

PCN Number:	20221216005.2	PCN Date:	December 21, 2022
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision and new Assembly & final test site (MLA) for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Jun 18, 2023	Sample requests accepted until:	Jan 20, 2023*

***Sample requests received after Jan 20, 2023 will not be supported.**

Change Type:

<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Assembly Materials
<input checked="" type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification
<input type="checkbox"/>	Test Site	<input checked="" type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>	Wafer Bump Process
<input checked="" type="checkbox"/>	Wafer Fab Site	<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, LBC9) and new Final test site & assembly site (MLA) 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
SFAB	IMP-PWR2	150 mm	RFAB	LBC9	300 mm

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

The pin one designator will be changing:

	Current	New
Pin one ID	Stripe	Dot

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

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

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TI Mexico	MEX	MEX	Aguaascalientes
TI Malaysia	MLA	MYS	Kuala Lumpur

Die Rev:

Current

New

Die Rev [2P]	Die Rev [2P]
A	A

Sample product shipping label (not actual product label)

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



UCC28C40-Q1, UCC28C41-Q1, UCC28C42-Q1, UCC28C43-Q1, UCC28C44-Q1, UCC28C45-Q1
SLUSA12G – DECEMBER 2009 – REVISED NOVEMBER 2022

Changes from Revision F (October, 2020) to Revision G (November, 2022) Page

- Updated *Total Power Dissipation* value in Absolute Maximum Table..... 4
- Added V_{REF} *maximum continuous voltage* from external circuitry in Recommended Operating Conditions.....4
- Updated T_J *max values* in Recommended Operating Conditions Table.....4
- Updated all *Thermal Resistance Numbers* in Thermal Information..... 5
- Updated Electrical Characteristics section 5

Product Folder	Current Datasheet Number	New Datasheet Number	Link to full datasheet
UCC28C4x-Q1	SLUSA12F	SLUSA12G	http://www.ti.com/product/UCC28C40-Q1

Product Affected:

UCC28C40QDRQ1	UCC28C42QDRQ1	UCC28C44QDRQ1	UCC28C45QDRQ1
UCC28C41QDRQ1	UCC28C43QDRQ1		

For alternate parts with similar or improved performance, please visit the product page on [TI.com](https://www.ti.com)

TI Information
Selective Disclosure

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

Toledo Automotive C4Y Change devices PG1.1
Approve Date 21-OCTOBER -2022

Product Attributes

Attributes	Qual Device: UCC28C44QDRQ1	Qual Device: UCC28C43QDRQ1	Qual Device: UCC28C41QDRQ1	QBS Reference: LM74700QDBVRQ1	QBS Reference: LM74700QDBVRQ1	QBS Reference: UCC28C56HQDRQ1	QBS Reference: SN65HVD1781AQDRQ1	QBS Reference: UCC28C52QDRQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125
Product Function	Power Management	Power Management	Power Management	Power Management	Power Management	Power Management	Interface	Power Management
Wafer Fab Supplier	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	DP1DM5	RFAB
Assembly Site	MLA	MLA	MLA	UTL2	UTL2	MLA	MLA	MLA
Package Group	SOIC	SOIC	SOIC	SOT	SOT	SOIC	SOIC	SOIC
Package Designator	D	D	D	DBV	DBV	D	D	D
Pin Count	8	8	8	6	6	8	8	8

- QBS: Qual By Similarity
- Qual Device UCC28C44QDRQ1 is qualified at MSL1 260C
- Qual Device UCC28C43QDRQ1 is qualified at MSL1 260C
- Qual Device UCC28C41QDRQ1 is qualified at MSL1 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: UCC28C44QDRQ1	Qual Device: UCC28C43QDRQ1	Qual Device: UCC28C41QDRQ1	QBS Reference: LM74700QDBVRQ1	QBS Reference: LM74700QDBVRQ1	QBS Reference: UCC28C56HQDRQ1	QBS Reference: SN65HVD1781AQDRQ1
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
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	-	1/77/0	3/231/0

ACU/HAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	1/770	3/2310	
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	-	1/770	3/2310	
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	-	-	-	-	-	1/50	1/50	
PTC	A5	JEDEC JESD22-A105	1	45	PTC	-40/125C	1000 Cycles	-	-	-	-	-	-	-	
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	-	1/770	-	
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	-	-	-	-	-	-	1/450	
Test Group B - Accelerated Lifetime Simulation Tests															
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	125C	1000 Hours	-	-	-	-	-	1/770	-	
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	140C	480 Hours	-	-	-	-	-	-	-	
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	150C	408 Hours	-	-	-	1/770	2/1540	-	-	
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	150C	24 Hours	-	-	-	-	3/24000	-	-	
Test Group C - Package Assembly Integrity Tests															
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear	Minimum of 5 devices. 30 wires Cpk>1.67	Wires	-	-	-	-	-	-	3/900	3/900
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices. 30 wires Cpk>1.67	Wires	-	-	-	-	-	-	3/900	3/900
SD	C3	JEDEC JESD22-B102	1	15	PB Solderability	>95% Lead Coverage	-	-	-	-	-	-	1/150	-	
SD	C3	JEDEC JESD22-B102	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	-	-	-	-	1/150	-	
PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	-	-	-	-	-	3/300	3/300	
Test Group D - Die Fabrication Reliability Tests															
EM	D1	JESD61	-	-	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	D2	JESD35	-	-	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	D3	JESD60 & 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	D4	-	-	-	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	D5	-	-	-	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	E2	AEC Q100-002	1	3	ESD HBM	-	2500 Volts	1/30	-	-	-	-	1/30	-	
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	2000 Volts	1/30	-	-	-	-	1/30	-	
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	1/60	-	-	-	-	1/60	-	
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	1/300	1/300	1/300	-	-	3/90	-	
Additional Tests															
Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name	Condition	Duration	Qual Device	Qual Device	Qual Device	QBS Reference	QBS Reference	QBS Reference	QBS Reference	

- 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

EL (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 : ACU/HAST

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

TI Qualification ID: R-NPD-2206-074

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 Change Management Team	PCN_ww_admin_team@list.ti.com

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