Datasheet update

UCC27282QDQ1	UCC27282QDRQ1	UCC27284QDQ1	UCC27284QDRQ1
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Group 2 Product Affected: Datasheet update

UCC27282QDDAQ1	UCC27282QDDARQ1	UCC27282QDRCRQ1	UCC27282QDRCTQ1
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Qualification Data
Automotive New Product Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)
 Approve Date 12-MAY -2022

Product Attributes

Attributes	Qual Device: <u>UCC27282QDQ1</u>	Qual Device: <u>UCC27284QDQ1</u>	Qual Device: <u>UCC27288D</u>	Qual Device: <u>UCC27289D</u>	QBS Reference: <u>TCAN1042HVDRO1</u>	QBS Reference: <u>TCAN1051VDRQ1</u>	QBS Reference: <u>LM5141QRGERQ1</u>
Automotive Grade Level	Grade 1	Grade 1	-	-	Grade 1	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 150	-40 to 150	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125
Product Function	Power Management	Power Management	-	-	Interface	Interface	Power Management
Wafer Fab Supplier	RFAB	RFAB	RFAB	RFAB	MH8	MH8	RFAB
Assembly Site	FMX	FMX	FMX	FMX	FMX	FMX	UTL1
Package Group	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	QFN
Package Designator	D	D	D	D	D	D	RGE
Pin Count	8	8	8	8	8	8	24

QBS: Qual By Similarity

Qual Device UCC27282QDQ1 is qualified at MSL2 260C

Qual Device UCC27284QDQ1 is qualified at MSL2 260C

Qual Device UCC27288D is qualified at MSL2 260C

Qual Device UCC27289D is qualified at MSL2 260C

Qualification Results

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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: <u>UCC27282QDQ1</u>	Qual Device: <u>UCC27284QDQ1</u>	Qual Device: <u>UCC27288D</u>	Qual Device: <u>UCC27289D</u>	QBS Reference: <u>TCAN1042HVDRO1</u>	QBS Reference: <u>TCAN1051VDRQ1</u>	QBS Reference: <u>LM5141QRGERQ1</u>
Test Group A - Accelerated Environment Stress Tests														
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL1 260C	1 Step	-	-	-	-	No Fails	No Fails	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	1 Step	No Fails	-	-	-	-	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	-	-	-	2/154/0	1/77/0	-

HAST	A 2	JEDEC JESD2 2-A110	3	77	Temperature Humidity Bias	85C/85%RH	1000 Hours	-	-	-	-	-	-	-
AC/U HAST	A 3	JEDEC JESD2 2A102/ JEDEC JESD2 2-A118	3	77	Autoclave	121C/15psig	96 Hours	1/77/0	-	-	-	2/154/0	1/77/0	-
AC/U HAST	A 3	JEDEC JESD2 2A102/ JEDEC JESD2 2-A118	3	77	Unbiased HAST	110C/85%RH	264 Hours	-	-	-	-	-	-	-
TC	A 4	JEDEC JESD2 2A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	3/231/0	-	-	-	2/154/0	1/77/0	-
HTSL	A 6	JEDEC JESD2 2-A103	1	45	High Temperature Storage Life	150C	1000 Hours	1/77/0	-	-	-	-	-	-
HTSL	A 6	JEDEC JESD2 2-A103	1	45	High Temperature Storage Life	175C	500 Hours	-	-	-	-	2/90/0	1/45/0	-
Test Group B - Accelerated Lifetime Simulation Tests														
HTOL	B 1	JEDEC JESD2 2A108	1	77	Life Test	125C	1000 Hours	-	-	-	-	-	-	3/231/0
HTOL	B 1	JEDEC JESD2 2-A108	1	77	Life Test	150C	1000 Hours	3/231/0	-	-	-	-	-	-
HTOL	B 1	JEDEC JESD2 2-A108	1	77	Life Test	150C	300 Hours	-	-	-	-	-	-	-
ELFR	B 2	AEC Q1000 08	1	77	Early Life Failure Rate	125C	48 Hours	-	-	-	-	-	-	3/2400/0
ELFR	B 2	AEC Q1000 08	1	77	Early Life Failure Rate	150C	48 Hours	1/800/0	-	-	-	-	-	-
Test Group C - Package Assembly Integrity Tests														
WBS	C 1	AEC Q1000 01	1	30	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	3/90/0	-	-	-	2/60/0	1/30/0	-
WBP	C 2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	3/90/0	-	-	-	2/60/0	1/30/0	-

SD	C 3	JEDEC JESD2 2-B102	1	15	PB Solderability	>95% Lead Coverage	-	1/15/0	-	-	-	-	-	-
SD	C 3	JEDEC JESD2 2-B102	1	15	PB-Free Solderability	>95% Lead Coverage	-	1/15/0	-	-	-	-	-	-
PD	C 4	JEDEC 2B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	3/30/0	-	-	-	2/20/0	1/10/0	-
Test Group D - Die Fabrication Reliability Tests														
EM	D 1	JESD6 1	-	-	Electromigration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDD B	D 2	JESD3 5	-	-	Time Dependent Dielectric Breakdown	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
HCI	D 3	JESD6 0 & 28	-	-	Hot Carrier Injection	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
NBTI	D 4	-	-	-	Negative Bias Temperature Instability	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
SM	D 5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
Test Group E - Electrical Verification Tests														
ESD	E 2	AEC Q1000 02	1	3	ESD HBM	-	2000 Volts	1/3/0	1/3/0	-	-	1/3/0	1/3/0	1/3/0
ESD	E 3	AEC Q1000 11	1	3	ESD CDM	-	500 Volts	1/3/0	1/3/0	-	-	1/3/0	1/3/0	1/3/0

LU	E 4	AEC Q1000 04	1	6	Latch-Up	Per AEC Q100-004	-	1/6/0	1/6/0	-	-	1/6/0	1/6/0	1/6/0
ED	E 5	AEC Q1000 09	3	30	Electric al Distribut ions	Cpk >1. 67 Room, hot, and cold	-	3/90/0	1/30/0	-	-	3/90/0	3/90/0	3/90/0

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

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40C to +150C

Grade 1 (or Q): -40C to +125C

Grade 2 (or T): -40C to +105C Grade 3 (or I) : -40C to +85C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

Automotive New Product Qualification Summary (As per AEC-Q100, AEC-Q006, and JEDEC Guidelines)

Approved 12-May-2022

Product Attributes

Attributes	Qual Device: <u>UCC27282QDQ1</u>	Qual Device: <u>TCAN1042HVDRO1</u>	Qual Device: <u>TCAN1051VDRO1</u>
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40 to +125 C
Automotive Grade Level	Grade 1	Grade 1	Grade 1
Product Function	Power Management	Interface	Interface
Wafer Fab Supplier	RFAB	MIHO8	MIHO8
Assembly Site	FMX	FMX	FMX
Package Type	SOIC	SOIC	SOIC
Package Designator	D	D	D
Ball/Lead Count	8	8	8

- QBS: Qual By Similarity

- Qual Device UCC27282QDQ1 is qualified at LEVEL2-260C

Qualification Results

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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name / Condition	Duration	Qual Device: <u>UCC27282QDQ1</u>	Qual Device: <u>TCAN1042HVDRO1</u>	Qual Device: <u>TCAN1051VDRO1</u>
Test Group A – Accelerated Environment Stress Tests									
PC	A1	-	3	22	SAM Analysis, Pre Stress	Completed	1/22/0	2/44/0	1/22/0
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	-	No fails	No fails
PC	A1	JEDEC J-STD-020	3	77	Preconditioning	Level 2-260C	No fails	-	-

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name / Condition	Duration	Qual Device: <u>UCC27282QDO1</u>	Qual Device: <u>TCAN1042HVDRO1</u>	Qual Device: <u>TCAN1051VDRQ1</u>
		JESD22-A113							
PC	A1	-	3	22	SAM Analysis, Post Stress	Completed	1/22/0	2/44/0	1/22/0
HAS T	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	1/77/0	2/154/0	1/77/0
HAS T	A2	-	3	1	Cross Section, Post bHAST 96 Hours	Completed	1/1/0	2/2/0	1/1/0
HAS T	A2	-	3	30	Wire Bond Shear, Post bHast, 96 Hours	Wires	1/30/0	2/60/0	1/30/0
HAS T	A2	-	3	30	Bond Pull over Stitch, post bHAST, 96 Hours	Wires	1/30/0	2/60/0	1/30/0
HAS T	A2	-	3	30	Bond Pull over Ball, Post bHAST, 96 Hours	Wires	1/30/0	2/60/0	1/30/0
HAS T	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	192 Hours	1/70/0	2/140/1 (1)	1/70/0
HAS T	A2	-	3	1	Cross Section, Post bHAST 192 Hours	Completed	1/1/0	2/2/0	1/1/0
HAS T	A2	-	3	22	SAM Analysis, Post bHAST, 192 Hours	Completed	1/22/0	2/44/0	1/22/0
HAS T	A2	-	3	30	Wire Bond Shear, Post bHast, 192 Hours	Wires	1/30/0	2/60/0	1/30/0
HAS T	A2	-	3	30	Bond Pull over Stitch, post bHAST, 192 Hours	Wires	1/30/0	2/60/0	1/30/0
HAS T	A2	-	3	30	Bond Pull over Ball, Post bHAST, 192 Hours	Wires	1/30/0	2/60/0	1/30/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	1/77/0	2/154/0	1/77/0
TC	A4	-	3	1	Cross Section, Post T/C 500 Cycles	Completed	1/1/0	2/2/0	1/1/0
TC	A4	-	3	22	SAM Analysis, Post T/C, 500 Cycles	Completed	1/22/0	2/44/0	1/22/0
TC	A4	-	3	30	Wire Bond Shear, Post T/C 500 Cycles	Wires	1/30/0	2/60/0	1/30/0
TC	A4	-	3	30	Bond Pull over Stitch Post T/C	Wires	1/30/0	2/60/0	1/30/0

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name / Condition	Duration	Qual Device: <u>UCC27282QDO1</u>	Qual Device: <u>TCAN1042HVDRO1</u>	Qual Device: <u>TCAN1051VDRQ1</u>
					500 Cycles				
TC	A4	-	3	30	Bond Pull over Ball Post T/C 500 Cycles	Wires	1/30/0	2/60/0	1/30/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	1000 Cycles	1/77/0	2/140/0	1/77/0
TC	A4	-	3	1	Cross Section, Post T/C 1000 Cycles	Completed	1/1/0	2/2/0	1/1/0
TC	A4	-	3	22	SAM Analysis, Post T/C, 1000 Cycles	Completed	1/22/0	2/44/0	1/22/0
TC	A4	-	3	30	Wire Bond Shear, Post T/C 1000 Cycles	Wires	1/30/0	2/60/0	1/30/0
TC	A4	-	3	30	Bond Pull over Stitch, Post T/C, 1000 Cycles	Wires	1/30/0	2/60/0	1/30/0
TC	A4	-	3	30	Bond Pull over Ball, Post T/C, 1000 Cycles	Wires	1/30/0	2/60/0	1/30/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	1000 Cycles	N/A	N/A	N/A
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	2000 Cycles	N/A	N/A	N/A
HTSL	A6	JEDEC JESD22-A103	3	45	High Temp Storage Bake 150C	1000 Hours	1/77/0	-	-
HTSL	A6	-	3	1	Cross Section, Post HTSL 1000 Hours	Completed	1/1/0	-	-
HTSL	A6	JEDEC JESD22-A103	3	44	High Temp Storage Bake 150C	2000 Hours	1/76/0	-	-
HTSL	A6	-	3	1	Cross Section, Post HTSL 2000 Hours	Completed	1/1/0	-	-
HTSL	A6	JEDEC JESD22-A103	3	45	High Temp Storage Bake 175C	500 Hours	-	2/90/0	1/45/0
HTSL	A6	-	3	1	Cross Section, Post HTSL 500 Hours	Completed	-	(2)	1/1/0
HTSL	A6	JEDEC JESD22-A103	3	44	High Temp Storage Bake 175C	1000 Hours	-	2/88/0	1/44/0
HTSL	A6	-	3	1	Cross Section, Post HTSL 1000 Hours	Completed	-	2/2/0	1/1/0
Test Group C – Package Assembly Integrity Tests									
WBS	C 1	AEC Q100-001	3	30	Wire Bond Shear, Cpk>1.67	Wires		2/60/0	1/30/0

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name / Condition	Duration	Qual Device: <u>UCC27282QDO1</u>	Qual Device: <u>TCAN1042HVDRO1</u>	Qual Device: <u>TCAN1051VDRQ1</u>
WBP	C 2	MIL-STD883 Method 2011	3	30	Bond Pull over Ball, Cpk >1.67	Wires		2/60/0	1/30/0

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST & TC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40C to +150C

Grade 1 (or Q): -40C to +125C

Grade 2 (or T): -40C to +105C

Grade 3 (or I) : -40C to +85C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

For questions regarding this notice, e-mails can be sent to the contacts shown below or your local Field Sales Representative.

Location	E-Mail
WW PCN Team	PCN_ww_admin_team@list.ti.com

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