

PCN Number:	20221104000.2	PCN Date:	November 04, 2022
Title:	Qualification of TI Malaysia as an additional Assembly and test site for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	May 3, 2023	Sample Requests accepted until:	Dec 4, 2022*

***Sample requests received after Dec 4, 2022 will not be supported.**

Change Type:

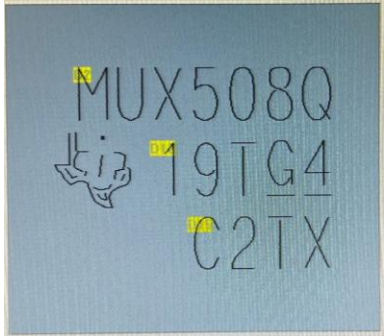
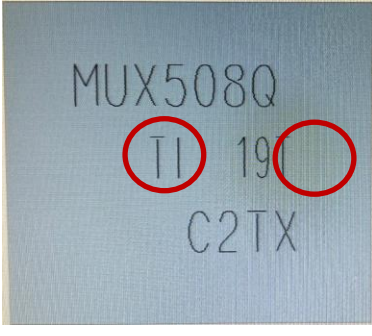
<input checked="" type="checkbox"/>	Assembly Site	<input checked="" type="checkbox"/>	Assembly Process	<input checked="" type="checkbox"/>	Assembly Materials
<input type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification
<input checked="" type="checkbox"/>	Test Site	<input checked="" type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Wafer Fab Materials	<input type="checkbox"/>	Wafer Fab Process
		<input type="checkbox"/>	Part number change		

PCN Details

Description of Change:

Texas Instruments is pleased to announce the qualification of TI Malaysia as an additional Assembly and test site. Construction differences are as follows:

	TAI	MLA
Bond wire diameter composition, diameter	Au, 0.96 mil	1mil PCC Die- > LF .96mil Au Die- >Die
Mold compound	4221499	4211880

	Current Device Symbolization	New Device Symbolization
**ECAT	Include Value	Remove
TI Bug	Include	Replace with "TI" text
Example		

Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ

Reason for Change:

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	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change

Changes to product identification resulting from this PCN:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TAI	TAI	TWN	Chung Ho, New Taipei City
MLA	MLA	MYS	Kuala Lumpur

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
 OPT:
 ITEM: 39
LBL: 5A (L)T0:1750

(1P) SN74LS07NSR
 (Q) 2000 (D) 0336
 (31T) LOT: 3959047MLA
 (4W) TKY (1T) 7523483SI2
 (P)
 (2P) REV: (V) 0033317
 (20L) ~~CSO: CHE~~ (21L) ~~CCO: USA~~
 (22L) ASO: MLA (23L) ACO: MYS

Product Affected:

SN5350MCQDQ1	SN5350MCQDRQ1	UCC5350MCQDQ1	UCC5350MCQDRQ1
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TI Information
Selective Disclosure

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

Galvatron UCC53xD Automotive and Commercial Offload from TAI to MLA
Approve Date 28-OCTOBER -2022

Product Attributes

Attributes	Qual Device: UCC5350MCQDRQ1	QBS Reference: ISO6721BQDRQ1	QBS Reference: UCC5390ECQDWVQ1	QBS Reference: ISO5851QDWQ1	QBS Reference: UCC5350MCQDRQ1
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	Interface	Interface	Interface	Interface
Wafer Fab Supplier	DP1DM5, DP1DM5	MH8, MH8	DP1DM5, DP1DM5	MH8, DP1DM5, DP1DM5	DP1DM5, DP1DM5
Assembly Site	MLA	MLA	TAI	TAI	TAI
Package Group	SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator	D	D	DWV	DW	D
Pin Count	8	8	8	16	8

- QBS: Qual By Similarity
- Qual Device UCC5350MCQDRQ1 is qualified at MSL3 260C

Qualification Results

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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: UCC5350MCQDRQ1	QBS Reference: ISO6721BQDRQ1	QBS Reference: UCC5390ECQDWVQ1	QBS Reference: ISO5851ODWQ1	QBS Reference: UCC5350MCQDRQ1
Test Group A - Accelerated Environment Stress Tests												
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL1 260C	1 Step	-	No Fails	-	-	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL3 260C	1 Step	No Fails	-	-	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	3/231/0	-	-	-
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	1/77/0	3/231/0	-	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	1/77/0	3/231/0	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	1/77/0	-	-	-	-
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	1	77	Life Test	125C	1000 Hours	-	-	1/77/0	3/231/0	-
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	125C	48 Hours	-	-	-	3/2400/0	-
Test Group C - Package Assembly Integrity Tests												
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	1/30/0	3/228/0	-	-	-
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	1/30/0	3/228/0	-	-	-
SD	C3	JEDEC JESD22-B102	1	15	PB Solderability	>95% Lead Coverage	-	-	1/15/0	-	-	-
SD	C3	JEDEC JESD22-B102	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	1/15/0	-	-	-

PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	1/10/0	3/30/0	-	-	-
Test Group D - Die Fabrication Reliability Tests												
EM	D1	JESD61	-	-	Electromigration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDDDB	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
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
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	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
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	-
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	1/30/0	3/90/0	1/30/0	1/30/0	1/30/0
Additional Tests												
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device	QBS Reference	QBS Reference	QBS Reference	QBS Reference

- 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/luHAST

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

TI Qualification ID: R-CHG-2108-038

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

**LBC8LVISO Alpad in MLA with 1.0 mil Cu wire and G633 mold compound
(Q100, Q006, Grade1, -40/125C)
Approved 28-Oct-2022**

Product Attributes

Attributes	Qual Device: UCC5350MCQDRQ1	Qual Device: ISO6721BQDRQ1
Operating Temp Range	-40 to +125 C	-40 to +125 C
Automotive Grade Level	Grade 1	Grade 1
Product Function	Interface	Interface
Wafer Fab Supplier	DP1DM5, DP1DM5	MH8
Wafer Process Technology	Power BiCMOS	Power BiCMOS
Assembly Site	MLA	MLA
Package Type	SOIC	SOIC
Package Designator	D	D
Ball/Lead Count	8	8

- QBS: Qual by Similarity
- Qual Device ISO6721BQDRQ1 is qualified at LEVEL2-260C
- Qual Device UCC5350MCQDRQ1 is qualified at MSL3 260C
- Device ISO6721BQDRQ1 and UCC5350MCQDRQ1 contains multiple dies.

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>UCC5350MCGDRQ1</u>	Qual Device: <u>ISO6721BQDRQ1</u>
Test Group A – Accelerated Environment Stress Tests								
PC	A1	-	3	22	SAM Analysis, Pre Stress	Completed	-	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 2-260C	-	No fails
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 3-260C	No fails	-
PC	A1	-	3	22	SAM Analysis, Post Stress	Completed	1/22/0	2/44/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	1/77/0	3/231/0
HAST	A2	-	3	1	Cross Section, Post bHAST 96 Hours	Completed	-	-
HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 96 Hours	Wires	-	-
HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 96 Hours	Wires	-	-
HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 96 Hours	Wires	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	192 Hours	1/70/0	3/210/0
HAST	A2	-	3	1	Cross Section, Post bHAST 192 Hours	Completed	1/1/0	3/3/0
HAST	A2	-	3	22	SAM Analysis, Post bHAST, 192 Hours	Completed	1/22/0	3/66/0
HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 192 Hours	Wires	1/30/0	3/81/0
HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 192 Hours	Wires	1/30/0	3/81/0
HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 192 Hours	Wires	1/30/0	3/81/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0

Type	#	Test Spec	Min Lot Qty	\$\$/Lot	Test Name / Condition	Duration	Qual Device: UCCS350MCQDRQ1	Qual Device: ISO6721BQDRQ1
TC	A4	-	3	1	Cross Section, Post T/C 500 Cycles	Completed	-	-
TC	A4	-	3	22	SAM Analysis, Post T/C, 500 Cycles	Completed	-	-
TC	A4	-	3	30	Wire Bond Shear, Post T/C 500 Cycles	Wires	-	-
TC	A4	-	3	30	Bond Pull over Stitch Post T/C 500 Cycles	Wires	-	-
TC	A4	-	3	30	Bond Pull over Ball Post T/C 500 Cycles	Wires	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	1000 Cycles	1/70/0	3/210/0
TC	A4	-	3	1	Cross Section, Post T/C 1000 Cycles	Completed	1/1/0	3/3/0
TC	A4	-	3	22	SAM Analysis, Post T/C, 1000 Cycles	Completed	1/22/0	3/66/0
TC	A4	-	3	30	Wire Bond Shear, Post T/C 1000 Cycles	Wires	1/30/0	3/81/0
TC	A4	-	3	30	Bond Pull over Stitch, Post T/C, 1000 Cycles	Wires	1/30/0	3/81/0
TC	A4	-	3	30	Bond Pull over Ball, Post T/C, 1000 Cycles	Wires	1/30/0	3/81/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	1000 Cycles	N/A	N/A
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	2000 Cycles	N/A	N/A
HTSL	A6	JEDEC JESD22-A103	3	45	High Temp Storage Bake 150C	1000 Hours	1/77/0	-
HTSL	A6	-	3	1	Cross Section, Post HTSL 1000 Hours	Completed	-	-
HTSL	A6	JEDEC JESD22-A103	3	44	High Temp Storage Bake 150C	2000 Hours	1/76/0	-
HTSL	A6	-	3	1	Cross Section, Post HTSL 2000 Hours	Completed	1/1/0	-
HTSL	A6	JEDEC JESD22-A103	3	45	High Temp Storage Bake 175C	500 Hours	-	3/135/0
HTSL	A6	-	3	1	Cross Section, Post HTSL 500 Hours	Completed	-	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: UCC5350MCGDRQ1	Qual Device: ISO6721BQDRQ1
HTSL	A6	JEDEC JESD22-A103	3	44	High Temp Storage Bake 175C	1000 Hours	-	3/132/0
HTSL	A6	-	3	1	Cross Section, Post HTSL 1000 Hours	Completed	-	3/3/0
Test Group C – Package Assembly Integrity Tests								
WBS	C1	AEC Q100-001	3	30	Wire Bond Shear, Cpk>1.67	Wires	1/30/0	3/90/0
WBP	C2	MIL-STD883 Method 2011	3	30	Bond Pull over Ball, Cpk >1.67	Wires	1/30/0	3/90/0

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST & TC samples, as applicable.

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

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: R-CHG-2108-038 and 20190819-131120

For questions regarding this notice, e-mails can be sent to the contacts shown below or your local Field Sales Representative.

Location	E-Mail
WW Change Management Team	PCN_ww_admin_team@list.ti.com

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