



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20251031003.2A

Qualification of MIHO using qualified Process Technology, additional Assembly site and BOM options for select devices

Change Notification / Sample Request

The rev A is being issued to correct the additional site wafer diameter and CSO code.

Date: November 25, 2025

To: Mouser PCN

Dear Customer:

This is an announcement of a change to a device that is currently offered by Texas Instruments. The details of this change are on the following pages.

Texas Instruments 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.

The changes discussed within this PCN will not take effect any earlier than the proposed first ship date on Page 3 of this notification, unless customer agreement has been reached on an earlier implementation of the change.

This notice does not change the end-of-life status of any product. Should product affected be on a previously issued product withdrawal/discontinuance notice, this notification does not extend the life of that product or change the life time buy offering/discontinuance plan.

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.

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

Sincerely,

Change Management Team
SC Business Services

20251031003.2A
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
ESD2CANXL24DBZRQ1	NULL
ESDS452DBZRQ1	NULL
TSM24ADBZRQ1	NULL
TSM24CADBZRQ1	NULL
ESD2CAN24DBZRQ1	NULL
ESD2CANFD24DBZRQ1	NULL
ESD652DBZRQ1	NULL

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

PCN Number:	20251031003.2A	PCN Date:	November 25, 2025
Title:	Qualification of MIHO using qualified Process Technology, additional Assembly site and BOM options for select devices		
Customer Contact:	Change Management Team	Dept:	Quality Services
Proposed 1st Ship Date:	May 24, 2026	Sample requests accepted until:	January 24, 2026*
*Sample requests received after January 24, 2026 will not be supported.			
Change Type:			
<input type="checkbox"/> Assembly Site	<input checked="" type="checkbox"/> Design	<input type="checkbox"/>	Wafer Bump Material
<input type="checkbox"/> Assembly Process	<input 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 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 MIHO using the VDIODE qualified process technology and additional 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
CFAB	VDIODE	200 mm	MIHO	VDIODE	200 mm

Construction differences are as follows:

Assembly Site	Current	Additional
	TIPI	CDAT
Lead Finish	NiPdAu	Post plate-AG Spot
Mount compound	4226215	4229877

Qual details are provided in the Qual Data Section.

Reason for Change:

Adding a 2nd source facility for 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
<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
CFAB	CU3	CHN	CHENGDU
MIHO	MH8	JPN	Miho, Ibaragi-ken

Assembly Site

Information:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TIPI	PHI	PHL	Baguio City
CDAT	CDA	CHN	Chengdu

Sample product shipping label (not actual product label):



Product Affected

ESD2CAN24DBZRQ1	ESD2CANFD24DBZRQ1	ESD2CANXL24DBZRQ1	ESDS452DBZRQ1
ESD652DBZRQ1	TSM24ADBZRQ1	TSM24CABDZRQ1	

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

Product Attributes

Attributes		Qual Device: ESD652DBZRQ1	Qual Device: ESD652DBZRQ1	Qual Device: ESD2CANFD24DBZRQ1	Qual Device: ESD2CANXL24DBZRQ1	Qual Device: ESD2CAN24DBZRQ1	Qual Device: ESD2CAN36DBZRQ1	QBS Reference: ESD2CAN24DBZRQ1
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	Interface	Interface	Interface	Interface	Interface	Interface	Interface	Interface
Wafer Fab Supplier	CFAB	CFAB	CFAB	CFAB	CFAB	CFAB	CFAB	CFAB
Assembly Site	CDAT	CDAT	CDAT	CDAT	CDAT	CDAT	CDAT	PHI
Package Group	SOT	SOT	SOT	SOT	SOT	SOT	SOT	SOT
Package Designator	DBZ	DBZ	DBZ	DBZ	DBZ	DBZ	DBZ	DBZ
Pin Count	3	3	3	3	3	3	3	3

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: ESDS452DBZRQ1	Qual Device: ESD652DBZRQ1	Qual Device: ESD2CANFD24DBZRQ1	Qual Device: ESD2CANXL24DBZRQ1	Qual Device: ESD2CAN24DBZRQ1	Qual Device: ESD2CAN36DBZRQ1	QBS Reference: ESD2CAN24DBZRQ1
Test Group A - Accelerated Environment Stress Tests														
PC	A1	JEDDEC J-STD-020 JESD22-A113	-	0	Preconditioning	MSL1 260C	1 Step	-	-	-	1/0/0	-	1/0/0	1/0/0
HAST	A2	JEDDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	-	-	1/77/0	-	-	1/77/0
HAST	A2.1	JEDDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	-	-	1/77/0	-	-	1/77/0
HAST	A2.1.2	-	3	1	Cross Section, post stress cross section	post stress cross section	Completed	1/1/0	-	-	1/1/0	-	-	1/1/0

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC1G00DRLR	Qual Device: SN74AHC1G14DRLR	Qual Device: SN74AHCT1G125DRLR	Qual Device: SN74AHC1G125DRLR	Qual Device: SN74AHCT1G08DRLR	QBS Reference: TLV1805QDBVRQ1	QBS Reference: SN74HCS74QPWRQ1	QBS Reference: TMP112AQDRLRQ1
CHAR	E5	Electrical Characterization	Per Datasheet Parameters	-	1/30/0	-	1/30/0	1/30/0	1/30/0	3/90/0	3/90/0	3/90/0
FTY	E6	Final Test Yield	-	-	1/All/0	-	-	1/All/0	-	-	-	-

- QBS: Qual By Similarity, also known as Generic Data
- Qual Device SN74AHC1G00DRLR is qualified at MSL1 260C
- Qual Device SN74AHC1G14DRLR is qualified at MSL1 260C
- Qual Device SN74AHCT1G125DRLR is qualified at MSL1 260C
- Qual Device SN74AHC1G125DRLR is qualified at MSL1 260C
- Qual Device SN74AHCT1G08DRLR 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 HTBL 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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: ESD52DBZ01	Qual Device: ESD652DBZ01	Qual Device: ESD2CANED24DBZ01	Qual Device: ESD2CANXL24DBZ01	Qual Device: ESD2CAN24DBZ01	Qual Device: ESD2CANED36DBZ01	Qual Device: ESD2CAN36DBZ01	Qual Device: ESD2CAN24DBZ01	QBS Reference: ESD2CAN24DBZ01
HAST	A2.1.3	-	3	3	Wire Bond Shear, post bHAST, 1X	Post stress	-	1/2/0	-	-	1/2/0	-	-	-	1/2/0	3/9/0
HAST	A2.1.4	-	3	3	Bond Pull over Stitch, post bHAST, 1X	Post stress	-	1/3/0	-	-	1/3/0	-	-	-	1/3/0	3/9/0
HAST	A2.1.5	-	3	3	Bond Pull over Ball, post bHAST, 1X	Post stress	-	1/3/0	-	-	1/3/0	-	-	-	1/3/0	3/9/0
HAST	A2.2	JEDEC JESD22-A110	3	70	Biased HAST	130C/85%RH	192 Hours	1/77/0	-	-	1/77/0	-	-	-	1/77/0	3/231/0
HAST	A2.2.1	-	3	22	SAM Analysis, post bHAST 2X	Review for delamination	Completed	1/22/0	-	-	1/22/0	-	-	-	1/22/0	3/6/0/0
HAST	A2.2.2	-	3	1	Cross Section, post bHAST, 2X	Post stress cross section	Completed	1/1/0	-	-	1/1/0	-	-	-	1/1/0	3/3/0
HAST	A2.2.3	-	3	3	Wire Bond Shear, post bHAST, 2X	Post stress	-	1/3/0	-	-	1/3/0	-	-	-	1/3/0	3/9/0
HAST	A2.2.4	-	3	3	Bond Pull over Stitch, post bHAST, 2X	Post stress	-	1/3/0	-	-	1/3/0	-	-	-	1/3/0	3/9/0
HAST	A2.2.5	-	3	3	Bond Pull over Ball, post bHAST, 2X	Post stress	-	1/3/0	-	-	1/3/0	-	-	-	1/3/0	3/9/0
ACUHAST	A3	JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	1/77/0	-	-	1/77/0	1/77/0	3/231/0
TCHT	A4.1	JEDEC JESD22-A104 and Appendix 6	3	77	Temperature Cycle	-65C/150C	1000 Cycles	-	-	-	1/77/0	-	-	1/77/0	1/77/0	3/231/0
TC	A4.1	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	1/77/0	-	-	1/77/0	1/77/0	3/231/0
TC	A4.1.1	-	3	22	SAM Analysis, post TC 1X	Review for delamination	Completed	-	-	-	1/22/0	-	-	1/22/0	1/22/0	3/6/0/0
TC	A4.1.2	-	3	1	Cross Section, post TC, 1X	Post stress cross section	Completed	-	-	-	1/1/0	-	-	1/1/0	1/1/0	3/3/0
TC	A4.1.3	-	3	3	Wire Bond Shear, post TC, 1X	Post stress	-	-	-	-	1/3/0	-	-	1/3/0	1/3/0	3/9/0
TC	A4.1.4	-	3	3	Bond Pull over Stitch, post TC, 1X	Post stress	-	-	-	-	1/3/0	-	-	1/3/0	1/3/0	3/9/0
TC	A4.1.5	-	3	3	Bond Pull over Ball, post TC, 1X	Post stress	-	-	-	-	1/3/0	-	-	1/3/0	1/3/0	3/9/0
TC	A4.2	JEDEC JESD22-A104 and Appendix 3	3	70	Temperature Cycle	-65C/150C	1000 Cycles	-	-	-	1/77/0	-	-	1/77/0	1/77/0	3/231/0
TC	A4.2.1	-	3	22	SAM Analysis, post TC, 2X	Review for delamination	Completed	-	-	-	1/22/0	-	-	1/22/0	1/22/0	3/6/0/0
TC	A4.2.2	-	3	1	Cross Section, post TC, 2X	Post stress cross section	Completed	-	-	-	1/1/0	-	-	1/1/0	1/1/0	3/3/0
TC	A4.2.3	-	3	3	Wire Bond Shear, post TC, 2X	Post stress	-	-	-	-	1/3/0	-	-	1/3/0	1/3/0	3/9/0
TC	A4.2.4	-	3	3	Bond Pull over Stitch, post TC, 2X	Post stress	-	-	-	-	1/3/0	-	-	1/3/0	1/3/0	3/9/0

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: ESD542DBZRQ1	Qual Device: ESD652DBZRQ1	Qual Device: ESD2CANED24DBZRQ1	Qual Device: ESD2CANXL24DBZRQ1	Qual Device: ESD2CAN24DBZRQ1	Qual Device: ESD2CANED36DBZRQ1	Qual Device: ESD2CAN36DBZRQ1	Qual Device: ESD2CAN24DBZRQ1	QBS Reference: ESD2CAN24DBZRQ1
TC	A4.2.5	-	3	3	Bond Pull over Ball, post TC, 2X	Post stress	-	-	-	-	-	1/3/0	-	1/3/0	1/3/0	3/9/0
Test Group B - Accelerated Lifetime Simulation Tests																
HTRB	B1.1	MIL-STD-750-1	3	77	High Temperature Reverse Bias	125C	1000 Hours	-	-	-	-	-	-	-	-	3/23/0
HTRB	B1.2	MIL-STD-750-1	3	77	High Temperature Reverse Bias	125C	2000 Hours	-	-	-	-	-	-	-	-	3/23/0
HTRB	B1	MIL-STD-750-1	3	5	Post Temp Cycle Bond Pull	MIL-STD 883 Method 2011	1 Step	-	-	-	-	-	-	-	-	3/5/0
Test Group C - Package Assembly Integrity Tests																
DPA	C2	JESD22-B101	-	30	Physical Dimensions	Cpk>1.67	1 Step	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	3/6/0
WBP	C3	MIL-STD-750-2	-	10	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	1 Step	1/10/0	1/10/0	1/10/0	1/10/0	1/10/0	1/10/0	1/10/0	1/10/0	3/30/0
WBS	C4	AEC-Q101-003	-	10	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	1 Step	1/10/0	1/10/0	1/10/0	1/10/0	1/10/0	1/10/0	1/10/0	1/10/0	3/30/0
DS	C5	MIL-STD-750-2	-	5	Die Shear	MIL-STD-750-2 Method 2017	1 Step	1/5/0	1/5/0	1/5/0	1/5/0	1/5/0	1/5/0	1/5/0	1/5/0	3/15/0
RSH	C8	JESD22-B107	-	30	Solder Heat	260C, 10 seconds	1 Step	1/30/0	-	-	-	-	-	-	-	1/30/0
SD	C10	JEDEC J-STD-002	-	15	PB Solderability	Precondition w/155C Dry Bake (4 hrs +/- 15 minutes)	1 Step	-	-	-	-	-	-	-	-	1/10/0
SD	C10	JEDEC J-STD-002	-	15	PB-Free Solderability	Precondition w/155C Dry Bake (4 hrs +/- 15 minutes)	1 Step	1/15/0	-	-	-	-	-	-	-	1/10/0
Test Group D - Die Fabrication Reliability Tests																
Test Group E - Electrical Verification Tests																
EV	E0	JESD22-B101	3	1000	Visual/Mechanical	Per JESD22-B-101	1 Step	1/1000/0	-	-	-	1/1000/0	-	-	1/1000/0	3/3000/0
ESD	E3	AEC-Q101-001	3	10	ESD HBM	Room Temp	2000 Volts	1/10/0	-	-	-	-	-	-	-	1/80/0
ESD	E4	AEC-Q101-005	3	10	ESD CDM	Room Temp	500 Volts	-	-	-	-	-	-	-	-	1/60/0
ESD	E4	AEC-Q101-005	3	10	ESD CDM	Room Temp	750 Volts	1/10/0	-	-	-	-	-	-	-	-
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device	Qual Device	Qual Device	Qual Device	Qual Device	Qual Device	Qual Device	Qual Device	QBS Reference

- Preconditioning was performed for Autodave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, HTSL, and IOL, as applicable
- Passing results reflect shift analysis per Q101 requirements

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 95C

E1 (TEST) Electrical test temperatures of Qual samples (High temperature according to Grade level):

- Room/Hot/Cold : HTRB, 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-2403-055

Product Attributes

Attributes		Qual Device: ESD2CAN24DBZRQ1	Qual Device: TSM24ADBZRQ1
Automotive Grade Level		Grade 1	Grade 1
Operating Temp Range (C)		-40 to 125	-40 to 125
Product Function		Interface	Interface
Wafer Fab Supplier		MH8	MH8
Assembly Site		PHI	PHI
Package Group		SOT	SOT
Package Designator		DBZ	DBZ
Pin Count		3	3

- QBS: Qual By Similarity, also known as Generic Data
- Qual Device ESD2CAN24DBZRQ1 and TSM24ADBZRQ1 are 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: ESD2CAN24DBZRQ1	Qual Device: TSM24ADBZRQ1
Test Group A - Accelerated Environment Stress Tests									
PC	A1	JEDEC J-STD-020 JESD22-A113	-	0	Preconditioning	MSL1 260C	1 Step	2/0/0	1/0/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	2/154/0	1/77/0
HAST	A2.1	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	2/154/0	1/77/0
HAST	A2.1.2	-	3	1	Cross Section, post bHAST, 1X	Post stress cross section	Completed	2/2/0	1/1/0
HAST	A2.1.3	-	3	3	Wire Bond Shear, post bHAST, 1X	Post stress	-	2/6/0	1/3/0
HAST	A2.1.4	-	3	3	Bond Pull over Stitch, post bHAST, 1X	Post stress	-	2/6/0	1/3/0
HAST	A2.1.5	-	3	3	Bond Pull over Ball, post bHAST, 1X	Post stress	-	2/6/0	1/3/0
HAST	A2.2	JEDEC JESD22-A110	3	70	Biased HAST	130C/85%RH	192 Hours	2/154/0	1/77/0
ACUHAST	A3	JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	2/154/0	1/77/0
TCHT	A4.1	JEDEC JESD22-A104 and Appendix 6	3	77	Temperature Cycle	-65C/150C	1000 Cycles	2/154/0	1/77/0
TC	A4.1	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	2/154/0	1/77/0
TC	A4.1.1	-	3	22	SAM Analysis, post TC 1X	Review for delamination	Completed	2/44/0	1/22/0
TC	A4.1.2	-	3	1	Cross Section, post TC, 1X	Post stress cross section	Completed	1/1/0	1/1/0
TC	A4.1.3	-	3	3	Wire Bond Shear, post TC, 1X	Post stress	-	1/3/0	1/3/0
TC	A4.1.4	-	3	3	Bond Pull over Stitch, post TC, 1X	Post stress	-	2/6/0	1/3/0
TC	A4.1.5	-	3	3	Bond Pull over Ball, post TC, 1X	Post stress	-	2/6/0	1/3/0
TC	A4.2	JEDEC JESD22-A104 and Appendix 3	3	70	Temperature Cycle	-65C/150C	1000 Cycles	2/154/0	1/77/0
TC	A4.2.1	-	3	22	SAM Analysis, post TC, 2X	Review for delamination	Completed	2/44/0	1/22/0
Test Group B - Accelerated Lifetime Simulation Tests									
HTRB	B1.1	MIL-STD-750-1	3	77	High Temperature Reverse Bias	125C	1000 Hours	2/154/0	1/77/0
HTRB	B1.2	MIL-STD-750-1	3	77	High Temperature Reverse Bias	125C	2000 Hours	2/154/0	1/77/0
Test Group C - Package Assembly Integrity Tests									
DPA	C2	JESD22-B100	-	30	Physical Dimensions	Cpk>1.67	1 Step	2/60/0	1/30/0
WBP	C3	MIL-STD-750-2	-	10	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	1 Step	1/10/0	1/10/0
WBS	C4	AEC-Q101-003	-	10	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	1 Step	2/20/0	1/10/0
DS	C5	MIL-STD-750-2	-	5	Die Shear	MIL-STD-750-2 Method 2017	1 Step	2/10/0	1/5/0
RSH	C8	JESD22-B107	-	30	Solder Heat	260C, 10 seconds	1 Step	1/30/0	1/30/0
SD	C10	JEDEC J-STD-002	-	15	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	1 Step	1/10/0	1/10/0
SD	C10	JEDEC J-STD-002	-	15	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	1 Step	1/15/0	1/15/0
Test Group D - Die Fabrication Reliability Tests									
Test Group E - Electrical Verification Tests									
EV	E0	JESD22-B101	3	1000	Visual/Mechanical	Per JESD22 B-101	1 Step	1/1000/0	1/1000/0
ESD	E3	AEC Q101-001	3	10	ESD HBM	Room Temp	2000 Volts	1/10/0	1/10/0
ESD	E4	AEC Q101-005	3	10	ESD CDM	Room Temp	750 Volts	1/10/0	1/10/0
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device	Qual Device

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, HTSL, and IOL, as applicable
- Passing results reflect shift analysis per Q101 requirements

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 : HTRB, 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-2405-014 and R-CHG-2405-054

Qualification Results

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

Type	#	Test Name	Condition	Duration	Qual Device: ESD2CAN24DBZRQ1	Qual Device: TSM24ADBZRQ1
HAST	A2	Biased HAST	130C/85%RH	96 Hours	2/154/0	1/77/0
UHAST	A3	Unbiased HAST	130C/85%RH	96 Hours	2/154/0	1/77/0
TC	A4	Temperature Cycle	-65C/150C	500 Cycles	2/154/0	1/77/0
HTOL	B1	High Temperature Reverse Bias	125C	2000 Hours	2/154/0	1/77/0
SD	C3	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	1/10/0	1/10/0
SD	C3	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	-	1/15/0	1/15/0
PD	C4	Physical Dimensions	Cpk>1.67	-	2/60/0	1/30/0
ESD	E2	ESD CDM	-	750 Volts	1/10/0	1/10/0
ESD	E2	ESD HBM	-	2000 Volts	1/10/0	1/10/0
CHAR	E5	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	2/50/0	1/25/0

- QBS: Qual By Similarity, also known as Generic Data
- Qual Devices ESD2CAN24DBZRQ1 and TSM24ADBZRQ1 are 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/>

TI Qualification ID: R-CHG-2405-014

Product Attributes

Attributes	Qual Device: ESD2CAN24DBZRQ1	Qual Device: TSM24ADBZRQ1
Automotive Grade Level	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 125	-40 to 125
Product Function	Interface	Interface
Wafer Fab Supplier	MH8	CFAB
Assembly Site	PHI	PHI
Package Group	SOT	SOT
Package Designator	DBZ	DBZ
Pin Count	3	3

- QBS: Qual By Similarity, also known as Generic Data
- Qual Device ESD2CAN24DBZRQ1 is qualified at MSL1 260C
- Qual Device TSM24ADBZRQ1 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: ESD2CAN24DBZRQ1	Qual Device: TSM24ADBZRQ1
Test Group A - Accelerated Environment Stress Tests									
PC	A1	JEDEC J-STD-020 JESD22-A113	-	0	Preconditioning	MSL1 260C	1 Step	2/0/0	1/0/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	2/154/0	1/77/0
HAST	A2.1	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	2/154/0	1/77/0
HAST	A2.1.2	-	3	1	Cross Section, post bHAST, 1X	Post stress cross section	Completed	2/2/0	1/1/0
HAST	A2.1.3	-	3	3	Wire Bond Shear, post bHAST, 1X	Post stress	-	2/6/0	1/3/0
HAST	A2.1.4	-	3	3	Bond Pull over Stitch, post bHAST, 1X	Post stress	-	2/6/0	1/3/0
HAST	A2.1.5	-	3	3	Bond Pull over Ball, post bHAST, 1X	Post stress	-	2/6/0	1/3/0
HAST	A2.2	JEDEC JESD22-A110	3	70	Biased HAST	130C/85%RH	192 Hours	2/154/0	1/77/0
AC/UHAST	A3	JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	2/154/0	1/77/0
TCHT	A4.1	JEDEC JESD22-A104 and Appendix 6	3	77	Temperature Cycle	-65C/150C	1000 Cycles	2/154/0	1/77/0
TC	A4.1	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	2/154/0	1/77/0
TC	A4.1.1	-	3	22	SAM Analysis, post TC 1X	Review for delamination	Completed	2/44/0	2/44/0
Test Group B - Accelerated Lifetime Simulation Tests									
HTRB	B1.1	MIL-STD-750-1	3	77	High Temperature Reverse Bias	125C	1000 Hours	2/154/0	1/77/0
HTRB	B1.2	MIL-STD-750-1	3	77	High Temperature Reverse Bias	125C	2000 Hours	2/154/0	1/77/0
Test Group C - Package Assembly Integrity Tests									
DPA	C2	JESD22-B100	-	30	Physical Dimensions	Cpk>1.67	1 Step	2/60/0	1/30/0
WBP	C3	MIL-STD-750-2	-	10	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	1 Step	1/10/0	1/10/0

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: ESD2CAN24DBZRQ1	Qual Device: TSM24ADBZRQ1
WBS	C4	AEC-Q101-003	-	10	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	1 Step	2/20/0	1/10/0
DS	C5	MIL-STD-750-2	-	5	Die Shear	MIL-STD-750-2 Method 2017	1 Step	2/10/0	1/5/0
RSH	C8	JESD22-B107	-	30	Solder Heat	260C, 10 seconds	1 Step	1/30/0	1/30/0
SD	C10	JEDEC J-STD-002	-	15	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	1 Step	1/10/0	1/10/0
SD	C10	JEDEC J-STD-002	-	15	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	1 Step	1/15/0	1/15/0
Test Group D - Die Fabrication Reliability Tests									
Test Group E - Electrical Verification Tests									
EV	E0	JESD22-B101	3	1000	Visual/Mechanical	Per JESD22 B-101	1 Step	1/1000/0	1/1000/0
ESD	E3	AEC Q101-001	3	10	ESD HBM	Room Temp	2000 Volts	1/10/0	1/10/0
ESD	E4	AEC Q101-005	3	10	ESD CDM	Room Temp	750 Volts	1/10/0	1/10/0
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device	QBS Reference

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, HTSL, and IOL, as applicable
- Passing results reflect shift analysis per Q101 requirements

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 : HTRB, 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-2405-014

TI Qualification ID: R-CHG-2405-054

ZVEI ID: SEM-PW-13, SEM-PA-18, SEM-PA-07, SEM-PA-05, SEM-PA-11, SEM-PA-08, SEM-PA-13, SEM-PS-02,

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.

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale (www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.