PCN Number:	20221207004.2	**PCN Date:**	December 09, 2022
Title:	Qualification of CDAT as an alternate Assembly & Test site for select devices		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	Jun 7, 2023	**Sample Requests accepted until:**	Jan 9, 2023*

***Sample requests received after Jan 9, 2023 will not be supported.**

Change Type:

☒	Assembly Site	☐	Design	☐	Wafer Bump Site
☒	Assembly Process	☐	Data Sheet	☐	Wafer Bump Material
☒	Assembly Materials	☐	Part number change	☐	Wafer Bump Process
☐	Mechanical Specification	☒	Test Site	☐	Wafer Fab Site
☐	Packing/Shipping/Labeling	☐	Test Process	☐	Wafer Fab Materials
				☐	Wafer Fab Process

PCN Details

Description of Change:

Texas Instruments Incorporated is announcing the qualification of CDAT as an additional Assembly & Test site for set of devices listed below. Construction differences are as follows:

	UTL1	CDAT
Bond wire composition, diameter	Au. 1.3 mil	Cu, 1.3 mil
Mount Compound	SID#PZ0031	4207123
Mold Compound	SID#CZ0142	4222198

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

Reason for Change:

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
☒ No Change	☒ No Change	☒ No Change	☒ No Change

Changes to product identification resulting from this PCN:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
UTL1	NSE	THA	Bangkok
CDAT	**CDA**	**CHN**	**Chengdu**

Sample product shipping label (not actual product label)

TEXAS INSTRUMENTS
MADE IN: Malaysia
2DC: 2Q:

MSL 2 /260C/1 YEAR	SEAL DT
MSL 1 /235C/UNLIM	03/29/04

OPT:
ITEM: 39
LBL: 5A (L)TO:1750

Pb G4

(1P) SN74LS07NSR
(Q) 2000 (D) 0336
(31T)LOT: 3959047MLA
(4W) TKY(1T) 7523483SI2
(P)
(2P) REV: (V) 0033317
(20L) CSO: SHE (21L) CCO:USA
(22L) ASO: MLA (23L) ACO: MYS

Product Affected:

TPS54240QDRCRQ1	TPS54260QDRCTQ1	TPS57060QDRCRQ1	TPS57160QDRCRQ1
TPS54260QDRCRQ1	TPS57040QDRCRQ1	TPS57140QDRCRQ1	TPS57160SDRCRWB

TI Information
Selective Disclosure

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

Approve Date 17-NOVEMBER -2022

Product Attributes

Attributes	Qual Device: TPS57040QDRCRQ1	QBS Reference: LM2775QDSGRQ1	QBS Reference: LM5158QRTERQ1	QBS Reference: P0809054B2PAP
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 125	-40 to 125	-40 to 125	-40 to 125
Product Function	Power Management	Power Management	Power Management	Signal Chain
Wafer Fab Supplier	DP1DM5	RFAB	DMOS6	DP1DM5
Assembly Site	CDAT	CDAT	CDAT	PHI
Package Group	QFN	QFN	QFN	QFP
Package Designator	DRC	DSG	RTE	PAP
Pin Count	10	8	16	64

- QBS: Qual By Similarity
- Qual Device TPS57040QDRCRQ1 is qualified at MSL3 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: TPS57040QDRCRQ1	QBS Reference: LM2775QDSGRQ1	QBS Reference: LM5158QRTERQ1	QBS Reference: P0809054B2PAP

Test Group A - Accelerated Environment Stress Tests											
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	1 Step	-	Pass	Pass	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL3 260C	1 Step	-	-	-	Pass
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	-	3/231/0	-	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Unbiased HAST	110C/85%RH	264 Hours	-	-	2/154/0	-
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	-	-	1/77/0	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	-	1/5/0	1/5/0	1/5/0
PTC	A5	JEDEC JESD22-A105	1	45	PTC	-40/125C	1000 Cycles	-	1/45/0	-	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	1/45/0	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	-	3/135/0	-	-

Test Group B - Accelerated Lifetime Simulation Tests											
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	125C	1000 Hours	-	3/231/0	-	3/230/0[1]
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	150C	408 Hours	-	-	3/231/0	-
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	125C	48 Hours	-	-	-	3/2399/0[2]
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	150C	24 Hours	-	-	1/800/0	-
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	3/90/0	3/90/0	3/90/0	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	3/90/0	3/90/0	3/90/0	3/90/0
SD	C3	JEDEC JESD22-B102	1	15	PB Solderability	>95% Lead Coverage	-	-	1/15/0	-	-
SD	C3	JEDEC JESD22-B102	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	1/15/0	-	-
PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	3/30/0	3/30/0	3/30/0	3/30/0
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
TDDB	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

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
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
SM	D5	-	-	-	Stress Migration	-	-	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	-	2000 Volts	-	-	1/3/0	1/3/0
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	500 Volts	-	-	-	1/3/0
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	500 Volts	-	-	1/3/0	-
ESD	E3	AEC Q100-011	1	3	ESD CDM	Corner pins	750 Volts	-	-	1/3/0	-
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	-	-	1/6/0	1/6/0
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	1/30/0	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/

TI Qualification ID: R-CHG-2202-040

[1]- 1 bond fail discounted
[2]- 1 no visual defect fail discounted

Automotive Q006 Report
(As per Q006 Guidelines)

CDAT 1.3 mils (33.3 um) Cu wire QFN
Approved 27-Sep-2018

Product Attributes

Attributes	Qual Device: LM2775QDSGRQ1
Automotive Grade Level	Grade 1
Operating Temp Range	-40 to +125 C
Wafer Fab Supplier	RFAB
Assembly Site	CDAT
Package Type	QFN/ SON
Package Designator	DSG
Ball/Lead Count	8

Attributes	Qual Device: LM2775QDSGRQ1
Die Attach Material ID	4207123
Die Attach Method	Epoxy Dispense
Mold Compound Supplier Name	SUMITOMO
Mold Compound Supplier Number	EME-G700LTD
Mold Compound ID	4222198
Flammability Rating	UL 94 V-0
Wire Bond Material	Cu
Wire Bond Diameter (mils)	1.3
Type of Wire Bond	Thermo-Sonic
Lead Frame Pad Size (mils)	70.9 x 43.3
Lead Frame Material	Cu
Leadframe Plating Composition	NiPdAu

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: LM2775QDSGRQ1
Test Group A – Accelerated Environment Stress Tests								
				3	22	SAM Analysis, Pre Stress	Completed	3/66/0
	PC	A1	JEDEC J-STD-020; JESD22-A113	3	77	**Preconditioning**	**Level 2- 260C**	**No fails**
				3	22	SAM Analysis, Post Precon	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	22	SAM Analysis, Post bHAST, 96 Hours	Completed	3/66/0
				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

	Type	#	Test Spec	Min Lot Qty	SS/ Lot	Test Name / Condition	Duration	Qual Device: LM2775QDSGRQ1
				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**	**1/45/0**
	PTC	**A5**	**JEDEC JESD22-A105**	1	45	**Power Temperature Cycle, -40/125C**	**2000 Cycles**	**1/45/0**
	HTSL	**A6**	**JEDEC JESD22-A103**	3	45	**High Temp Storage Bake 175C**	**500 Hours**	**3/135/0**
				3	1	Cross Section, Post HTSL 500 Hours	Completed	3/3/0
	HTSL	**A6**	**JEDEC JESD22-A103**	3	44	**High Temp Storage Bake 175C**	**1000 Hours**	**3/132/1***
				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	Bond Pull over Stitch, Cpk>1.67	Wires	3/90/0
	WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull over Ball, 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

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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