PCN Number:	20230919001.2	PCN Date:	September 22, 2023
Title:	Qualification of CDAT as an additional Assembly and test site for the TPS51200AQDRCxQ1		
Customer Contact:	Change Management Team	Dept:	Quality Services
Proposed 1st Ship Date:	Mar 17, 2024	Sample requests accepted until:	Sept 19, 2023

***Sample requests received after Sept 19, 2023 will not be supported.**

Change Type:

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

PCN Details

Description of Change:

Texas Instruments Incorporated is announcing the qualification of CDAT as an additional Assembly & Test site for the TPS51200AQDRCxQ1. Construction differences are as follows:

	CARZ	CDAT
Mount Compound	SID#443156	4207123
Bond wire composition, diameter	Au, 1.0 mil	Cu, 1.0 mil

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
CARZ	CSZ	CHN	Jiangsu
CDAT	**CDA**	**CHN**	**Chengdu**

Sample product shipping label (not actual product label)



Product Affected:

TPS51200AQDRCRQ1	TPS51200AQDRCTQ1

TI Information
Selective Disclosure

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

TPS51200AQDRC CDAT offload
Approve Date 18-January-2023

Product Attributes

Attributes	Qual Device: TPS51200AQDRCRQ1	QBS Product, Process, Package Reference: TPS51200QDRCRQ1	QBS Product, Process Reference: TPS51200AQDRCRQ1	QBS Process Reference: TPS55340QPWPRQ1	QBS Package Reference: LM5149QRGYRQ1	QBS Package Reference: LM5149QRGYRQ1	QBS Package Reference: TPS2546QRTERQ1
Automotive Grade Level	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
Product Function	Power Management	Power Management	Power Management	Power Management	Power Management	Power Management	Power Management
Wafer Fab Supplier	MH8	MH8	MH8	MH8	RFAB RFAB	DMOS6 DMOS6	RFAB
Assembly Site	CDAT	CDAT	CARZ	TAI	CDAT	CDAT	CDAT
Package Group	QFN	QFN	QFN	TSSOP	QFN	QFN	QFN
Package Designator	DRC	DRC	DRC	PWP	RGY	RGY	RTE
Pin Count	10	10	10	14	24	24	16

- QBS: Qual By Similarity
- Qual Device TPS51200AQDRCRQ1 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: TPS51200AQDRCRQ1	QBS Product, Process, Package Reference: TPS51200QDRCRQ1	QBS Product, Process Reference: TPS51200AQDRCRQ1	QBS Process Reference: TPS55340QPWPRQ1	QBS Package Reference: LM5149QRGYRQ1	QBS Package Reference: LM5149QRGYRQ1	QBS Package Reference: TPS2546QRTERQ1
Test Group A - Accelerated Environment Stress Tests														
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Per Appt Package Level	1 Step	Pass	Pass	Pass	Pass	Pass	Pass	Pass
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	110C/85%RH	264 Hours	-	3/231/0	3/231/0	-	-	-	-

HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	-	-	3/231/0	1/77/0	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	3/231/0	-	-	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	1/77/0	-	-	-	1/77/0	3/231/0	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	3/231/0	3/231/0	3/231/0	1/77/0	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	3/15/0	1/5/0	1/5/0	-
PTC	A5	JEDEC JESD22-A105	1	45	PTC	-40/125C	1000 Cycles	-	-	-	1/45/0	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	-	1/45/0	-	-	3/135/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	-	1/43/0	1/45/0	-	-	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	3/231/0	3/231/0	-	-	3/231/0
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	125C	48 Hours	-	-	-	3/2400/0	-	-	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	1/30/0	3/90/0	3/90/0	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	1/30/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0	3/90/0
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	3/45/0	3/45/0	-	-	-	1/15/0
SD	C3	JEDEC J-STD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	3/45/0	3/45/0	-	-	1/15/0	1/15/0
PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	1/10/0	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	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	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	-	2000 Volts	-	3/9/0	1/3/0	1/3/0	-	-	1/3/0
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	500 Volts	-	3/9/0	1/3/0	-	-	-	1/3/0
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	-	3/18/0	1/6/0	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	1/30/0	-	-	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-2201-033

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

Q006 LBC7 BOAC CDAT 16 RTE Package with 1.3mil, 1.98mil Cu wire

Approved 12-Aug-2020

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: TPS54618CQRTERQ1	QBS Process/ Package Reference: TPS2546QRTERQ1	QBS Package Reference: TPS254900AIRVCTQ1	QBS Package Reference: LM2775QDSGRQ1
Test Group A – Accelerated Environment Stress Tests											
	PC	A1	-	3	22	SAM Analysis, Pre Stress	Completed	1/22/0	3/66/0	3/66/0	3/66/0
	PC	**A1**	**JEDEC J-STD-020 JESD22-A113**	**3**	**77**	**Preconditioning**	**Level 3-260C**	**No fails**	-	-	-
	PC	**A1**	**JEDEC J-STD-020 JESD22-A113**	**3**	**77**	**Preconditioning**	**Level 2-260C**	-	**No fails**	**No fails**	**No fails**
	PC	A1	-	3	22	SAM Analysis, Post Stress	Completed	1/22/0	3/66/0	3/66/0	3/66/0
	HAST	**A2**	**JEDEC JESD22-A110**	**3**	**77**	**Biased HAST, 130C/85%RH**	**96 Hours**	1/90/0	**3/231/0**	**3/231/0**	**3/231/0**
	HAST	A2	-	3	1	Cross Section, Post bHAST 96 Hours	Completed	-	3/3/0	3/3/0	3/3/0
	HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 96 Hours	Wires	-	3/90/0	3/90/0	3/90/0
	HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 96 Hours	Wires	-	3/90/0	3/90/0	3/90/0
	HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 96 Hours	Wires	-	3/90/0	3/90/0	3/90/0

	Type	#	Test Spec	Min Lot Qty	SS/ Lot	Test Name / Condition	Duration	Qual Device: TPS54618CQRTERQ1	QBS Process/ Package Reference: TPS2546QRTERQ1	QBS Package Reference: TPS254900AIRVCTQ1	QBS Package Reference: LM2775QDSGRQ1
	HAST	**A2**	**JEDEC JESD22-A110**	**3**	**77**	**Biased HAST, 130C/85%RH**	**192 Hours**	1/80/0	**3/210/0**	**3/210/0**	**3/210/0**
	HAST	A2	-	3	1	Cross Section, Post bHAST 192 Hours	Completed	1/1/0	3/3/0	3/3/0	3/3/0
	HAST	A2	-	3	22	SAM Analysis, Post bHAST, 192 Hours	Completed	1/22/0	3/66/0	3/66/0	3/66/0
	HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 192 Hours	Wires	1/30/0	3/90/0	3/90/0	3/90/0
	HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 192 Hours	Wires	1/30/0	3/90/0	3/90/0	3/90/0
	HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 192 Hours	Wires	1/30/0	3/90/0	3/90/0	3/90/0
	TC	**A4**	**JEDEC JESD22-A104 and Appendix 3**	**3**	**77**	**Temperature Cycle, -65/150C**	**500 Cycles**	**3/231/0**	**3/231/0**	**3/231/0**	**3/231/0**
	TC	A4	-	3	1	Cross Section, Post T/C 500 Cycles	Completed	-	3/3/0	3/3/0	3/3/0
	TC	A4	-	3	22	SAM Analysis, Post T/C, 500 Cycles	Completed	3/66/0	3/66/0	3/66/0	3/66/0
	TC	A4	-	3	30	Wire Bond Shear, Post T/C 500 Cycles	Wires	-	3/90/0	3/90/0	3/90/0
	TC	A4	-	3	30	Bond Pull over Stitch Post T/C 500 Cycles	Wires	-	3/90/0	3/90/0	3/90/0
	TC	A4	-	3	30	Bond Pull over Ball Post T/C 500 Cycles	Wires	-	3/90/0	3/90/0	3/90/0
	TC	**A4**	**JEDEC JESD22-A104 and**	**3**	**77**	**Temperature Cycle, -65/150C**	**1000 Cycles**	**3/210/0**	**3/210/0**	**3/210/0**	**3/210/0**

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: TPS54618CQRTERQ1	QBS Process/ Package Reference: TPS2546QRTERQ1	QBS Package Reference: TPS254900AIRVCTQ1	QBS Package Reference: LM2775QDSGRQ1
			Appendix 3								
	TC	A4	-	3	1	Cross Section, Post T/C 1000 Cycles	Completed	3/3/0	3/3/0	3/3/0	3/3/0
	TC	A4	-	3	22	SAM Analysis, Post T/C, 1000 Cycles	Completed	3/66/0	3/66/0	3/66/0	3/66/0
	TC	A4	-	3	30	Wire Bond Shear, Post T/C 1000 Cycles	Wires	3/90/0	3/90/0	3/90/0	3/90/0
	TC	A4	-	3	30	Bond Pull over Stitch, Post T/C, 1000 Cycles	Wires	3/90/0	3/90/0	3/90/0	3/90/0
	TC	A4	-	3	30	Bond Pull over Ball, Post T/C, 1000 Cycles	Wires	3/90/0	3/90/0	3/90/0	3/90/0
	PTC	**A5**	**JEDEC JESD22-A105**	**1**	**45**	**Power Temperature Cycle - 40/125C**	**1000 Cycles**	**1/45/0**	**N/A**	**N/A**	**1/45/0**
	PTC	**A5**	**JEDEC JESD22-A105**	**1**	**45**	**Power Temperature Cycle - 40/125C**	**2000 Cycles**	**1/45/0**	**N/A**	**N/A**	**1/45/0**
	HTSL	**A6**	**JEDEC JESD22-A103**	**3**	**45**	**High Temp Storage Bake 175C**	**500 Hours**	**1/45/0**	-	-	**3/135/0**
	HTSL	A6	-	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**	**1/45/0**	-	-	**1/132/0**
	HTSL	A6	-	3	1	Cross Section, Post HTSL 1000 Hours	Completed	1/1/0	-	-	3/3/0
	HTSL	**A6**	**JEDEC JESD22-A103**	**3**	**45**	**High Temp Storage Bake 150C**	**500 Hours**	-	-	**3/135/0**	-
	HTSL	A6	-	3	1	Cross Section, Post HTSL 500 Hours	Completed	-	-	3/3/0	-
	HTSL	**A6**	**JEDEC JESD22-A103**	**3**	**44**	**High Temp Storage Bake 150C**	**1000 Hours**	-	**3/145/0**	**3/132/0**	-
	HTSL	A6	-	3	1	Cross Section,	Completed	-	3/3/0	3/3/0	-

	Type	#	Test Spec	Min Lot Qty	SS/ Lot	Test Name / Condition	Duration	Qual Device: TPS54618CQRTERQ1	QBS Process/ Package Reference: TPS2546QRTERQ1	QBS Package Reference: TPS254900AIRVCTQ1	QBS Package Reference: LM2775QDSGRQ1
						Post HTSL 1000 Hours					
	HTSL	**A6**	**JEDEC JESD22-A103**	**3**	**44**	**High Temp Storage Bake 150C**	**2000 Hours**	-	**3/132/0**	**3/132/0**	-
	HTSL	A6	-	3	1	Cross Section, Post HTSL 2000 Hours	Completed	-	3/3/0	3/3/0	-
Test Group C – Package Assembly Integrity Tests											
	WBS	C1	AEC Q100-001	3	30	Wire Bond Shear, Cpk>1.67	Wires	3/90/0	3/90/0	3/90/0	-
	WBP	C2	MIL-STD883 Method 2011	3	30	Bond Pull, Cpk >1.67	Wires	3/90/0	3/90/0	3/90/0	-

- QBS: Qual By Similarity
- Qual Device TPS54618CQRTER is qualified at LEVEL3-260C

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

TI Qualification ID: 20180913-127056

ZVEI IDs: SEM-PA-07, SEM-PA-08, SEM-PA-18, SEM-TF-01

For questions regarding this notice, e-mails can be sent to Change Management team or your local Field Sales Representative.

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