

<b>PCN Number:</b>	20230131001.2	<b>PCN Date:</b>	February 01, 2023
<b>Title:</b>	Adding TI CD-PR as additional wafer probe (EWS) site and TI CDAT as additional Assembly and Test site for select devices		
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>	<b>Dept:</b>	Quality Services
<b>Proposed 1<sup>st</sup> Ship Date:</b>	Aug 01, 2023	<b>Sample requests accepted until:</b>	Mar 03, 2023*

\*Sample requests received after Mar 03, 2023 will not be supported.

**Change Type:**

<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design	<input type="checkbox"/>	Wafer Bump Site
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet	<input type="checkbox"/>	Wafer Bump Material
<input type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change	<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>	Mechanical Specification	<input checked="" type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Site
<input checked="" type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process	<input type="checkbox"/>	Wafer Fab Materials
		<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process

**PCN Details**

**Description of Change:**

Texas Instruments Incorporated has qualified CD-PR as additional probe (EWS) site and TI CDAT as additional Assembly and Test site for devices listed below in the product affected section. No material differences between assembly sites.

Current:		New:
Probe Site (EWS)	TI Clark (CLARK-PR)	<i>TI Chengdu (CD-PR)</i>
Final Test Site (FT)	UTAC (UTL2)	<i>TI Chengdu (CD-AT)</i>

Test coverage, insertions, conditions will remain consistent with current testing.

**Reason for Change:**

Enable additional probe capacity to support high volume ramps.  
Continuity of Supply

**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:**

Assembly Site		
UTAC	Assembly Site Origin (22L)	ASO: NS2
<a href="#">TI Chengdu</a>	<a href="#">Assembly Site Origin (22L)</a>	<a href="#">ASO: CDA</a>

Sample product shipping label (not actual product label)



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) TO: 1750**



(1P) **SN74LS07NSR**  
(Q) **2000** (D) **0336**  
(31T) LOT: 3959047MLA  
(4W) TKY (1T) 7523483SI2  
(P)  
(2P) REV: (V) 0033817  
(20L) CSO: SHE (21L) CCO: USA  
(22L) ASO: MLA (23L) ACO: MYS

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**Product Affected:**

TPS25850QRPQRQ1	TPS25855QRPQRQ1	TPS25862QRPQRQ1	TPS25869QRPQRQ1
TPS25851QRPQRQ1	TPS25858QRPQRQ1	TPS25864QRPQRQ1	
TPS25852QRPQRQ1	TPS25859QRPQRQ1	TPS25865QRPQRQ1	
TPS25854QRPQRQ1	TPS25860QRPQRQ1	TPS25868QRPQRQ1	

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

Approved 17-Dec-2020

**Product Attributes**

Attributes	Qual Device: <u>TPS552882QRPMRQ1</u>	Qual Device: <u>TPS55288QRPMRQ1</u>	QBS Process Reference: <u>TPS61378QWRTERQ1</u>
Automotive Grade Level	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	Power Management	Power Management	Power Management
Wafer Fab Supplier	RFAB	RFAB	RFAB
Die Revision	A1	A2	A0
Assembly Site	CDAT	CDAT	CDAT
Package Type	QFN/ SON	QFN/ SON	QFN/ SON
Package Designator	RPM	RPM	RTE
Ball/Lead Count	26	26	16

- QBS: Qual By Similarity
- Qual Device TPS552882QRPMRQ1 and TPS55288QRPMRQ1 are qualified at LEVEL2-260CG

**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>TPS552882QRPMRQ1</u>	Qual Device: <u>TPS55288QRPMRQ1</u>	QBS Process Reference: <u>TPS61378QWRTERQ1</u>
<b>Test Group A – Accelerated Environment Stress Tests</b>									
PC	A1	JEDEC J-STD-020 JESD2 2-A113	3	77	Automotive Preconditioning	Level 2-260C	3/All/0	-	3/All/0
HAST	A2	JEDEC JESD2 2-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-	3/231/0
UHAST	A3	JEDEC JESD2 2-A118	3	77	Unbiased HAST, 130C/85%RH	96 Hours	3/231/0	-	3/231/0

TC	A 4	JEDEC JESD2 2-A104 and Append ix 3	3	77	Temperature Cycle, - 65/150C	500 Cycles	3/231/0	-	3/231/0
PTC	A 5	JEDEC JESD2 2-A105	1	45	Power Temp. Cycle, - 40/125C	1000 Cycles	1/45/0	-	1/45/0
HTSL	A 6	JEDEC JESD2 2-A103	1	45	High Temp. Storage Bake, 175C	500 Hours	3/231/0	-	3/231/0
<b>Test Group B – Accelerated Lifetime Simulation Tests</b>									
HTOL	B 1	JEDEC JESD2 2-A108	3	77	Life Test, 150C	408 Hours	3/231/0	-	3/231/0
ELFR	B 2	AEC Q100- 008	3	80 0	Early Life Failure Rate, 125C	48 Hours	1/800/0	-	3/2400/0
<b>Test Group C – Package Assembly Integrity Tests</b>									
WBS	C 1	AEC Q100- 001	1	30	Bond Shear (Cpk>1.67)	Wires	N/A	N/A	3/90/0
WBP	C 2	MIL- STD88 3 Method 2011	1	30	Bond Pull (Cpk>1.67)	Wires	N/A	N/A	3/90/0
SD	C 3	JEDEC JESD2 2-B102	1	15	Solderability >95% Lead Coverage	Pb-Free	1/15/0	-	1/15/0
SD	C 3	JEDEC JESD2 2-B102	1	15	Solderability >95% Lead Coverage	Pb	1/15/0	-	1/15/0
PD	C 4	JEDEC JESD2 2-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	--	3/30/0	-	3/30/0
SBS	C 5	AEC Q100- 010	3	50	Solder Ball Shear (Cpk>1.67)	Post HTSL/Bu mp	N/A	N/A	N/A
LI	C 6	JEDEC JESD2 2-B105	1	50	Lead Integrity	Leads	N/A	N/A	N/A
<b>Test Group D – Die Fabrication Reliability Tests</b>									
EM	D 1	JESD6 1	-	-	Electromigrati on	--	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-
TDDB	D 2	JESD3 5	-	-	Time Dependant Dielectric Breakdown	--	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-
HCI	D 3	JESD6 0 & 28	-	-	Hot Injection Carrier	--	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	-

SM	D 5	-	-	-	Stress Migration	--	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-
<b>Test Group E – Electrical Verification Tests</b>									
HBM	E 2	AEC Q100-002	1	3	ESD - HBM	3000 V	1/3/0	1/3/0	1/3/0
CDM	E 3	AEC Q100-011	1	3	ESD - CDM	1000 V	1/3/0	1/3/0	1/3/0
LU	E 4	AEC Q100-004	1	6	Latch-up	(Per AEC-Q100-004)	1/6/0	1/6/0	1/6/0
ED	E 5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	3/90/0	1/30/0	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

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

Approved 09-Dec-2022

### Product Attributes

Attributes	Qual Device: <a href="#">TPS258XXQRPQRQ1</a>	QBS Reference: <a href="#">TPS61378QWRTERQ1</a>	QBS Reference: <a href="#">TPS25772800QRQLRQ1</a>	QBS Reference: <a href="#">TPS2585DQRQRQ1</a>	QBS Reference: <a href="#">TPS2585Q0RPQRQ1</a>
Automotive Grade Level	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
Product Function	Power Management	Power Management	Power Management	Power Management	Power Management
Wafer Fab Supplier	RFAB	RFAB	RFAB	RFAB	RFAB
Assembly Site	CDAT	CDAT	CDAT	UTL1	CDAT
Package Group	QFN-HR	QFN	QFN-HR	QFN-HR	QFN-HR
Package Designator	RPQ	RTE	RQL	RPQ	RPQ
Pin Count	25	16	29	25	25

QBS: Qual By Similarity. Product Family is qualified at LEVEL2-260C.

Each product in the family passed Yield Analysis represented in TPS258XXQRPQRQ1 device matrix.

TPS25851QRPQRQ1	TPS25860QRPQRQ1
TPS25852QRPQRQ1	TPS25862QRPQRQ1
TPS25854QRPQRQ1	TPS25864QRPQRQ1
TPS25855QRPQRQ1	TPS25868QRPQRQ1
TPS25859QRPQRQ1	TPS25869QRPQRQ1

## 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: TP525862QRPQRQ1	QBS Reference: TP561378QWRTERQ1	QBS Reference: TP525772B00QBQLRQ1	QBS Reference: TP525850QRPQRQ1	QBS Reference: TP525850QRPQRQ1
<b>Test Group A - Accelerated Environment Stress Tests</b>												
PC	A1	JEDEC J-STD-020 JESD22A113	3	77	Preconditioning	MSL2 260C	1 Step	-	3/0/0	3/0/0	3/0/0	1/0/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0	1/77/0
AC/UHAST	A3	JEDEC JESD22A102/JEDEC JESD22A118	3	77	Autoclave	121C/15psig	96 Hours	-	-	3/231/0	3/231/0	1/77/0
AC/UHAST	A3	JEDEC JESD22A102/JEDEC JESD22A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	-	3/231/0	-	-	-
TC	A4	JEDEC JESD22A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0	1/77/0
PTC	A5	JEDEC JESD22-A105	1	45	PTC	-40/125C	1000 Cycles	-	1/45/0	1/45/0	1/45/0	1/45/0
TSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	1/77/0	1/45/0	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	-	3/135/0	-	-	-
<b>Test Group B - Accelerated Lifetime Simulation Tests</b>												
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	125C	1000 Hours	-	-	3/231/0	1/77/0	1/77/0

HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	150C	408 Hours	-	3/231/0	-	-	-
ELFR	B2	AEC Q100008	1	77	Early Life Failure Rate	125C	48 Hours	-	3/2400/0	-	-	-
<b>Test Group C - Package Assembly Integrity Tests</b>												
WBS	C1	AEC Q100001	1	30	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	-	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	-	-	-
SD	C3	JEDEC JESD22B102	1	15	PB Solderability	>95% Lead Coverage	-	-	1/15/0	1/15/0	-	1/15/0
SD	C3	JEDEC JESD22-B102	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	1/15/0	1/15/0	-	1/15/0
PD	C4	JEDEC JESD22B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	-	3/30/0	-	-	1/10/0
<b>Test Group D - Die Fabrication Reliability Tests</b>												
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
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
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
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
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

<b>Test Group E - Electrical Verification Tests</b>												
ESD	E2	AEC Q100002	1	3	ESD HBM	-	4000 Volts	-	1/3/0	1/3/0	1/3/0	-
ESD	E3	AEC Q100011	1	3	ESD CDM	-	1500 Volts	-	1/3/0	1/3/0	1/3/0	-
LU	E4	AEC Q100004	1	6	Latch-Up	Per AEC Q100-004	-	-	1/6/0	1/6/0	1/6/0	-
ED	E5	AEC Q100009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	1/30/0	3/90/0	-	-	1/30/0

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/>

ZVEI ID reference: SEM-PA-18, SEM-TF-01

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

Location	E-Mail
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