

PCN# 20250417000.2
Adding TIEM-PR as additional wafer probe test site and
TI Malaysia (MLA) as an additional Assembly and Test site
for select package devices
Change Notification / Sample Request

Date: April 21, 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

20250417000.2
Change Notification / Sample Request
Attachments

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
ISO7720QDWRQ1	ISO7720QDWRQ1
ISO7721QDWRQ1	ISO7721QDWRQ1
ISO7721FQDWRQ1	NULL
ISO7710QDRQ1	ISO7710QDRQ1
ISO7710FQDWRQ1	NULL
ISO7710FQDRQ1	ISO7710FQDRQ1

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

PCN Number:	20250417000.2			PCN Date:	April 21, 2025
Title:	Adding TIEM-PR as additional wafer probe test site and TI Malaysia (MLA) as an additional Assembly and Test site for select package devices				
Customer Contact:	Change Management team		Dept:	Quality Services	
Proposed 1st Ship Date:	October 18, 2025		Estimated Sample Availability:	June 20, 2025	
*Sample requests received after June 20, 2025 will not be supported.					
Change Type:					
<input checked="" type="checkbox"/> Assembly Site	<input type="checkbox"/>	Design	<input type="checkbox"/>	Wafer Bump Material	
<input checked="" type="checkbox"/> Assembly Process	<input type="checkbox"/>	Data Sheet	<input type="checkbox"/>	Wafer Bump Process	
<input checked="" type="checkbox"/> Assembly Materials	<input type="checkbox"/>	Part number change	<input type="checkbox"/>	Wafer Fab Site	
<input type="checkbox"/> Mechanical Specification	<input checked="" type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Material	
<input type="checkbox"/> Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process	<input type="checkbox"/>	Wafer Fab Process	

PCN Details

Description of Change:

Texas Instruments is pleased to announce TIEM-PR as additional wafer probe site and TI Malaysia (MLA) as an additional Assembly and Test site for select devices in the SOIC package. Material differences between sites as follows.

	Current	Additional
Probe Test Site	TI CDAT (CD-PR)	TI Melaka (TIEM-PR)
Assembly/Test Site	TI Taiwan	TI Malaysia
Wire diam/type	0.96mil Au	0.8mil Cu

Test coverage, insertions, conditions will remain consistent with current testing.

Reason for Change:

Continuity of supply.

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:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (21L)	Assembly City
TI Malaysia	MLA	MYS	Kuala Lumpur
TI Taiwan	TAI	TWN	Chung Ho, New Taipei City
TI Melaka	CU6	MYS	Melaka

Sample product shipping label (not actual product label)

 TEXAS INSTRUMENTS MADE IN: Malaysia 2DC: 20: MSL 2 / 260C / 1 YEAR SEAL DT MSL 1 / 235C / UNLIM 03/29/04				(1P) SN74LS07NSR (Q) 2000 (D) 0336 (31T) LOT: 3959047MLA (4W) TKY (1T) 7523483SI2 (P) (2P) REV: (V) 0033317 (20L) CSO: SHE (21L) CCO:USA (22L) ASO: MLA (23L) AC0: MYS									
OPT: ITEM: 39 LBL: 5A (L)T0:1750													
Product Affected: <table border="1"> <tr> <td>ISO7710FQDRQ1</td> <td>ISO7710QDWRQ1</td> <td>ISO7721FQDWRQ1</td> </tr> <tr> <td>ISO7710FQDWRQ1</td> <td>ISO7720FQDWRQ1</td> <td>ISO7721QDWRQ1</td> </tr> <tr> <td>ISO7710QDRQ1</td> <td>ISO7720QDWRQ1</td> <td></td> </tr> </table>					ISO7710FQDRQ1	ISO7710QDWRQ1	ISO7721FQDWRQ1	ISO7710FQDWRQ1	ISO7720FQDWRQ1	ISO7721QDWRQ1	ISO7710QDRQ1	ISO7720QDWRQ1	
ISO7710FQDRQ1	ISO7710QDWRQ1	ISO7721FQDWRQ1											
ISO7710FQDWRQ1	ISO7720FQDWRQ1	ISO7721QDWRQ1											
ISO7710QDRQ1	ISO7720QDWRQ1												

Qualification Data

Automotive Qualification Summary
 (As per AEC-Q100 Rev. J and JEDEC Guidelines)
 Approve Date 01-March-2024

Product Attributes

Attributes	Qual Device: ISO7710QDRQ1	QBS Package Reference: ISO6721BQDRQ1	QBS Process Reference: UCC23513QDWYQ1	QBS Package Reference: ISO6763QDWRQ1	QBS Package Reference: ISO5452DWR	QBS Package Reference: ISO7721QDRQ1	QBS Package Reference: UCC21330BQDRQ1
Automotive Grade Level	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
Product Function	Interface	Interface	Power Management	Interface	Power Management	Signal Chain, Interface	Power Management
Wafer Fab Supplier	RFAB, RFAB	MHB, MHB	RFAB, RFAB	RFAB, RFAB	DP1DMS, DP1DMS, MHB	RFAB, RFAB	RFAB, RFAB, RFAB
Assembly Site	MLA	MLA	TAI	MLA	MLA	MLA	MLA
Package Group	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator	D	D	DWY	DW	DW	D	D
Pin Count	8	8	6	16	16	8	16

QBS: Qual By Similarity
 Qual Device ISO7710QDRQ1 is qualified at MSL2 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: ISO7710QDRQ1	QBS Package Reference: ISO6721BQDRQ1	QBS Process Reference: UCC23513QDWYQ1	QBS Package Reference: ISO6763QDWRQ1	QBS Package Reference: ISO5452DWR	QBS Package Reference: ISO7721QDRQ1	QBS Package Reference: UCC21330BQDRQ1
Test Group A - Accelerated Environment Stress Tests														
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL1 260C	-	-	No Fails	-	-	-	-	-

PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	-	-	-	-	No Fails	No Fails	No Fails	No Fails
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	3/231/0	-	3/231/0	1/77/0	-	-
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	-	3/231/0	-	3/231/0	1/77/0	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	3/231/0	-	3/231/0	1/77/0	1/77/0	3/231/0
TC-SAM	A4	-	3	3	Post TC SAM	<50% delamination	-	-	1/12/0	-	1/12/0	-	1/12/0	1/12/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0	1/45/0	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	-	3/135/0	-	-	-	-	-
Test Group B - Accelerated Lifetime Simulation Tests														
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test	125C	1000 Hours	-	3/231/0	3/231/0	-	-	-	-
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	-	3/228/0	-	3/90/0	-	1/30/0	3/90/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	-	3/228/0	-	3/90/0	-	1/30/0	3/90/0
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	1/15/0	-	-	-	-	-
SD	C3	JEDEC J-STD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	1/15/0	-	-	-	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	-	-	3/30/0	-	-	-	1/10/0	3/30/0
Test Group D - Die Fabrication Reliability Tests														
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: ISO7710QDRQ1	QBS Package Reference: ISO6721BQDRQ1	QBS Process Reference: UCC23513QDWYQ1	QBS Package Reference: ISO6763QDWWRQ1	QBS Package Reference: ISO5452DWR	QBS Package Reference: ISO7721QDRQ1	QBS Package Reference: UCC21330BQDRQ1
EM	D1	JESD61	-	-	Electromigration	-	-	Completed Per Process Technology Requirements						
TDOB	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
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
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	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	-	1/30/0	3/90/0	3/90/0	1/30/0	1/30/0	1/30/0	1/30/0

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

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-NPD-2302-098

Qualification Data

Automotive Qualification Summary

(As per AEC-Q100 Rev. J and JEDEC Guidelines)

Approve Date 01-March-2024

Product Attributes

Attributes		Qual Device: ISO7710QDWRQ1	QBS Process Reference: UCC23513QDWYQ1	QBS Package Reference: ISO6763QDWRQ1	QBS Package Reference: ISO7721QDWRQ1	QBS Product Reference: ISO7710QDRQ1
Automotive Grade Level		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
Product Function		Interface	Power Management	Interface	Interface	Interface
Wafer Fab Supplier		RFAB, RFAB	RFAB, RFAB	RFAB, RFAB	RFAB, RFAB	RFAB, RFAB
Assembly Site		MLA	TAI	MLA	MLA	MLA
Package Group		SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator		DW	DWY	DW	DW	D
Pin Count		16	6	16	16	8

QBS: Qual By Similarity

Qual Device ISO7710QDWRQ1 is qualified at MSL2 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: ISO7710QDWRQ1	QBS Process Reference: UCC23513QDWYQ1	QBS Package Reference: ISO6763QDWRQ1	QBS Package Reference: ISO7721QDWRQ1	QBS Product Reference: ISO7710QDRQ1	
Test Group A - Accelerated Environment Stress Tests													
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	-	-	-	No Fails	-	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	-	3/231/0	-	-	-
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	-	-	3/231/0	-	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	-	3/231/0	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	3/135/0	-	-	-
Test Group B - Accelerated Lifetime Simulation Tests													
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test	125C	1000 Hours	-	3/231/0	-	-	-	-
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	-	-	3/90/0	1/30/0	-	-
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	-	-	3/90/0	1/30/0	-	-
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	-	-	-	-	-
SD	C3	JEDEC J-STD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	-	-	-	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	-	-	-	-	1/10/0	-	-
Test Group D - Die Fabrication Reliability Tests													
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	Device specific data [1]	1/3/0	-	-	-	1/3/0
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	500 Volts	Device specific data [1]	1/3/0	-	1/3/0	1/3/0	1/3/0
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	Device specific data [1]	1/6/0	-	-	-	1/6/0
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	Device specific data [1]	3/90/0	3/90/0	-	-	1/30/0

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

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-NPD-2309-078

[1] Qual Device: ISO7710QDWRQ1 and QBS Reference: ISO7710QDRQ1 use the same silicon die.

Qualification Data
Automotive Qualification Summary
(As per AEC-Q100 Rev. J and JEDEC Guidelines)
Approve Date 30-January-2024

Product Attributes

Attributes		Qual Device: <u>ISO7721QDWRQ1</u>	Qual Device: <u>ISO7720QDWRQ1</u>	QBS Process Reference: <u>UCC23513QDWYQ1</u>	QBS Package Reference: <u>ISO6763QDWRQ1</u>	QBS Product Reference: <u>ISO7721QDRQ1</u>	QBS Product Reference: <u>ISO7720QDRQ1</u>
Automotive Grade Level	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
Product Function	Interface	Interface	Power Management	Interface	Signal Chain,Interface	Signal Chain,Interface	Signal Chain,Interface
Wafer Fab Supplier	RFAB, RFAB	RFAB, RFAB	RFAB, RFAB	RFAB, RFAB	RFAB, RFAB	RFAB, RFAB	RFAB, RFAB
Assembly Site	MLA	MLA	TAI	MLA	MLA	MLA	MLA
Package Group	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator	DW	DW	DWY	DW	D	D	D
Pin Count	16	16	6	16	8	8	8

QBS: Qual By Similarity

Qual Device ISO7721QDWRQ1 is qualified at MSL2 260C

Qual Device ISO7720QDWRQ1 is qualified at MSL2 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: <u>ISO7721QDWRQ1</u>	Qual Device: <u>ISO7720QDWRQ1</u>	QBS Process Reference: <u>UCC23513QDWYQ1</u>	QBS Package Reference: <u>ISO6763QDWRQ1</u>	QBS Product Reference: <u>ISO7721QDRQ1</u>	QBS Product Reference: <u>ISO7720QDRQ1</u>	
Test Group A - Accelerated Environment Stress Tests														
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	-	-	-	-	-	No Fails	No Fails	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	3/231/0	-	-
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	-	-	-	-	3/231/0	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	-	3/231/0	1/77/0	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	3/135/0	-	-
Test Group B - Accelerated Lifetime Simulation Tests														
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test	125C	1000 Hours	-	-	-	-	3/231/0	-	-
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	-	3/90/0	3/90/0	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	3/90/0	1/30/0	-	-
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	-	1/15/0	-	-	-	-
SD	C3	JEDEC J-STD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	-	1/15/0	-	-	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	-	1/10/0	-	3/30/0	-	1/10/0	-	-
Test Group D - Die Fabrication Reliability Tests														

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	Device specific data [1]	Device specific data [1]	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
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	Device specific data [1]	Device specific data [1]	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	-	Device specific data [1]	Device specific data [1]	3/90/0	3/90/0	1/30/0	1/30/0

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

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-NPD-2302-091

[1] Data collected for same silicon die in D package

Qualification Data

Automotive Qualification Summary
(As per AEC and JEDEC Guidelines)

Q006 SOIC at MLA and TAI

Approve Date 19-OCTOBER -2023

Product Attributes

Attributes		Qual Device: <u>ISO6763QDWRQ1</u>	Qual Device: <u>UCC21540QDWKRQ1</u>	QBS Package Reference: <u>PUCC21550ADWKR</u>
Automotive Grade Level		Grade 1	Grade 1	Grade 1
Operating Temp Range (C)		-40 to 125	-40 to 125	-40 to 125
Wafer Fab Supplier		RFAB, RFAB	MH8, MH8, MH8	DMOS6, DMOS6, MH8
Assembly Site		MLA	TAI	TAI
Package Group		SOIC	SOIC	SOIC
Package Designator		DW	DWK	DWK
Pin Count		16	14	14

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: <u>ISO6763QDWRQ1</u>	Qual Device: <u>UCC21540QDWKRQ1</u>	QBS Reference: <u>PUCC21550ADWKR</u>
Test Group A - Accelerated Environment Stress Tests										
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	-	3/597/0	1/199/0	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL3 260C	-	-	-	3/693/0
PC	A1.1	-	3	22	SAM Precon Pre	Review for delamination	-	3/66/0	1/22/0	3/66/0
PC	A1.2	-	3	22	SAM Precon Post	Review for delamination	-	3/66/0	1/22/0	3/66/0

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: <u>ISO6763QDWRQ1</u>	Qual Device: <u>UCC21540QDWKRQ1</u>	QBS Reference: <u>PUCC21550ADWKR</u>
HAST	A2.1	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	3/231/0	1/77/0	3/231/0
HAST	A2.1.2	-	3	1	Cross Section, post bHAST, 1X	Post stress cross section	Completed	3/3/0	1/1/0	-
HAST	A2.1.3	-	3	3	Wire Bond Shear, post bHAST, 1X	Post stress	-	3/9/0	1/3/0	3/9/0
HAST	A2.1.4	-	3	3	Bond Pull over Stitch, post bHAST, 1X	Post stress	-	3/9/0	1/3/0	3/9/0
HAST	A2.1.5	-	3	3	Bond Pull over Ball, post bHAST, 1X	Post stress	-	3/9/0	1/3/0	3/9/0
HAST	A2.2	JEDEC JESD22-A110	3	70	Biased HAST	130C/85%RH	192 Hours	3/210/0	1/70/0	3/210/0
HAST	A2.2.1	-	3	22	SAM Analysis, post bHAST 2X	Review for delamination	Completed	3/66/0	1/22/0	3/66/0
HAST	A2.2.2	-	3	1	Cross Section, post bHAST, 2X	Post stress cross section	Completed	3/3/0	1/1/0	3/3/0
HAST	A2.2.3	-	3	3	Wire Bond Shear, post bHAST, 2X	Post stress	-	3/9/0	1/3/0	3/9/0
HAST	A2.2.4	-	3	3	Bond Pull over Stitch, post bHAST, 2X	Post stress	-	3/9/0	1/3/0	3/9/0
HAST	A2.2.5	-	3	3	Bond Pull over Ball, post bHAST, 2X	Post stress	-	3/9/0	1/3/0	3/9/0
TC	A4.1	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-55C/150C	1000 Cycles	-	-	3/231/0
TC	A4.1	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	3/231/0	1/77/0	-
TC	A4.1.1	-	3	22	SAM Analysis, post TC 1X	Review for delamination	Completed	3/66/0	1/22/0	3/66/0
TC	A4.1.2	-	3	1	Cross Section, post TC, 1X	Post stress cross section	Completed	3/3/0	1/1/0	-
TC	A4.1.3	-	3	3	Wire Bond Shear, post TC, 1X	Post stress	-	3/9/0	1/3/0	3/9/0
TC	A4.1.4	-	3	3	Bond Pull over Stitch, post TC, 1X	Post stress	-	3/9/0	1/3/0	3/9/0
TC	A4.1.5	-	3	3	Bond Pull over Ball, post TC, 1X	Post stress	-	3/9/0	1/3/0	3/9/0
TC	A4.2	JEDEC JESD22-A104 and Appendix 3	3	70	Temperature Cycle	-55C/150C	2000 Cycles	-	-	3/210/0
TC	A4.2	JEDEC JESD22-A104 and Appendix 3	3	70	Temperature Cycle	-65C/150C	1000 Cycles	3/210/0	1/70/0	-
TC	A4.2.1	-	3	22	SAM Analysis, post TC, 2X	Review for delamination	Completed	3/66/0	1/22/0	3/66/0
TC	A4.2.2	-	3	1	Cross Section, post TC, 2X	Post stress cross section	Completed	3/3/0	1/1/0	3/3/0
TC	A4.2.3	-	3	3	Wire Bond Shear, post TC, 2X	Post stress	-	3/9/0	1/3/0	3/9/0
TC	A4.2.4	-	3	3	Bond Pull over Stitch, post TC, 2X	Post stress	-	3/9/0	1/3/0	3/9/0
TC	A4.2.5	-	3	3	Bond Pull over Ball, post TC, 2X	Post stress	-	3/9/0	1/3/0	3/9/0
HTSL	A6.1	JEDEC JESD22-A103	3	45	High Temperature Storage Life	150C	1000 Hours	3/135/0	1/45/0	-

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HTSL	A6.1	JEDEC JESD22-A103	3	45	High Temperature Storage Life	175C	500 Hours	-	-	3/231/0
HTSL	A6.1.1	-	3	1	Cross Section, post HTSL, 1X	Post stress cross section	Completed	3/3/0	1/1/0	3/3/0
HTSL	A6.2	JEDEC JESD22-A103	3	44	High Temperature Storage Life	150C	2000 Hours	3/132/0	1/44/0	-
HTSL	A6.2	JEDEC JESD22-A103	3	44	High Temperature Storage Life	175C	1000 Hours	-	-	3/228/0
HTSL	A6.2.1	-	3	1	Cross Section, post HTSL, 2X	Post stress cross section	Completed	3/3/0	1/1/0	3/3/0
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	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	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

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-2303-105

ZVEI ID: SEM-PA-18, SEM-PA-08, SEM-TF-01

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