



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20251031003.2B

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

Change Notification / Sample Request

The rev B is being issued to correct the ZVEI IDs and to remove the Design change type.

Date: December 15, 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

20251031003.2B
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:	20251031003.2B	PCN Date:	December 15, 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:			
☒ Assembly Site	☐ Design	☐ Wafer Bump Material	
☐ Assembly Process	☐ Data Sheet	☐ Wafer Bump Process	
☐ Assembly Materials	☐ Part number change	☒ Wafer Fab Site	
☐ Mechanical Specification	☐ Test Site	☒ Wafer Fab Material	
☒ Packing/Shipping/Labeling	☐ Test Process	☒ 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
CFAB	VDIODE	200 mm	MIHO
			VDIODE
			200 mm
Construction differences are as follows:			
	Current	Additional	
Assembly Site	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 2 nd 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
☒ No Change	☒ No Change	☒ No Change	☒ 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	TSM24CADBZRQ1	

For alternate parts with similar or improved performance, please visit the product page on [TI.com](https://www.ti.com)

Product Attributes

Attributes	Qual Device: ESDS452DBZRQ1	Qual Device: ESD652DBZRQ1	Qual Device: ESD2CANFD24DBZRQ1	Qual Device: ESD2CANXL24DBZRQ1	Qual Device: ESD2CAN24DBZRQ1	Qual Device: ESD2CANFD36DBZRQ1	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: ESD2CANFD36DBZRQ1	Qual Device: ESD2CAN36DBZRQ1	QBS Reference: ESD2CAN24DBZRQ1
Test Group A - Accelerated Environment Stress Tests															
PC	A1	JEDEC J-STD-020 JESD22-A113	-	0	Preconditioning	MSL1 260C	1 Step	-	-	-	1/0/0	-	1/0/0	1/0/0	3/Pass
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	-	-	1/77/0	-	-	1/77/0	3/231/0
HAST	A2.1	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	-	-	1/77/0	-	-	1/77/0	3/231/0
HAST	A2.1.2	-	3	1	Cross Section, post bHAST, 1X	Post stress cross section	Completed	1/1/0	-	-	1/1/0	-	-	1/1/0	3/3/0

Type	#	Test Name	Condition	Duration	Qual Device: SN74AHC1G00DRLR	Qual Device: SN74AHC1G14DRLR	Qual Device: SN74AHC1G125DRLR	Qual Device: SN74AHC1G1250RLR	Qual Device: SN74AHC1G08DRLR	QBS Reference: TLV1805QDBVRQ1	QBS Reference: SN74HCS740PWRQ1	QBS Reference: TMP112AQORLQ1
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 SN74AHC1G125DRLR is qualified at MSL1 260C
- Qual Device SN74AHC1G1250RLR is qualified at MSL1 260C
- Qual Device SN74AHC1G08DRLR 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/3k 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: ESDS452DBZBQ1	Qual Device: ESDS52DBZBQ1	Qual Device: ESD2CANF024DBZBQ1	Qual Device: ESD2CANL24DBZBQ1	Qual Device: ESD2CAN24DBZBQ1	Qual Device: ESD2CANF030DBZBQ1	Qual Device: ESD2CAN30DBZBQ1	QSS Reference: ESD2CAN24DBZBQ1
HAST	A2.1.3	-	3	3	Wire Bond Shear, post bHAST, 1X	Post stress	-	1/3/0	-	-	1/3/0	-	-	1/3/0	3/9/0
HAST	A2.1.4	-	3	3	Bond Pull over Sitch, 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	3/66/0
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 Sitch, 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
ACU/HAST	A3	JEDEC JESD22-A110	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	3/66/0
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 Sitch, 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	3/66/0
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 Sitch, 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: ESD2CANE24DBZRQ1	Qual Device: ESD2CAN24DBZRQ1	Qual Device: ESD2CAN24DBZRQ1	Qual Device: ESD2CAN24DBZRQ1	Qual Device: ESD2CAN24DBZRQ1	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
Test Group B - Accelerated Lifetime Simulation Tests														
HTRB	B1.1	MIL-STD-750-1	3	77	High Temperature Reverse Bias	125C	1000 Hours	-	-	-	-	-	-	3/2310
HTRB	B1.2	MIL-STD-750-1	3	77	High Temperature Reverse Bias	125C	2000 Hours	-	-	-	-	-	-	3/2310
HTRB	B1	MIL-STD-750-1	3	5	Post Temp Cycle Bond Pull	MIL-STD 883 Method 2011	1 Step	-	-	-	-	-	-	3/150
Test Group C - Package Assembly Integrity Tests														
DPA	C2	JESD22-B100	-	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	3/500
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	3/300
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	3/300
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	3/150
RSH	C8	JESD22-B107	-	30	Solder Heat	260C, 10 seconds	1 Step	1/30/0	-	-	-	-	-	1/300
SD	C10	JEDEC J-STD-002	-	15	PB Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	1 Step	-	-	-	-	-	-	1/100
SD	C10	JEDEC J-STD-002	-	15	PB-Free Solderability	Precondition w.155C Dry Bake (4 hrs +/- 15 minutes)	1 Step	1/15/0	-	-	-	-	-	1/100
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	-	-	3/30000
ESD	E3	AEC-Q101-001	3	10	ESD HBM	Room Temp	2000 Volts	1/10/0	-	-	-	-	-	1/800
ESD	E4	AEC-Q101-005	3	10	ESD CDM	Room Temp	500 Volts	-	-	-	-	-	-	1/600
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	QBS Reference

- Preconditioning was performed for Autodrive, 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 H): -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/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
ACUHA	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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: ESD2CAN24DBZRQ1	Qual Device: TSM24ADBZRQ1
TC	A4.2.2	-	3	1	Cross Section, post TC, 2X	Post stress cross section	Completed	1/1/0	1/1/0
TC	A4.2.3	-	3	3	Wire Bond Shear, post TC, 2X	Post stress	-	2/6/0	1/3/0
TC	A4.2.4	-	3	3	Bond Pull over Stitch, post TC, 2X	Post stress	-	2/6/0	1/3/0
TC	A4.2.5	-	3	3	Bond Pull over Ball, post TC, 2X	Post stress	-	2/6/0	1/3/0
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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: ESD2CAN24DBZRQ1	Qual Device: TSM24ADBZRQ1
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
TC	A4.2.2	-	3	1	Cross Section, post TC, 2X	Post stress cross section	Completed	1/1/0	1/1/0
TC	A4.2.3	-	3	3	Wire Bond Shear, post TC, 2X	Post stress	-	2/6/0	1/3/0
TC	A4.2.4	-	3	3	Bond Pull over Stitch, post TC, 2X	Post stress	-	2/6/0	1/3/0
TC	A4.2.5	-	3	3	Bond Pull over Ball, post TC, 2X	Post stress	-	2/6/0	1/3/0

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: <u>ESD2CAN24DBZRQ1</u>	Qual Device: <u>TSM24ADBZRQ1</u>
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,~~

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