

PCN Number:	20220524000.2A		PCN Date:	July 19, 2022	
Title:	Qualification of new Fab site (RFAB) using qualified Process Technology, Die Revision, and additional Assembly/test sites & BOM options for select devices				
Customer Contact:	PCN Manager		Dept:	Quality Services	
Proposed 1st Ship Date:	Nov 26, 2022		Sample Requests accepted until:	June 26, 2022	
*Sample requests received after June 26, 2022 will not be supported.					
Change Type:					
<input checked="" type="checkbox"/>	Assembly Site	<input checked="" type="checkbox"/>	Assembly Process	<input checked="" type="checkbox"/>	Assembly Materials
<input checked="" type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification
<input checked="" type="checkbox"/>	Test Site	<input 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:					
Revision A is to correct the city information in the "changes in product identification resulting from this PCN" section below. Updates are in highlight bold font .					
Texas Instruments is pleased to announce the qualification of a new fab & process technology (RFAB, LBC9) die revision, and Assembly/test & BOM option 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
DL-LIN	LBC4	200 mm	RFAB	LBC9	300 mm
The die was also changed as a result of the process change.					
Construction differences between the Assembly sites are as follows:					
	UTL2	ASESH	HFTF		
Bond wire composition, diameter	Au, 1.0 mil	Cu, 1.0 mil	Cu, 1.0 mil		
Mold Compound	SID#CZ0094	SID#EN2000515	SID#R-32		
Mount Compound	SID#PZ0013	SID#EY1000063	SID#A-24		
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-milimeter 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
DL-LIN	DLN	USA	Dallas
RFAB	RFB	USA	Richardson

Die Rev:


Current

New

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

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
UTL2	NS2	THA	Bangpakong, Chachoengsao
ASESH	ASH	CHN	Hefei Shanghai
HFTF	HFT	CHN	Chengdu Hefei


Sample product shipping label (not actual product label)




TEXAS INSTRUMENTS
MADE IN: Malaysia
2DC: 20:

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) ~~CSO: USA~~
 (22L) ASO: MLA (23L) ACO: MYS

Product Affected:

Texas Instruments Incorporated
PCN#20220524000.2A

TI Information – Selective Disclosure

TPS40210QDGRCT

TPS40210QDGRQ1


TI Information
 Selective Disclosure

Automotive New Product Qualification Summary

(As per AEC-Q100 and JEDEC Guidelines)

TPS40210QDGRQ1
Approved 7-May-2022

Product Attributes

Attributes	Qual Device: TPS40210QDGRQ1	Qual Device: TPS40210QDGRQ1	QBS Process Reference: TLC6C5816QPWPRQ1	QBS Product Reference: TCA39306DCURQ1	QBS Product Reference: TPS7B8250QDGNRQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40°C to +125°C	-40 to +125 C	-40°C to +125°C
Product Function	Power Management	Power Management	Power Management	Interface	Power Management
Wafer Fab Supplier	RFAB	RFAB	RFAB	RFAB	RFAB
Die Revision	A	A	A	A	A
Assembly Site	HFTFAT	ASESHAT	TAI	HFTFAT	ASESHAT
Package Type	HVSSOP	HVSSOP	HTSSOP	VSSOP	HVSSOP
Package Designator	DGQ	DGQ	PWP	DCU	DGN
Ball/Lead Count	10	10	28	8	8

- QBS: Qual By Similarity

- Qual Device TPS40210QDGRQ1 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: TPS40210QDGRQ1	Qual Device: TPS40210QDGRQ1	QBS Process Reference: TLC6C5816QPWPRQ1	QBS Product Reference: TCA39306DCURQ1	QBS Product Reference: TPS7B8250QDGNRQ1
Test Group A – Accelerated Environment Stress Tests											
PC	A1	JEDEC J-STD-020 JESD22-A113	3	-	Automotive Preconditioning	Level 1-280C	-	-	-	3/All/0	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	-	Automotive Preconditioning	Level 2-280C	3/All/0	3/All/0	-	-	3/All/0
PC	A1	JEDEC J-STD-020 JESD22-A113	3	-	Automotive Preconditioning	Level 3-280C	-	-	3/All/0	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0	-	3/231/0	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	-	-	3/231/0	3/231/0	3/231/0
UHAST	A3	JEDEC JESD22-A118	3	77	Unbiased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0	-	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -85/150C	500 Cycles	3/231/0	3/231/0	3/231/0	3/231/0	3/231/0
TC-BP	A4	MIL-STD883 Method 2011	1	30	Post Temp Cycle Bond Pull	Wires	1/30/0	1/30/0	1/30/0	1/30/0	-
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	N/A	-	-	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp. Storage Bake, 150C	1000 Hours	-	-	3/231/0	3/135/0	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp. Storage Bake, 175C	500 Hours	3/135/0	3/135/0	-	-	3/231/0
Test Group B – Accelerated Lifetime Simulation Tests											
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	-	-	-	3/231/0	1/77/0
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 140C	480 Hours	-	-	3/231/0	-	-
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	408 Hours	1/77/0	1/77/0	-	-	2/154/0
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	1000 Hours	1/77/0	1/77/0	-	-	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 150C	24 Hours	-	-	3/2400/0	-	1/800/0
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	--	N/A	N/A	-	-	-

Test Group C – Package Assembly Integrity Tests											
WBS	C1	AEC Q100-001	1	30	Bond Shear (Cpk>1.67)	Wires	3/90/0	3/90/0	3/90/0	3/90/0	1/30/0
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull (Cpk>1.67)	Wires	3/90/0	3/90/0	13/90/0	-	1/30/0
SD	C3	JEDEC JESD22-B102	1	15	Solderability (>95% Lead Coverage)	Pb	1/15/0	1/15/0	1/15/0	-	1/15/0
SD	C3	JEDEC JESD22-B102	1	15	Solderability (>95% Lead Coverage)	Pb-Free	1/15/0	1/15/0	1/15/0	-	1/15/0
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	--	3/30/0	3/30/0	3/30/0	3/30/0	3/30/0
SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Post HTSL/Bump	N/A	N/A	-	-	-
LI	C6	JEDEC JESD22-B105	1	50	Lead Pull to Destruction	Leads	3/72/0	3/72/0	-	1/24/0	3/72/0
Test Group D – Die Fabrication Reliability Tests											
EM	D1	JESD81	-	-	Electromigration	--	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-	-	-
TDDb	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	--	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-	-	-
HCI	D3	JESD80 & 28	-	-	Hot Injection Carrier	--	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	-	-	-
SM	D5	-	-	-	Stress Migration	--	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-	-	-
Test Group E – Electrical Verification Tests											
HBM	E2	AEC Q100-002	1	3	ESD - HBM	3000 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
CDM	E3	AEC Q100-011	1	3	ESD - CDM	1000 V	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
LU	E4	AEC Q100-004	1	6	Latch-up, 125C	(Per AEC Q100-004)	1/6/0	1/6/0	1/6/0	1/6/0	1/6/0
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, Hot, & Cold	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0

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): -40°C to +150°C
 Grade 1 (or Q): -40°C to +125°C
 Grade 2 (or T): -40°C to +105°C
 Grade 3 (or I): -40°C to +85°C

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

TI Qualification ID: 20200723-135165 and 20210304-138916



TI Information
 Selective Disclosure

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

1.0 mil Cu Wire on Al Pad in ASESAT SOP Package Approved 7-May-2022

Product Attributes

Attributes	Qual Device: TPS40210QDGRQ1
Automotive Grade Level	Grade 1
Operating Temp Range	-40 to +125 C
Product Function	Power Management
Wafer Fab Supplier	RFAB
Die Revision	A
Assembly Site	ASESAT
Package Type	HVSSOP
Package Designator	DGQ
Ball/Lead Count	10

- QBS: Qual By Similarity
 - Qual Devices TPS40210QDGRQ1 is qualified at LEVEL2-260C

Qualification Results

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

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Type	#	Test Spec	Min Lot Qty	SS/ Lot	Test Name / Condition	Duration	Qual Device: TPS40210QDGQRQ1
Test Group A – Accelerated Environment Stress Tests							
			3	12	SAM Analysis, T0	Completed	3/66/0
PC	A1	JEDEC J-STD-020; JESD22-A113	3	77	Preconditioning	Level 2- 260C	3/All/0
			3	12	SAM Analysis, Post Preconditioning	Completed	3/66/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0
			3	1	Cross Section, Post bHAST 96 Hours	Completed	3/3/0
			3	30	Wire Bond Shear, Post bHast 96 Hours	Wires	3/90/0
			3	30	Bond Pull over Stitch, post bHAST, 96 Hours	Wires	3/90/0
			3	30	Bond Pull over Ball, Post bHAST, 96 Hours	Wires	3/90/0
HAST	A2	JEDEC JESD22-A110	3	70	Biased HAST, 130C/85%RH	192 Hours	3/210/0
			3	1	Cross Section, Post bHAST 192 Hours	Completed	3/3/0
			3	22	SAM Analysis, Post bHAST, 192 Hours	Completed	3/66/0
			3	30	Wire Bond Shear, Post bHast 192 Hours	Wires	3/90/0
			3	30	Bond Pull over Stitch, post bHAST 192 Hours	Wires	3/90/0
			3	30	Bond Pull over Ball, Post bHAST 192 Hours	Wires	3/90/0
TC	A4	JEDEC JESD22-A104	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0
			3	1	Cross Section, Post T/C 500 Cycles	Completed	3/3/0
			3	22	SAM Analysis, Post T/C 500 Cycles	Completed	3/66/0
			3	30	Wire Bond Shear, Post T/C 500 Cycles	Wires	3/90/0
			3	30	Bond Pull over Stitch, Post T/C 500 Cycles	Wires	3/90/0
			3	30	Bond Pull over Ball Post T/C 500 Cycles	Wires	3/90/0
TC	A4	JEDEC JESD22-A104	3	70	Temperature Cycle, -65/150C	1000 Cycles	3/210/0
			3	1	Cross Section, Post T/C 1000 Cycles	Completed	3/3/0
			3	22	SAM Analysis, Post T/C 1000 Cycles	Completed	3/66/0
			3	30	Wire Bond Shear, Post T/C 1000 Cycles	Wires	3/90/0
			3	30	Bond Pull over Stitch, Post T/C 1000 Cycles	Wires	3/90/0
			3	30	Bond Pull over Ball, Post T/C 1000 Cycles	Wires	3/90/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle, -40/125C	1000 Cycles	N/A

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: TPS40210QDGRQ1
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle, -40/125C	2000 Cycles	N/A
HTSL	A6	JEDEC JESD22-A103	3	45	High Temp Storage Bake 175C	500 Hours	3/135/0
HTSL	A6	JEDEC JESD22-A103	3	44	High Temp Storage Bake 175C	1000 Hours	3/132/0
			3	1	Cross Section, Post HTSL 1000 Hours	Completed	3/3/0
Test Group C – Package Assembly Integrity Tests							
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear, Cpk>1.67	Wires	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull, Cpk>1.67	Wires	3/90/0

A1 (PC): Preconditioning:

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

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I): -40°C to +85°C

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

TI Qualification ID: 20200723-135165

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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