

<b>PCN Number:</b>	20230516002.2	<b>PCN Date:</b>	May 17, 2023																		
<b>Title:</b>	Qualification of DMOS6 as an additional Fab site, TAI as an additional Assembly/Final Test site & Clark-PR as an additional Probe site for the TPS92520QDADRQ1																				
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>	<b>Dept:</b>	Quality Services																		
<b>Proposed 1<sup>st</sup> Ship Date:</b>	Nov 13, 2023	<b>Sample requests accepted until:</b>	June 16, 2023*																		
<b>*Sample requests received after June 16, 2023 will not be supported.</b>																					
<b>Change Type:</b>																					
<input checked="" type="checkbox"/> Assembly Site	<input type="checkbox"/> Assembly Process	<input type="checkbox"/> Assembly Materials																			
<input 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 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>																					
Texas Instruments is pleased to announce the qualification of DMOS6 as an additional Fab site, TAI as an additional Assembly/Final Test site & Clark-PR as an additional Probe site for the TPS92520QDADRQ1.																					
<table border="1"> <thead> <tr> <th colspan="3">Current Fab Site</th><th colspan="3">New Fab Site</th></tr> <tr> <th>Fab Site</th><th>Process</th><th>Wafer Diameter</th><th>Fab Site</th><th>Process</th><th>Wafer Diameter</th></tr> </thead> <tbody> <tr> <td>RFAB</td><td>LBC9</td><td>300 mm</td><td>DMOS6</td><td>LBC9</td><td>300 mm</td></tr> </tbody> </table>				Current Fab Site			New Fab Site			Fab Site	Process	Wafer Diameter	Fab Site	Process	Wafer Diameter	RFAB	LBC9	300 mm	DMOS6	LBC9	300 mm
Current Fab Site			New Fab Site																		
Fab Site	Process	Wafer Diameter	Fab Site	Process	Wafer Diameter																
RFAB	LBC9	300 mm	DMOS6	LBC9	300 mm																
There are no construction differences between the devices built in TI Malaysia vs. TI Taiwan.																					
Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ																					
<b>Reason for Change:</b>																					
Business Continuity																					
<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																		
<b>Changes to product identification resulting from this PCN:</b>																					
<b>Fab Site Information:</b>																					
Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City																		
RFAB	RFB	USA	Richardson																		
<b>DMOS6</b>	<b>DM6</b>	<b>USA</b>	<b>Dallas</b>																		
<b>Assembly Site</b>	<b>Assembly Site Origin (22L)</b>	<b>Assembly Country Code (23L)</b>	<b>Assembly City</b>																		
MLA	MLA	MYS	Kuala Lumpur																		
<b>TAI</b>	<b>TAI</b>	<b>TWN</b>	<b>Chung Ho, New Taipei City</b>																		

Sample product shipping label (not actual product label):



## Product Affected:

TPS92520QDADRQ1

TI Information  
Selective Disclosure

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

TPS92520QDADRQ1 and TPS92520QDAPRQ1 Qualification  
Approve Date 04-May-2023

### Product Attributes

Attributes	Qual Device: <a href="#">TPS92520QDADRQ1</a>	Qual Device: <a href="#">TPS92520QDAPRQ1</a>	QBS Reference: <a href="#">LMR33630CQRNXRQ1</a>	QBS Reference: <a href="#">LM7620QPWPRQ1</a>
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	Power Management
Wafer Fab Supplier	DMOS6	DMOS6	DMOS6	RFAB
Assembly Site	TAI	TAI	CDAT	TAI
Package Group	TSSOP	TSSOP	QFN	TSSOP
Package Designator	DAD	DAD	RNX	PWP
Pin Count	32	32	12	16

- QBS: Qual By Similarity
- Qual Device TPS92520QDADRQ1 is qualified at MSL3 260C
- Qual Device TPS92520QDADRQ1 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: <a href="#">TPS92520QDADRQ1</a>	Qual Device: <a href="#">TPS92520QDAPRQ1</a>	QBS Reference: <a href="#">LMR33630CQRNXRQ1</a>	QBS Reference: <a href="#">LM76202QPWPRQ1</a>
Test Group A - Accelerated Environment Stress Tests											
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	1 Step	-	-	3/All/0	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL3 260C	1 Step	1/All/0	-	-	3/All/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	110C/85%RH	264 Hours	-	-	3/231/0	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	-	-	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	1/77/0	-	-	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Unbiased HAST	110C/85%RH	264 Hours	-	-	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
PTC	A5	JEDEC JESD22-A105	1	45	PTC	-40/125C	1000 Cycles	1/45/0	-	1/50/0	2/90/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	1/45/0	-	3/231/0	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	-	-	-	3/135/0
Test Group B - Accelerated Lifetime Simulation Tests											
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: <a href="#">TPS92520QDADRQ1</a>	Qual Device: <a href="#">TPS92520QDAPRQ1</a>	QBS Reference: <a href="#">LMR33630CQRNXRQ1</a>	QBS Reference: <a href="#">LM76202QPWPRQ1</a>
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	125C	1000 Hours	-	-	2/154/0	1/77/0
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	150C	300 Hours	1/77/0	-	-	-
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	125C	48 Hours	-	-	3/2400/0	-
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
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
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	1/15/0	-	1/15/0	1/15/0
SD	C3	JEDEC J-STD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	1/15/0	-	1/15/0	1/15/0
PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	3/30/0	-	1/10/0	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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: TPS92520QDADRQ1	Qual Device: TPS92520QDAPRQ1	QBS Reference: LMR33630CQRNQRQ1	QBS Reference: LM76202QPWRQ1
SM	D5	-	-	-	Stress Migration	-	-	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 Q100-002	1	3	ESD HBM	-	2000 Volts	-	1/3/0	-	-
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	500 Volts	-	1/3/0	-	-
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	-	1/6/0	-	-
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	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

#### Orderable Part Numbers

The following table contains a list of all TI Orderable Part Numbers (OPNs) released by this qualification per Product Qualification Family definition (AEC Q100 Appendix 1). Group E results shown above cover all part numbers listed here.

TPS92520QDADRQ1	TPS92520QDAPRQ1
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#### 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/HAST

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

TI Qualification ID: R-CHG-2203-056

ZVEI IDs: SEM-PA-13, SEM-PA-18, SEM-TF-01

For questions regarding this notice, e-mails can be sent to the contact shown 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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