



12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN# 20240610001.1

**Qualification of additional Assembly Site (MLA), BOM options for select devices
Change Notification / Sample Request**

Date: June 11, 2024

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 **30** days of the date of this notice. Lack of acknowledgement of this notice within 30 days constitutes acceptance and approval of this change. If samples or additional data are required, requests must be received within **30 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.

Sincerely,

Change Management Team
SC Business Services

20240610001.1

Attachment: 1

Products Affected:

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

DEVICE	CUSTOMER PART NUMBER
AMC1106E05DWV	NULL
AMC1106M05DWVR	NULL
AMC1202DWVR	NULL
AMC1300BDWV	NULL
AMC1300BDWVR	NULL
AMC1300DWV	NULL
AMC1300DWVR	NULL
AMC1301DWV	NULL
AMC1301DWVR	NULL
AMC1301SDWV	NULL
AMC1301SDWVR	NULL
AMC1302DWV	NULL
AMC1302DWVR	NULL
AMC1303E2520DWVR	NULL
AMC1303M0510DWV	NULL
AMC1303M0520DWV	NULL
AMC1303M2510DWV	NULL
AMC1303M2510DWVR	NULL
AMC1303M2520DWV	NULL
AMC1303M2520DWVR	NULL
AMC1306E05DWV	NULL
AMC1306E25DWVR	NULL
AMC1306M05DWV	NULL
AMC1306M05DWVR	NULL
AMC1306M25DWV	NULL
AMC1306M25DWVR	NULL
AMC1306M25EDWVR	NULL
AMC1311BDWV	NULL
AMC1311BDWVR	NULL
AMC1311DWV	NULL
AMC1311DWVR	NULL
AMC1333M10DWVR	NULL
AMC1336DWVR	NULL
AMC1350DWV	NULL
AMC1350DWVR	NULL
AMC1351DWV	NULL
AMC1351DWVR	NULL

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

PCN Number:	20240610001.1	PCN Date:	June 11, 2024
Title:	Qualification of additional Assembly Site (MLA), BOM options for select devices		
Customer Contact:	Change Management team	Dept:	Quality Services
Proposed 1st Ship Date:	September 09, 2024	Sample requests accepted until:	July 11, 2024*

*Sample requests received after July 11, 2024 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 type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Material
<input checked="" 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 the qualification of additional Assembly Site, BOM options for the devices listed below.

Group 1: (Devices will remain at the current assembly site)

	Current	Proposed
Wire diam/type	0.96mil Au (Die to die)	0.80mil Cu
	0.96mil Au or 1.0mil Cu (Die to lead)	0.80mil Cu
Top side marking	TI logo, with G4	TI letter, remove G4

Group 2:

	TAI	MLA
Wire diam/type	0.96mil Au (Die to die)	0.80mil Cu
	0.96mil Au or 1.0mil Cu (Die to lead)	0.80mil Cu
Top side marking	TI logo, with G4	TI letter, remove G4

Qual details are provided in the Qual Data Section.

Reason for Change:

Supply Continuity

- 1) To align with world technology trends and use wiring with enhanced mechanical and electrical properties
- 2) Maximize flexibility within our Assembly/Test production sites.
- 3) Cu is easier to obtain and stock

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 Information:

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

Sample product shipping label (not actual product label):



Product Affected: Group 1

AMC1106E05DWV	AMC1301SDWV	AMC1303M2510DWV	AMC1311DWVR
AMC1106M05DWV	AMC1301SDWVR	AMC1303M2520DWV	AMC1336DWV
AMC1290DWV	AMC1302DWV	AMC1306E05DWV	AMC1350DWV
AMC1300BDWV	AMC1303E0510DWV	AMC1306E25DWV	AMC1351DWV
AMC1300BDWVR	AMC1303E0520DWV	AMC1306M05DWV	SN201811022DWVR
AMC1300DWV	AMC1303E2510DWV	AMC1306M25DWV	TLA7002DWVR
AMC1300DWVR	AMC1303E2520DWV	AMC1311BDWV	TLA7312DWVR
AMC1301DWV	AMC1303M0510DWV	AMC1311BDWVR	
AMC1301DWVR	AMC1303M0520DWV	AMC1311DWV	

Product Affected: Group 2

AMC1106E05DWVR	AMC1303E0520DWVR	AMC1303M2520DWVR	AMC1333M10DWVR
AMC1106M05DWVR	AMC1303E2510DWVR	AMC1306E05DWVR	AMC1336DWVR
AMC1202DWVR	AMC1303E2520DWVR	AMC1306E25DWVR	AMC1350DWVR
AMC1290DWVR	AMC1303M0510DWVR	AMC1306M05DWVR	AMC1351DWVR
AMC1302DWVR	AMC1303M0520DWVR	AMC1306M25DWVR	SN201811023DWVR
AMC1303E0510DWVR	AMC1303M2510DWVR	AMC1306M25EDWVR	TLA8062DWVR

Group 1 Qualification Report
 Automotive Qualification Summary
 (As per AEC-Q100 Rev. H and JEDEC Guidelines)
 Approve Date 31-January-2024

Product Attributes

Attributes		Qual Device: AMC1311BQDWVRQ1	QBS Process Reference: INA215AQDCKRQ1	QBS Process Reference: ISO7741FQDWQ1	QBS Process, Product Reference: AMC1311BQDWQ1	QBS Package, Process, Product Reference: AMC1311CQDWVRQ1	QBS Package Reference: AMC1305M25QDWQ1
Automotive Grade Level		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
Product Function		Signal Chain	Signal Chain	Interface	Signal Chain	Signal Chain	Signal Chain
Wafer Fab Supplier		AIZU, AIZU, MH8, MH8	AIZU	MH8, MH8	MH8, AIZU, MH8, AIZU	AIZU, MH8, MH8, AIZU	DP1DM5, DP1DM5, AIZU
Assembly Site		TAI	TFME	TAI	TAI	TAI	TAI
Package Group		SOIC	SOT	SOIC	SOIC	SOIC	SOIC
Package Designator		DWV	DCK	DW	DWV	DWV	DW
Pin Count		8	6	16	8	8	16

QBS: Qual By Similarity

Qual Device AMC1311BQDWVRQ1 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: AMC1311BQDWVRQ1	QBS Process Reference: INA215AQDCKRQ1	QBS Process Reference: ISO7741FQDWQ1	QBS Process, Product Reference: AMC1311BQDWQ1	QBS Package, Process, Product Reference: AMC1311CQDWVRQ1	QBS Package Reference: AMC1305M25QDWQ1
Test Group A - Accelerated Environment Stress Tests													
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	-	-	-	-	-	-	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL3 260C	-	1/Pass	-	-	-	3/Pass	3/Pass
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	3/231/0	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	-	-	-	-	-	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Unbiased HAST	130C/85%RH	96 Hours	-	-	-	-	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	3/231/0
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	-	-	-	-	-	1/5/0
TC-SAM	A4	-	3	3	Post TC SAM	<50% delamination	-	-	-	-	-	3/36/0	-
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	-	-	-
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test	150C	408 Hours	-	-	-	3/231/0	1/77/0	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate	125C	48 Hours	-	3/2400/0	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
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
PD	C4	JEDEC JESD22-B100 and B108	3	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					
TDDB	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	-	Completed Per Process Technology Requirements					
HCI	D3	JESD60 & 28	-	-	Hot Carrier Injection	-	-	Completed Per Process Technology Requirements					
BTI	D4	-	-	-	Bias Temperature Instability	-	-	Completed Per Process Technology Requirements					
SM	D5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements					

Test Group E - Electrical Verification Tests														
ESD	E2	AEC Q100-002	1	3	ESD HBM	-	2000 Volts	-	-	-	-	-	1/3/0	-
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	750 Volts	-	-	-	-	-	1/3/0	-
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	-	-	-	-	1/6/0	1/6/0	-
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	-	3/90/0	3/90/0	-

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/>

Qualification Report

Automotive Qualification Summary

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

Approve Date 18-March-2024

Product Attributes

Attributes	Qual Device: AMC1311BQDWVRQ1	QBS Process Reference: INA215AQDCKRQ1	QBS Process Reference: ISO7741EQDWQ1	QBS Package Reference: ISO6763QDWQ1	QBS Package, Process Reference: ISO452DWR	QBS Process, Product Reference: AMC1311CQDWVRQ1	QBS Process, Product Reference: AMC1311BQDWVRQ1
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	Signal Chain	Signal Chain	Interface	Interface	Power Management	Signal Chain	Signal Chain
Wafer Fab Supplier	AIZU, AIZU, MH8, MH8	AIZU	MH8, MH8	RFAB, RFAB	DP1DM5, DP1DM5, MH8	MH8, MH8, AIZU, AIZU	AIZU, AIZU, MH8, MH8
Assembly Site	MLA	TFME	TAI	MLA	MLA	MLA	TAI
Package Group	SOIC	SOT	SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator	DWV	DCK	DW	DW	DW	DWV	DWV
Pin Count	8	6	16	16	16	8	8

QBS: Qual By Similarity

Qual Device AMC1311BQDWVRQ1 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: AMC1311BQDWVRQ1	QBS Process Reference: INA215AQDCKRQ1	QBS Process Reference: ISO7741FQDWQ1	QBS Package Reference: ISO6763QDWQRQ1	QBS Package, Process Reference: ISO5452DWR	QBS Process, Product Reference: AMC1311CQDWVRQ1	QBS Process, Product Reference: AMC1311BQDWVRQ1
Test Group A - Accelerated Environment Stress Tests														
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	-	-	-	-	3/Pass	1/Pass	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	-	-	-	1/77/0	-	-
AC/uHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	-	-	-	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	1/77/0	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	-	3/135/0	1/45/0	-	-
Test Group B - Accelerated Lifetime Simulation Tests														
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test	125C	1000 Hours	-	3/231/0	3/231/0	-	-	-	-
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test	150C	408 Hours	-	-	-	-	-	1/77/0	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate	125C	48 Hours	-	3/2400/0	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	-	-	-
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	-	-	-
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	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDBB	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
HCI	D3	JESD60 & 28	-	-	Hot Carrier Injection	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
BTI	D4	-	-	-	Bias Temperature Instability	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
SM	D5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
Test Group E - Electrical Verification Tests														
ESD	E2	AEC Q100-002	1	3	ESD HBM	-	2000 Volts	-	-	-	-	-	1/3/0	-
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	750 Volts	-	-	-	-	-	1/3/0	-
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	-	-	-	-	-	1/6/0	-
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67, Room, hot, and cold	-	-	-	-	-	-	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/>

Group 2 Qualification Report

Automotive Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)
Approve Date 19-May-2022

Product Attributes

Attributes		Qual Device: <u>AMC1306M25QDWVRQ1</u>	QBS Product Reference: <u>AMC1300BQDWVRQ1</u>	QBS Process Reference: <u>AMC1305M25QDWWRQ1</u>	QBS Process Reference: <u>INA210BQDCKRQ1</u>	QBS Process Reference: <u>INA215AQDCKRQ1</u>
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	Signal Chain	Signal Chain	Signal Chain	Signal Chain	Signal Chain	Signal Chain
Wafer Fab Supplier	AIZU, MH8	AIZU, MH8	AIZU, DM5	AIZU	AIZU	AIZU
Die Revision	A, B	A, B	B, C, D, G	D	C	C
Assembly Site	MLA	MLA	TITL (TAI)	NFME	NFME	NFME
Package Type	SOIC	SOIC	SOIC	SOT	SOT	SOT
Package Designator	DWV	DWV	DW	DCK	DCK	DCK
Ball/Lead Count	8	8	16	8	8	8

- QBS: Qual By Similarity

- Qual Device AMC1306M25QDWVRQ1 is qualified at LEVEL3-260C

- Device AMC1306M25QDWVRQ1 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>AMC1306M25QDWVRQ1</u>	QBS Product Reference: <u>AMC1300BQDWVRQ1</u>	QBS Process Reference: <u>AMC1305M25QDWWRQ1</u>	QBS Process Reference: <u>INA210BQDCKRQ1</u>	QBS Process Reference: <u>INA215AQDCKRQ1</u>
Test Group A – Accelerated Environment Stress Tests											
PC	A 1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning Level 2	Level 2-260C	-	-	-	-	3/948/0
PC	A 1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning Level 3	Level 3	-	-	3/960/0	-	-
HAST	A 2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	-	3/231/0
AC	A 3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	-	-	3/231/0	-	3/231/0
TC	A 4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0	-	3/231/0
PTC	A 5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	-	-	-	-
HTSL	A 6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	-	-	1/45/0	-	1/45/0
Test Group B – Accelerated Lifetime Simulation Tests											
HTOL	B 1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	-	-	-	-	3/231/0
HTOL	B 1	JEDEC JESD22-A108	3	77	Life Test, 150C	408 Hours	-	-	3/231/0	-	-
ELFR	B 2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	3/2400/0

ELFR	B 2	AEC Q100-008	3	800	Early Life Failure Rate, 150C	24 Hours	-	-	12/25/05/0	-	-
EDR	B 3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	-	-	-	-
Test Group C – Package Assembly Integrity Tests											
WBS	C 1	AEC Q100-001	1	30	Auto Wire Bond Shear	Wires	-	1/30/0	-	-	1/30/0
WBP	C 2	MIL-STD883 Method 2011	1	30	Auto Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.33, Ppk>1.67	1/30/0	1/30/0	3/90/0	-	1/30/0
LI	C 6	JEDEC JESD22-B105	1	50	Lead Fatigue	To Destruction	-	-	1/50/0	-	-
Test Group D – Die Fabrication Reliability Tests											
EM	D 1	JESD81	-	-	Electromigration	-	Completed Per Process Technology Requirements	-	-	-	-
TDD B	D 2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	Completed Per Process Technology Requirements	-	-	-	-
HCI	D 3	JESD80 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	-	-	-	-
NBTI	D 4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	-	-	-	-
SM	D 5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	-	-	-	-
Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: AMC1306M25QDWVR Q1	QBS Product Reference: AMC1300BQDWVR Q1	QBS Process Reference: AMC1305M25QDWVR Q1	QBS Process Reference: INA210BQDCKRQ 1	QBS Process Reference: INA215AQDCKRQ 1
Test Group E – Electrical Verification Tests											
HBM	E 2	AEC Q100-002	1	3	ESD - HBM - Q100	4000V	-	-	1/3/0	-	-
CDM	E 3	AEC Q100-011	1	3	ESD - CDM - Q100	1500V	-	-	1/3/0	-	-
LU	E 4	AEC Q100-004	1	6	Latch-up	(Per AEC-Q100-004)	1/6/0	1/6/0	1/6/0	1/6/0	-
ED	E 5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67	1/30/0	1/30/0	3/90/0	9/270/0	-
MQ			-	-	Manufacturability (Auto Assembly)	(per automotive requirements)	Pass	Pass	Pass	-	Pass
YLD			-	-	FTY and Bin Summary	-	Pass	Pass	-	-	-

A1 (PC): Preconditioning:

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

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I) : -40°C to +85°C

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

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

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

Automotive Qualification Summary
 (As per AEC-Q100 and JEDEC Guidelines)
 Approve Date 19-May-2022

Product Attributes

Attributes		Qual Device: <u>AMC1311CQDWVRQ1</u>	QBS Process Reference: <u>INA210BQDCKRQ1</u>	QBS Process Reference: <u>INA215AQDCKRQ1</u>	QBS Process Reference: <u>ISO7741FQDWQ1</u>
Automotive Grade Level		Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range		-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function		Signal Chain	Signal Chain	Signal Chain	Interface
Wafer Fab Supplier		AIZU, MIHO	AIZU	AIZU	MIHO
Die Revision		A, B	D	C	A
Assembly Site		MLA	NFME	NFME	TAI
Package Type		SOIC	SOT	SOT	SOIC
Package Designator		DWV	DCK	DCK	DW
Ball/Lead Count		8	6	6	16

- QBS: Qual By Similarity

- Qual Device AMC1311CQDWVRQ1 is qualified at LEVEL3-260C

- Device AMC1311CQDWVRQ1 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>AMC1311CQDWV RQ1</u>	QBS Process Reference: <u>INA210BQDCK RQ1</u>	QBS Process Reference: <u>INA215AQDCK RQ1</u>	QBS Process Reference: <u>ISO7741FQD WQ1</u>
Test Group A – Accelerated Environment Stress Tests										
PC	A 1	JEDEC J-STD-020 JESD2 2-A113	3	77	Automotive Preconditioning Level 2	Level 2-260C	-	-	3/948/0	3/1304/0
PC	A 1	JEDEC J-STD-020 JESD2 2-A113	3	77	Automotive Preconditioning Level 3	Level 3-260C	3/0/0	-	-	-
HAST	A 2	JEDEC JESD2 2-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-	3/231/0	3/231/0
AC	A 3	JEDEC JESD2 2-A102	3	77	Autoclave 121C	96 Hours	-	-	3/231/0	3/231/0
UHAS T	A 3	JEDEC JESD2 2-A102	3	77	Auto Unbiased Hast 130C/85%RH	96 Hours	3/77/0	-	-	-
TC	A 4	JEDEC JESD2 2-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	3/231/0	-
PTC	A 5	JEDEC JESD2 2-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	-	-	-
HTSL	A 6	JEDEC JESD2 2-A103	1	45	High Temp Storage Bake 175C	500 Hours	3/135/0	-	1/45/0	3/231/0

Test Group B – Accelerated Lifetime Simulation Tests										
HTOL	B 1	JEDEC JESD2 2-A108	3	77	Auto High Temp Operating Life Grade 1	150C(408 Hours); VCC max	1/77/0	-	-	-
HTOL	B 1	JEDEC JESD2 2-A108	3	77	Life Test, 125C	1000 Hours	-	-	3/231/0	3/231/0
ELFR	B 2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	3/2400/0	6/2654/0
EDR	B 3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	-	-	-
Test Group C – Package Assembly Integrity Tests										
WBS	C 1	AEC Q100-001	1	30	Auto Wire Bond Shear	Wires	3/30/0	-	1/30/0	3/228/0
Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: AMC1311CQDWV RQ1	QBS Process Reference: INA210BQDCK RQ1	QBS Process Reference: INA215AQDCK RQ1	QBS Process Reference: ISO7741FQD WQ1
WBP	C 2	MIL-STD883 Method 2011	1	30	Auto Wire Bond Pull	Wires	3/30/0	-	1/30/0	3/228/0
SD	C 3	JEDEC JESD2 2-B102	1	15	Surface Mount Solderability >95% Lead Coverage	Pb-free	1/15/0	-	-	-
SD	C 3	JEDEC JESD2 2-B102	1	15	Surface Mount Solderability >95% Lead Coverage	Pb	1/15/0	-	-	-
PD	C 4	JEDEC JESD2 2-B100 and B108	3	10	Auto Physical Dimensions	Cpk>1.67	3/10/0	-	-	-
LI	C 6	JEDEC JESD2 2-B105	1	50	Lead Integrity	Leads	1/24/0	-	-	-
Test Group D – Die Fabrication Reliability Tests										
EM	D 1	JESD6 1	-	-	Electromigration	-	Completed Per Process Technology Requirements	-	-	-
TDDB	D 2	JESD3 5	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	-	-	-
HCI	D 3	JESD6 0 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	-	-	-

NBTI	D 4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	-	-	-
SM	D 5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	-	-	-
Test Group E – Electrical Verification Tests										
HBM	E 2	AEC Q100-002	1	3	Auto ESD HBM	4000V	1/3/0	1/3/0	-	-
CDM	E 3	AEC Q100-011	1	3	Auto ESD CDM	1500V	1/3/0	1/3/0	-	1/3/0
LU	E 4	AEC Q100-004	1	6	Latch-up	(per AEC-Q100-004)	1/6/0	1/6/0	-	1/6/0
ED	E 5	AEC Q100-009	3	30	Auto Electrical	Cpk>1.67 Room, hot,	1/30/0	9/270/0	-	3/90/0
					Distributions	and cold test				
Additional Tests										
-	-	-	-	-	Bond Pull, over ball	Minimum of 5 devices, 30 wires Cpk>1.67	3/30/0	-	-	-
-	-	-	-	-	Bond Pull, over stitch	Minimum of 5 devices, 30 wires Cpk>1.67	3/30/0	-	-	-
FLAM			-	-	Flammability	Method A - UL94 V-0	1/5/0	-	-	-
FLAM			-	-	Flammability	Method B - IEC 695-2-2	1/5/0	-	-	-
FLAM			-	-	Flammability	Method C - UL 1694	1/5/0	-	-	-
MQ			-	-	Manufacturability (Auto Assembly)	(per automotive requirements)	Pass	-	Pass	Pass
MQ			-	-	Manufacturability (Wafer Fab)	(per mfg. Site specification)	Pass	-	-	-
MSL			-	-	Thermal Path Integrity	L3-260C	3/12/0	-	-	-

A1 (PC): Preconditioning:

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

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I) : -40°C to +85°C

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

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Automotive Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)
Approve Date 19-May-2022

Product Attributes

Attributes		Qual Device: <u>AMC1300BQDWVRQ1</u>	QBS Product Reference: <u>AMC1311CQDWVRQ1</u>	QBS Process Reference: <u>AMC1305M25QDWVRQ1</u>	QBS Process Reference: <u>INA215AQDCKRQ1</u>
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C	-40 to +125 C
Product Function	Signal Chain	Signal Chain	Signal Chain	Signal Chain	Signal Chain
Wafer Fab Supplier	AIZU, MH8	AIZU, MH8	AIZU, DM5-DALLAS, DMOS 5	AIZU	
Die Revision	A, B	A, B	BC, D, G	C	
Assembly Site	MLA	MLA	TITL (TAI)	NFME	
Package Type	SOIC	SOIC	SOIC	SOT	
Package Designator	DWV	DWV	DW	DCK	
Ball/Lead Count	8	8	16	6	

- QBS: Qual By Similarity

- Qual Device AMC1300BQDWVRQ1 is qualified at LEVEL3-260C

- Device AMC1300BQDWVRQ1 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>AMC1300BQDWVRQ1</u>	QBS Product Reference: <u>AMC1311CQDWVRQ1</u>	QBS Process Reference: <u>AMC1305M25QDWVRQ1</u>	QBS Process Reference: <u>INA215AQDCKRQ1</u>
Test Group A – Accelerated Environment Stress Tests										
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning Level 2	Level 2-260C	-	-	-	3/948/0
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning Level 3	L3-260C	-	3/0/0	3/960/0	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	3/231/0	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	-	-	3/231/0	3/231/0
UHAST	A3	JEDEC JESD22-A102	-	-	Unbiased HAST 130C/85%RH	96 Hours	-	3/231/0	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	-	3/231/0	3/231/0	3/231/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	-	3/135/0	1/45/0	1/45/0
Test Group B – Accelerated Lifetime Simulation Tests										
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	-	-	-	3/231/0
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	408 Hours	-	1/77/0	3/231/0	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/2400/0
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 150C	24 Hours	-	-	12/2505/0	-
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	-	-	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: AMC1300BQDWVRQ1	QBS Product Reference: AMC1311CQDWVRQ1	QBS Process Reference: AMC1305M25QDWVRQ1	QBS Process Reference: INA215AQDCKRQ1
Test Group C – Package Assembly Integrity Tests										
WBS	C1	AEC Q100-001	1	30	Auto Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	1/30/0	3/90/0	3/90/0	1/30/0
WBP	C2	MIL-STD883 Method 2011	1	30	Auto Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	1/30/0	3/90/0	3/90/0	1/30/0
SD	C3	JEDEC JESD22-B102	1	15	Pb Free Surface Mount Solderability	Pb Free	-	1/15/0	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Auto Physical Dimensions	Cpk>1.67	-	1/30/0	-	-
LI	C6	JEDEC JESD22-B105	1	50	Lead Pull	leads	1/24/0	1/24/0	1/5/0	-
Test Group D – Die Fabrication Reliability Tests										
EM	D1	JESD81	-	-	Electromigration	-	Completed Per Process Technology Requirements	-	-	-
TDDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	-	-	-
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	-	-	-
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	-	-	-
SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	-	-	-
Test Group E – Electrical Verification Tests										
HBM	E2	AEC Q100-002	1	3	Auto ESD HBM	4000V	1/3/0	-	-	-
CDM	E3	AEC Q100-011	1	3	Auto ESD CDM	1500V	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	-
ED	E5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67 Room, hot, and cold test	1/30/0	1/30/0	3/90/0	-
Additional Tests										
-			-	-	Automotive L3 Powered Moisture Sensitivity	L3-260C	-	3/36/0	-	-
FLAM			-	-	Flammability (IEC 6065-2-2)	Method B/IEC 6065-2-2	-	1/5/0	-	-
FLAM			-	-	Flammability (UL 94V-0)	Method A/UL 94V-0	-	1/5/0	-	-
FLAM			-	-	Flammability (UL-1694)	Method C/UL-1694	-	1/5/0	-	-
MQ			-	-	Manufacturability (Auto Assembly)	(per automotive requirements)	Pass	Pass	Pass	Pass
MQ			-	-	Manufacturability (Wafer Fab)	(per mfg. Site specification)	Pass	Pass	-	-
YLD			-	-	FTY and Bin Summary	-	Pass	-	-	-

A1 (PC): Preconditioning:

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

Ambient Operating Temperature by Automotive Grade Level:

Grade 0 (or E): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I) : -40°C to +85°C

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

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Automotive Qualification Summary
(As per AEC-Q100 and JEDEC Guidelines)
Approve Date 30-May-2017

Product Attributes

Attributes	Qual Device: AMC1200TDWVRQ1	QBS Product Reference: AMC1200TDWVRQ1	QBS Product Reference: AMC1200STDUBRQ1	QBS Package Reference: AMC1301QDWVRQ1
Operating Temp Range	-40 to +105 C	-40 to +105 C	-40 to +105 C	-40 to +125 C
Automotive Grade Level	Grade 2	Grade 2	Grade 2	Grade 1
Product Function	Signal Chain	Signal Chain	Signal Chain	Signal Chain
Wafer Fab Supplier	DMOS 5, TSMC	DMOS5, TSMC	DMOS 5, TSMC	DMOS5
Die Revision	F, G	F, G	C, F	A, B
Assembly Site	TAI	TAI	HANA THAILAND	TAI
Package Type	SOIC	SOIC	SOP	SOIC
Package Designator	DWV	DWV	DUB	DWV
Ball/Lead Count	8	8	8	8

- QBS: Qual By Similarity
 - Qual Device AMC1200TDWVRQ1 is qualified at LEVEL2-280C
 - Device AMC1200TDWVRQ1 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: AMC1200TDWVRQ1	QBS Product Reference: AMC1200TDWVRQ1	QBS Product Reference: AMC1200STDUBRQ1	QBS Package Reference: AMC1301QDWVRQ1
Test Group A – Accelerated Environment Stress Tests										
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 2-280C	3/599/0	3/1350/0	-	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning	Level 3-260C	-	-	-	3/900/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0	-	3/231/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	3/231/0	-	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	-	3/231/0
TC-BP	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Post Temp Cycle Bond Pull	Wires	1/30/0	1/30/0	-	1/50/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	N/A	N/A	N/A
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	1/45/0	3/135/0	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	-	-	-	3/135/0
Test Group B – Accelerated Lifetime Simulation Tests										
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	408 Hours	-	3/231/0	1/77/0	3/231/0
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	3/2400/1 (Note 1)	-	3/2400/0
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	--	N/A	-	-	-
Test Group C – Package Assembly Integrity Tests										
WBS	C1	AEC Q100-001	1	30	Bond Shear (Cpk>1.67)	Wires	3/90/0	3/90/0	-	3/231/0
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull (Cpk>1.67)	Wires	3/90/0	3/90/0	-	3/231/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free	1/15/0	1/15/0	-	1/15/0
SD	C3	JEDEC JESD22-B102	1	15	Solderability	Pb	1/15/0	1/15/0	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	--	-	3/30/0	-	3/30/0
SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Post HTSL/Bump	N/A	N/A	N/A	N/A
LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	Leads	-	-	-	-
Test Group D – Die Fabrication Reliability Tests										
EM	D1	JESD61	-	-	Electromigration	--	Completed Per Process Technology Requirements			
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	--	Completed Per Process Technology Requirements			
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	--	Completed Per Process Technology Requirements			
NBTI	D4	-	-	-	Negative Bias Temperature Instability	--	Completed Per Process Technology Requirements			
SM	D5	-	-	-	Stress Migration	--	Completed Per Process Technology Requirements			
Test Group E – Electrical Verification Tests										
HBM	E2	AEC Q100-002	1	3	ESD - HBM	2500 V	-	1/3/0	1/3/0	-
CDM	E3	AEC Q100-011	1	3	ESD - CDM	1000 V	-	1/3/0	1/3/0	-
LU	E4	AEC Q100-004	1	6	Latch-up	(Per AEC Q100-004)	-	1/6/0	1/12/0	-
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold test	-	3/90/0	-	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): -40°C to +150°C

Grade 1 (or Q): -40°C to +125°C

Grade 2 (or T): -40°C to +105°C

Grade 3 (or I) : -40°C to +85°C

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

Room/Hot/Cold : HTOL, ED

Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU

Room : AC/uHAST

Note 1: 1 failure due to EOS QTS FA453167-1

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

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