



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20250730004.2

**Qualification of RFAB using qualified Process Technology, Die Revision, Datasheet
and BOM options for select devices
Change Notification / Sample Request**

Date: July 31, 2025
To: Mouser PCN

Dear Customer:

This is an announcement of a change to a device that is currently offered by Texas Instruments (TI). The details of this change are on the following pages, and are in alignment with our standard product change notification (PCN) [process](#).

TI requires acknowledgement of receipt of this notification within 60 days of the date of this notice. Lack of acknowledgement of this notice within 60 days constitutes acceptance and approval of this change. If samples or additional data are required, requests must be received within 60 days of this notification, given that samples are not built ahead of the change.

The Proposed First Ship date in this PCN letter is the earliest possible date that customers could receive the changed material. It is our commitment that the changed device will not ship before that date. If samples are requested within the 60 day sample request window, customers will still have 30-days to complete their evaluation regardless of the proposed 1st ship date.

Changes outlined in this notification underscore our commitment to product longevity and supply continuity, as well as our continued efforts to transition to newer, more efficient manufacturing processes and technologies. Specifically, this particular notification is related to TI's multiyear transition plan for our two remaining 150-millimeter production lines (DFAB in Dallas, Texas, and SFAB in Sherman, Texas). SFAB closure activities are expected to begin by the end of 2025. DFAB will remain open with a smaller set of 200mm technologies and GaN.

For questions regarding this notice or to provide acknowledgement of this PCN, you may contact your local Field Sales Representative or the Change Management team. For sample requests or sample related questions, contact your local Field Sales Representative. As always, we thank you for your continued business.

TI values customer engagement and feedback related to TI changes. Customers should contact TI if there are questions or concerns regarding a change notification.

Change Management Team
SC Business Services

20250730004.1
Attachment: 1

Products Affected:

The devices listed on this page are a subset of the complete list of affected devices. According to our records, you have recently purchased these devices. The corresponding customer part number is also listed, if available.

DEVICE	CUSTOMER PART NUMBER
TLE2142QDRQ1	NULL
TLE2141QDRQ1	NULL

Technical details of this Product Change follow on the next page(s).

PCN Number:	20250730004.2	PCN Date:	July 31, 2025
Title:	Qualification of RFAB using qualified Process Technology, Die Revision, Datasheet and BOM options for select devices		
Customer Contact:	Change Management Team	Dept:	Quality Services
Proposed 1st Ship Date:	January 27, 2026	Sample requests accepted until:	September 29, 2025*
*Sample requests received after September 29, 2025 will not be supported.			
Change Type:			
<input checked="" type="checkbox"/> Assembly Site	<input checked="" type="checkbox"/> Design	<input type="checkbox"/>	Wafer Bump Material
<input checked="" type="checkbox"/> Assembly Process	<input checked="" type="checkbox"/> Data Sheet	<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/> Assembly Materials	<input type="checkbox"/> Part number change	<input checked="" type="checkbox"/>	Wafer Fab Site
<input type="checkbox"/> Mechanical Specification	<input checked="" type="checkbox"/> Test Site	<input checked="" type="checkbox"/>	Wafer Fab Material
<input checked="" type="checkbox"/> Packing/Shipping/Labeling	<input type="checkbox"/> Test Process	<input checked="" type="checkbox"/>	Wafer Fab Process

PCN Details

Description of Change:

Texas Instruments is pleased to announce the addition of RFAB using the TIB qualified process technology, and assembly BOM options for the devices listed below.

Current Fab Site			Additional Fab Site		
Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter
DL-LIN-2	EXCAL2	150 mm	RFAB	TIB	300 mm

The die was also changed as a result of the process change.

Construction differences are as follows:

	Current	Proposed
Assembly site/ Test	FMX/ TAI	MLA
Bond wire diam/type	0.96 mil Cu	0.8 mil Cu
Die thickness	10.5 mil	7.5 mil

The datasheets will be changing as a result of the above mentioned changes. The datasheet change details can be reviewed in the datasheet revision history. For additional information, the standard data package (SDP) should be requested. The request can be sent to pcn_ww_admin_team@list.ti.com



TLE2141-Q1

SLOS525A – SEPTEMBER 2011 – REVISED JULY 2025

Changes from Revision * (September 2011) to Revision A (July 2025)

Page

- Updated the numbering format for tables, figures, and cross-references throughout the document..... 1
- Changed pins 1 and 5 from OFFSET N1 to NC and OFFSET N2 to NC..... 1
- Changed typical settling time specification from $0.34\mu s$ (0.1%, $\pm 15V V_S$) to $0.43\mu s$, $0.4\mu s$ (0.01%, $\pm 15V V_S$) to $0.64\mu s$, $0.16\mu s$ (0.1%, 5V V_S) to $0.66\mu s$, and $0.22\mu s$ (0.01%, 5V V_S) to $0.99\mu s$ 4
- Changed typical THD+N specification at $\pm 15V V_S$ from 0.01% to 0.06%..... 4
- Changed typical maximum output bandwidth specification at 5V V_S from 660kHz to 380kHz..... 4



TLE2142-Q1

SLOS628A – JULY 2009 – REVISED JULY 2025

Changes from Revision * (July 2009) to Revision A (July 2025)	Page
• Updated the numbering format for tables, figures, and cross-references throughout the document.....	1
• Changed typical settling time specification from $0.34\mu\text{s}$ (0.1%, $\pm 15\text{V } V_S$) to $0.43\mu\text{s}$, $0.4\mu\text{s}$ (0.01%, $\pm 15\text{V } V_S$) to $0.64\mu\text{s}$, $0.16\mu\text{s}$ (0.1%, $5\text{V } V_S$) to $0.66\mu\text{s}$, and $0.22\mu\text{s}$ (0.01%, $5\text{V } V_S$) to $0.99\mu\text{s}$	3
• Changed typical THD+N specification at $\pm 15\text{V } V_S$ from 0.01% to 0.06%.....	3
• Changed typical maximum output bandwidth specification at $5\text{V } V_S$ from 660kHz to 380kHz.....	3
• Added <i>ESD Ratings</i> table.....	3
• Added <i>Thermal Information</i> table...	4

The links to the revised datasheets are available in the table below:

Product Folder	Current Datasheet Number	New Datasheet Number	Link to full datasheet
TLE2141-Q1	SLOS525	SLOS525A	http://www.ti.com/product/TLE2141-Q1
TLE2142-Q1	SLOS628	SLOS628A	http://www.ti.com/product/TLE2142-Q1

Qual details are provided in the Qual Data Section.

Reason for Change:

These changes are part of our multiyear plan to transition products from our 200-millimeter factories to newer, more efficient manufacturing processes and technologies, underscoring our commitment to product longevity and supply continuity.

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None

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
DL-LIN	DLN	USA	Dallas
RFAB	RFB	USA	Richardson

Die Rev:

Current

New

Die Rev [2P]	Die Rev [2P]
A, B, C	BA

Assembly Site Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
FMX	MEX	MEX	Aguascalientes
TAI	TAI	TWN	Chung Ho, New Taipei City
MLA	MLA	MY	KUALA LUMPUR

Sample product shipping label (not actual product label):

 MADE IN: Malaysia 2DC: 29 MSL 2 / 260C / 1 YEAR MSL 1 / 235C / UNLIM OPT: 39 ITEM: LBL: 5A (L)T0:1750		 	(1P) SN74LS07NSR (Q) 2000 (D) 0336 (31T) LOT: 3959047MLA (4W) TKY(1T) 7523483SI2 (P) (2P) REV: (V) 0053317 (20L) CS0: SHE (21L) CCO:USA (22L) AS0: MLA (23L) ACO: MYS	
Product Affected TLE2141QDRQ1 TLE2142QDRQ1				

For alternate parts with similar or improved performance, please visit the product page on TI.com

Product Attributes

Attributes	Qual Device: TLE2142QDRQ1	QBS Product Reference:		QBS Package Reference:		QBS Product Reference:		QBS Process Reference:		QBS Package Reference:		QBS Product Reference:	
		TLE2141QDRQ1	ULQ2003AQDRQ1	ULQ2003AQDRQ1	LM2901BQDRQ1	MC33063AQDRQ1	OPA2991QDRQ1	OPA2991QDRQ1	LM2903BQDRQ1	LM2901QDRQ1	LM2903BQDRQ1	LM2901QDRQ1	
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	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	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125
Product Function	Signal Chain	Signal Chain	Power Management	Signal Chain	Power Management	Signal Chain	Signal Chain	Signal Chain	Signal Chain	Signal Chain	Signal Chain	Signal Chain	Signal Chain
Wafer Fab Supplier	RFAB	RFAB	SH-BIP-1	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB
Assembly Site	MLA	MLA	MLA	MLA	MLA	FMX	MLA	MLA	MLA	MLA	MLA	MLA	MLA
Package Group	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator	D	D	D	D	D	D	D	D	D	D	D	D	D
Pin Count	8	8	16	14	8	8	8	8	8	8	8	8	14

- QBS: Qual By Similarity, also known as Generic Data
- Qual Device TLE2142QDRQ1 is qualified at MSL1 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: TLE2142QDRQ1	QBS Product Reference: TLE2141QDRQ1	QBS Package Reference: ULQ2003AQDRQ1	QBS Product Reference: LM2901BQDRQ1	QBS Process Reference: MC33063AQDRQ1	QBS Package Reference: OPA2991QDRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Product Reference: LM2901QDRQ1
Test Group A - Accelerated Environment Stress Tests															
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL1 260C	-	1/Pass	1/Pass	3/Pass	1/Pass	3/Pass	3/Pass	1/Pass	1/Pass
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	1/77/0	3/231/0	1/77/0	3/231/0	3/231/0	1/77/0	1/77/0

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: TLE2142QDRQ1	QBS Product Reference: TLE2141QDRQ1	QBS Package Reference: ULQ2003AQDRQ1	QBS Product Reference: LM2901BQDRQ1	QBS Process Reference: MC33063AQDRQ1	QBS Package Reference: OPA2991QDRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Product Reference: LM2901QDRQ1
AC/UHAST															
AC/UHAST	A3	JEDEC JESD22-A102/103/104 and Appendix 3	3	77	Autoclave	121C/15psig	96 Hours	-	-	3/231/0	-	-	-	-	-
AC/UHAST	A3	JEDEC JESD22-A102/103/104 and Appendix 3	3	77	Unbiased HAST	130C/85%RH	96 Hours	1/77/0	1/77/0	-	1/77/0	3/231/0	3/231/0	1/77/0	1/77/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	1/77/0	3/231/0	1/77/0	3/231/0	3/231/0	1/77/0	1/77/0
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	1/5/0	2/10/0	-	1/5/0	-	1/5/0	1/5/0	1/5/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	1/45/0	-	3/135/0	-	3/135/0	3/135/0	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	1/45/0	-	1/77/0	-	-	1/45/0	1/77/0	-
Test Group B - Accelerated Lifetime Simulation Tests															
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test	125C	1000 Hours	-	-	3/231/0	-	3/231/0	-	-	-
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test	150C	300 Hours	-	1/77/0	-	1/77/0	-	-	1/77/0	1/77/0
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test	150C	408 Hours	-	-	-	-	-	1/77/1 ¹	-	-
ELFR	B2	AEC Q100-008	3	800	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	1/30/0	1/30/0	3/90/0	1/30/0	3/90/0	3/90/0	1/30/0	1/30/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	1/30/0	1/30/0	3/90/0	1/30/0	3/90/0	3/90/0	1/30/0	1/30/0
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	-	1/15/0	1/15/0	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	-	1/15/0	1/15/0
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	-	1/10/0	1/10/0	-	1/10/0	3/30/0	3/30/0	1/10/0	1/10/0

Test Group D - Die Fabrication Reliability Tests															
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: TLE2142QDRQ1	QBS Product Reference: TLE2141QDRQ1	QBS Package Reference: ULQ2003AQDRQ1	QBS Product Reference: LM2901BQDRQ1	QBS Process Reference: MC33063AQDRQ1	QBS Package Reference: OPA2991QDRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Product Reference: LM2901QDRQ1
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 Carrier Injection	-	-	Completed Per Process Technology Requirements							
BTI	D4	-	-	-	Bias Temperature Instability	-	-	Completed Per Process Technology Requirements							
SM	D5	-	-	-	Stress Migration	-	-	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	-	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	500 Volts	1/3/0	1/3/0	-	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
LU	E4	AEC Q100-004	1	3	Latch-Up	Per AEC Q100-004	-	1/3/0 ⁴²⁵³	1/3/0	-	1/6/0	1/6/0	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	-	3/90/0	3/90/0	3/90/0	1/30/0	3/90/0	3/90/0	1/30/0	1/30/0

Additional Tests

- 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.

TLE2142QDRQ1

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

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

TI Qualification ID: R-CHG-2403-112

Product Attributes

Attributes		Qual Device: TLE2141QDRQ1	QBS Package Reference: TLV9022QDRQ1	QBS Product Reference: LM2901BQDRQ1	QBS Process Reference: MC33063AQDRQ1	QBS Package Reference: OPA2991QDRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Product Reference: LM2901QDRQ1
Automotive Grade Level	Grade 1	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	-40 to 125
Product Function	Signal Chain	Signal Chain	Signal Chain	Power Management	Signal Chain	Signal Chain	Signal Chain	Signal Chain
Wafer Fab Supplier	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB
Assembly Site	MLA	MLA	MLA	FMX	MLA	MLA	MLA	MLA
Package Group	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator	D	D	D	D	D	D	D	D
Pin Count	8	8	14	8	8	8	8	14

- QBS: Qual By Similarity, also known as Generic Data
- Qual Device TLE2141QDRQ1 is qualified at MSL1 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: TLE2141QDRQ1	QBS Package Reference: TLV9022QDRQ1	QBS Product Reference: LM2901BQDRQ1	QBS Process Reference: MC33063AQDRQ1	QBS Package Reference: OPA2991QDRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Product Reference: LM2901QDRQ1	
Test Group A - Accelerated Environment Stress Tests															
PC	A1	JEDEC J-STD-020 JEDEC JESD22-A113	3	77	Preconditioning	MSL1 260C	-	1/Pass	3/Pass	1/Pass	3/Pass	3/Pass	3/Pass	1/Pass	1/Pass
Test Group B - Accelerated Lifetime Simulation Tests															
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: TLE2141QDRQ1	QBS Package Reference: TLV9022QDRQ1	QBS Product Reference: LM2901BQDRQ1	QBS Process Reference: MC33063AQDRQ1	QBS Package Reference: OPA2991QDRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Product Reference: LM2901QDRQ1	
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	1/77/0	1/77/0	1/77/0	1/77/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	1/77/0	3/231/0	1/77/0	3/231/0	3/231/0	3/231/0	1/77/0	1/77/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	3/231/0	1/77/0	3/231/0	3/231/0	1/77/0	1/77/0	1/77/0
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	1/5/0	-	1/5/0	-	1/5/0	1/5/0	1/5/0	1/5/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	3/135/0	-	3/135/0	3/135/0	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	1/45/0	-	1/77/0	-	-	1/45/0	1/77/0	
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	1/30/0	3/90/0	3/90/0	1/30/0	1/30/0	
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	1/30/0	3/90/0	3/90/0	1/30/0	1/30/0	
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	1/15/0	1/15/0	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	-	1/15/0	1/15/0	

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: TLE2141QDRQ1	QBS Package Reference: TLV9022QDRQ1	QBS Product Reference: LM2901BQDRQ1	QBS Process Reference: MC33063AQDRQ1	QBS Package Reference: OPA2991QDRQ1	QBS Product Reference: LM2903BQDRQ1	QBS Product Reference: LM2901QDRQ1
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	-	1/10/0	3/30/0	1/10/0	3/30/0	3/30/0	1/10/0	1/10/0
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
BTI	D4	-	-	-	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	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	500 Volts	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0	1/3/0
LU	E4	AEC Q100-004	1	3	Latch-Up	Per AEC Q100-004	-	1/3/0	1/6/0	1/6/0	1/6/0	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	-	3/90/0	3/90/0	1/30/0	3/90/0	3/90/0	1/30/0	1/30/0
Additional Tests														

- 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.

[TLE2141QDRQ1](#)

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-2404-088

ZVEI: SEM-PA-07, SEM-PA-08, SEM-PA-18, SEM-DE-01, SEM-PW-13, SEM-PW-02, SEM-PW-04, SEM-PW-05, SEM-PW-07, SEM-PW-08, SEM-BD-08

In performing change qualifications, Texas Instruments follows integrated circuit industry standards in performing defect mechanism analysis and failure mechanism-based accelerated environmental testing to ensure wafer fab process, assembly process and product quality and reliability. As encouraged by these standards, TI uses both product-specific and generic (family) data in qualifying its changes. For devices to be categorized as a 'product qualification family' for generic data purposes, they must share similar product, wafer fab process and assembly process elements. The applicability of generic data (also known at TI as Qualification by Similarity (QBS)) is determined by the Reliability Engineering function following these industry standards. Generic data is shown in the qualification report in columns titled "QBS Process" (for wafer fab process), "QBS Package" (for assembly process) and "QBS Product" (for product family).

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

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