

<b>PCN Number:</b>	20230206000.1B		<b>PCN Date:</b>	March 21, 2023	
<b>Title:</b>	Qualification of additional Fab site (RFAB) and Assembly site (CDAT) options for select LBC7 devices				
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>		<b>Dept:</b>	Quality Services	
<b>Proposed 1<sup>st</sup> Ship Date:</b>	May 6, 2023		<b>Sample requests accepted until:</b>	April 20, 2023*	
<b>*Sample requests received after April 20, 2023 will not be supported.</b>					
<b>Change Type:</b>					
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input checked="" type="checkbox"/>	Assembly Materials
<input 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 type="checkbox"/>	Wafer Fab Process
	<input type="checkbox"/>		Part number change		
<b>PCN Details</b>					
<b>Description of Change:</b>					
<p><b>Revision B</b> is to announce the <u>addition</u> of new devices that were not included on the original PCN notification. The new devices are highlighted in yellow and <b>bolded</b> in the product affected section below. The expected first shipment date for the new devices will be 90 days from this notice for these newly added devices only. The proposed 1<sup>st</sup> ship date of May 6, 2023 still applies for the original set of devices.</p> <p>Texas Instruments is pleased to announce the qualification of an additional fab (RFAB) and assembly (CDAT) site for selected devices as listed below in the product affected section.</p>					
<b>Current Fab Site</b>			<b>Additional Fab Site</b>		
<b>Current Fab Site</b>	<b>Process</b>	<b>Wafer Diameter</b>	<b>Additional Fab Site</b>	<b>Process</b>	<b>Wafer Diameter</b>
MIHO	LBC7	200 mm	RFAB	LBC7	300 mm
For the devices in the group 2, construction differences are as follows:					
	<b>UTL1 &amp; UTL3</b>	<b>CDAT</b>			
Mold Compound	SID#CZ0141	4222198			
Mount Compound	SID#PZ0031	4207123			
Bond wire composition, diameter	Au, 1.3 mil	Cu, 0.8 mil			
Qual details are provided in the Qual Data Section.					
<b>Reason for Change:</b>					
Continuity of Supply					
<b>Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):</b>					
None					
<b>Impact on Environmental Ratings:</b>					
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.					
<b>RoHS</b>	<b>REACH</b>	<b>Green Status</b>	<b>IEC 62474</b>		
<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
MIHO8	MH8	JPN	Ibaraki
<b>RFAB</b>	<b>RFB</b>	<b>USA</b>	<b>Richardson</b>

**Assembly Site Information:**

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
UTL1	NSE	THA	Bangkok
UTL3	UT3	THA	Bangpakong
<b>CDAT</b>	<b>CDA</b>	<b>CHN</b>	<b>Chengdu</b>

Sample product shipping label (not actual product label)

**Product Affected:**

**Group 1 Devices Adding RFAB as an additional Wafer Fab site:**

SN1102023DBZR	<b>THVD1450DRBT</b>	TPS53913RVER	TPS562200DDCT
SN1102023LP	<b>THVD1451D</b>	TPS53913RVET	TPS562209DDCR
SN1102023LPB	<b>THVD1451DR</b>	TPS53915RVER	TPS562209DDCT
SN1401038RTER	<b>THVD1451DRBR</b>	TPS53915RVET	TPS563200DDCR
SN1401043RVER	<b>THVD1451DRBT</b>	TPS543B20RVFR	TPS563200DDCT
SN1402065RVER	<b>THVD1452D</b>	TPS543B20RVFT	TPS563209DDCR
SN1402065RVET	<b>THVD1452DGS</b>	TPS543C20ARVFR	TPS563209DDCT
<b>SN1450687473DRBR</b>	<b>THVD1452DGSR</b>	TPS543C20RVFR	TPS563210ADDFR
SN1501019ADDCR	<b>THVD1452DR</b>	TPS543C20RVFT	TPS563210ADDFT
SN1501019DDCR	<b>THVD1510D</b>	TPS544A20RVFR	TPS563210DDFR
SN1501019DDCT	<b>THVD1510DGK</b>	TPS544A20RVFT	TPS563210DDFT
SN1501020DDCR	<b>THVD1510DGKR</b>	TPS544B20RVFR	TPS563219ADDFR
SN1501020DDCT	<b>THVD1510DR</b>	TPS544B20RVFT	TPS563219ADDFT
SN1504025DDCR	<b>THVD1512DGS</b>	TPS544C20RVFR	TPS563219DDFR
SN1504025DDCT	<b>THVD1512DGSR</b>	TPS544C20RVFT	TPS563219DDFT
SN1504026DDCR	<b>THVD1530DR</b>	TPS544C20ZRVFR	TPS564201DDCR
SN1504026DDCT	<b>THVD1550D</b>	TPS544C20ZRVFT	TPS564201DDCT
SN1602018RVFR	<b>THVD1550DGK</b>	TPS546C20ARVFR	TPS564208DDCR
SN1602018RVFT	<b>THVD1550DGKR</b>	TPS546C20ARVFT	TPS564208DDCT
SN1607018DQPR	<b>THVD1550DR</b>	TPS546C23RVFR	TPS62240DDCR
SN1607021DQPR	<b>THVD1551DGK</b>	TPS546C23RVFT	TPS62240DDCT
SN1611045DDCR	<b>THVD1551DGKR</b>	TPS546C23ZRVFR	TPS62260DDCR
SN1804026DDFR	<b>THVD1552D</b>	TPS546C23ZRVFT	TPS62260DDCT

SN1804026DDFT	<b>THVD1552DGS</b>	TPS548A20RVER	TPS62262DDCR
SN1807012RVFR	<b>THVD1552DGSR</b>	TPS548A20RVER-P	TPS62262DDCT
SN1807013RVER	<b>THVD1552DR</b>	TPS548A20RVET	TPS62561DDCR
SN1812002RVFR	TLC59116IPWR	TPS548B22RVFR	TPS62561DDCT
SN2101029RVER	TLC59116IRHBR	TPS548B22RVFT	TPS82084SILR
<b>THVD1410D</b>	TPS53318DQPR	TPS549A20RVER	TPS82084SILT
<b>THVD1410DGK</b>	TPS53318DQPT	TPS549A20RVET	TPS82085SILR
<b>THVD1410DGKR</b>	TPS53319DQPR	TPS549B22RVFR	TPS82085SILT
<b>THVD1410DR</b>	TPS53319DQPT	TPS549B22RVFT	TSM41615MOVR
<b>THVD1450D</b>	TPS53513RVER	TPS55340PWP	TSM41625MOVR
<b>THVD1450DGK</b>	TPS53513RVER-P	TPS55340PWPR	TSM846C23MOLR
<b>THVD1450DGKR</b>	TPS53513RVET	TPS55340RTER	TSM846C24MOLR
<b>THVD1450DR</b>	TPS53515RVER	TPS55340RTET	
<b>THVD1450DRBR</b>	TPS53515RVET	TPS562200DDCR	

**Group 2 Devices Adding RFAB Fab site and CDAT as an additional Assembly site:**

TPS62240DRVR	TPS62250DRVT	TPS62262DRVR	TPS62291DRVT
TPS62240DRVT	TPS62260ADRVR	TPS62262DRVT	TPS62293DRVR
TPS62242DRVR	TPS62260ADRVT	TPS62263DRVR	TPS62562DRVR
TPS62242DRVT	TPS62260DRVR	TPS62263DRVT	TPS62562DRVT
TPS62243DRVR	TPS62260DRVT	TPS62290DRVR	TPS62590DRVR
TPS62243DRVT	TPS62261DRVR	TPS62290DRVT	TPS62590DRVT
TPS62250DRVR	TPS62261DRVT	TPS62291DRVR	

**Qualification Report**

**Approve Date 6-October-2010**

**Qualification Results**

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

Type	Test Name / Condition	Duration	Qual Device: TPS51217DSC
ED	Electrical Characterization	Per Datasheet Parameters	Pass
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0
AC	Autoclave, 121C	96 Hours	3/231/0
HBM	ESD - HBM	2000 V	3/9/0
CDM	ESD - CDM	500 V	3/9/0
HTOL	Life Test, 135C	635 Hours	3/231/0
HTSL	High Temp. Storage Bake, 170C	420 Hours	3/231/0
LU	Latch-up	(per JESD78)	3/18/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/18/0

- Qual Device TPS51217DSC is qualified at LEVEL2-260C

- 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

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

**Green/Pb-free Status:**

Qualified Pb-Free(SMT) and Green

**Automotive New Product Qualification Summary**  
**(As per AEC-Q100 and JEDEC Guidelines)**  
**Approved 15-Feb-2022**

**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: TPS62261TDRVRQ1	QBS Package Reference: Q25171QWDRCRQ1
<b>Test Group A – Accelerated Environment Stress Tests</b>								
PC	A1	JEDEC J-STD-020 JESD22-A113	3		MSL2/260C	-	3/693/0	3/693/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 hours	1/77/0 & QBS	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 hours	3/231/0	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 cycles	3/231/0	3/231/0
TC-WBP	A4	MIL-STD883 Method 2011	1	60	Bond Pull over Ball Post T/C 500 Cycles	Wires	QBS	1/30/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 hours	QBS	3/231/0
<b>Test Group B – Accelerated Lifetime Simulation Tests</b>								
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 hours	B1 Data carried over from original TPS62261TDRVRQ1 qualification	
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 hours	B2 Data carried over from original TPS62261TDRVRQ1 qualification	
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	
<b>Test Group C – Package Assembly Integrity Tests</b>								
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	-	1/30/0	
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear, Cpk >1.67	Wires	1/30/0	
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free Solder	QBS to package family data	1/15/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Solder	QBS to package family data	1/15/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: TPS62261TDRVRQ1	QBS Package Reference: Q25171QWDRCRQ1
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	QBS to package family data	3/30/0
<b>Test Group D – Die Fabrication Reliability Tests</b>								
EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	-
TDDb	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	Completed Per Process Technology Requirements	-
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	-
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	-
SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	-
<b>Test Group E – Electrical Verification Tests</b>								
HBM	E2	AEC Q100-002	1	3	ESD - HBM	2000 V	E2 Data carried over from original TPS62261TDRVRQ1 qualification	
CDM	E3	AEC Q100-011	1	3	ESD - CDM	500 V	E3 Data carried over from original TPS62261TDRVRQ1 qualification	
LU	E4	AEC Q100-004	1	6	Latch-up	Per AEC Q100-004	E4 Data carried over from original TPS62261TDRVRQ1 qualification	
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67	E5 Data carried over from original TPS62261TDRVRQ1 qualification	

- QBS: Qual By Similarity

**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

**Qualification Report**  
**Approve Date 03-March-2023**

**Qualification Results**

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

Type	#	Test Name	Condition	Duration	Qual Device: THVD1550D	Qual Device: THVD1510DGK	Qual Device: THVD1552DGS	QBS Reference: TPS51217DSCR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	3/231/0
HTOL	B1	Life Test	135C	635 Hours	-	-	-	3/231/0
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	1/76/0	1/76/0	1/76/0	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	1/76/0	1/76/0	1/76/0	-
ESD	E2	ESD CDM	-	1500 Volts	1/3/0	1/3/0	1/3/0	3/9/0
ESD	E2	ESD HBM (Bus Pins)	-	16000 Volts	1/3/0	1/3/0	1/3/0	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	3/9/0
ESD	E2	ESD HBM	-	8000 Volts	1/3/0	1/3/0	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	1/3/0	1/3/0	1/3/0	3/18/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	-	-	1/30/0	3/60/0

- QBS: Qual By Similarity
- Qual Device THVD1550D is qualified at MSL1 260C
- Qual Device THVD1510DGK is qualified at MSL1 260C
- Qual Device THVD1552DGS is qualified at MSL1 260C
- 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

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

**Green/Pb-free Status:**

Qualified Pb-Free(SMT) and Green

**Qualification Report**  
**Approve Date 03-March-2023**

**Qualification Results**

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

Type	#	Test Name	Condition	Duration	Qual Device: THVD1450DRBR	Qual Device: THVD1410DGKR	Qual Device: THVD1452DR	QBS Reference: TPS51217DSCR
HAST	A2	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0
UHAST	A3	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	3/231/0
HTSL	A6	High Temperature Storage Life	170C	420 Hours	-	-	-	3/231/0
HTOL	B1	Life Test	135C	635 Hours	-	-	-	3/231/0
WBS	C1	Ball Shear	76 balls, 3 units min	Wires	1/76/0	1/76/0	1/76/0	-
WBP	C2	Bond Pull	76 Wires, 3 units min	Wires	1/76/0	1/76/0	1/76/0	-
ESD	E2	ESD CDM	-	1500 Volts	-	1/3/0	1/3/0	3/9/0
ESD	E2	ESD HBM (Bus Pins)	-	16000 Volts	-	1/3/0	1/3/0	-
ESD	E2	ESD HBM	-	2000 Volts	-	-	-	3/9/0
ESD	E2	ESD HBM	-	8000 Volts	-	1/3/0	1/3/0	-
LU	E4	Latch-Up	Per JESD78	-	-	1/3/0	1/3/0	3/18/0
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	-	3/60/0

- QBS: Qual By Similarity

- Qual Device THVD1450DRBR is qualified at MSL1 260C
- Qual Device THVD1410DGKR is qualified at MSL1 260C
- Qual Device THVD1452DR is qualified at MSL1 260C
- 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

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**Green/Pb-free Status:**

Qualified Pb-Free(SMT) and Green

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

Location	E-Mail
WW Change Management Team	<a href="mailto:PCN_ww_admin_team@list.ti.com">PCN_ww_admin_team@list.ti.com</a>

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