

PCN Number:	20230210001.1A		PCN Date:	April 11, 2023												
Title:	Qualification of TI Malaysia as an additional Assembly site for select devices															
Customer Contact:	PCN Manager	Dept:	Quality Services													
Proposed 1st Ship Date:	May 13, 2023	Sample requests accepted until:	Mar 13, 2023*													
*Sample requests received after Mar 13, 2023 will not be supported.																
Change Type:																
☒	Assembly Site	☐	Design	☐												
☐	Assembly Process	☐	Data Sheet	☐												
☐	Assembly Materials	☐	Part number change	☐												
☐	Mechanical Specification	☐	Test Site	☐												
☒	Packing/Shipping/Labeling	☐	Test Process	☐												
		☐	Wafer Bump Site													
		☐	Wafer Bump Material													
		☐	Wafer Bump Process													
		☐	Wafer Fab Site													
		☐	Wafer Fab Materials													
		☐	Wafer Fab Process													
PCN Details																
Description of Change:																
Revision A is to remove devices in the Product Affected Section (in bold character with strikethrough). This device will continue to be manufactured as prior and will not be subjected to the change described in this notification.																
Texas Instruments is pleased to announce the qualification of TI Malaysia as additional Assembly Site for Select Devices listed in the "Product Affected" Section. No material differences between sites.																
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Assembly Site</th> <th style="text-align: center;">Assembly Site Origin</th> <th style="text-align: center;">Assembly Country Code</th> <th style="text-align: center;">Assembly City</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">TI Taiwan</td> <td style="text-align: center;">TAI</td> <td style="text-align: center;">TWN</td> <td style="text-align: center;">Chung Ho, New Taipei City</td> </tr> <tr> <td style="text-align: center;">TI Malaysia</td> <td style="text-align: center;">MLA</td> <td style="text-align: center;">MYS</td> <td style="text-align: center;">Kuala Lumpur</td> </tr> </tbody> </table>					Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly City	TI Taiwan	TAI	TWN	Chung Ho, New Taipei City	TI Malaysia	MLA	MYS	Kuala Lumpur
Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly City													
TI Taiwan	TAI	TWN	Chung Ho, New Taipei City													
TI Malaysia	MLA	MYS	Kuala Lumpur													
Package Marking Differences:																
	TAI	MLA														
TI Bug	Include	Replace with "TI" text														
**ECAT	Include Value	Remove														
Example	\T/ YMLLLLS UCC21530 G4 O \T/ = TI LOGO YM = YEAR MONTH DATE CODE S = ASSY SITE CODE LLLL = LOT TRACE CODE G4 = ECAT VALUE O = PIN 1 INDICATOR	TI YMLLLLS UCC21530 O TI = TI LETTER YM = YEAR MONTH DATE CODE S = ASSY SITE CODE LLLL = LOT TRACE CODE O = PIN 1 INDICATOR														
** - Not all devices have ECAT information included in the symbolization, but for the ones that do, this information will be removed.																
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
☒ No Change	☒ No Change	☒ No Change	☒ No Change

Changes to product identification resulting from this PCN:

Assembly Site		
TI Taiwan	Assembly Site Origin (22L)	ASO: TAI
TI Malaysia	Assembly Site Origin (22L)	ASO: MLA

Sample product shipping label (not actual product label)



Product Affected:

UCC21530DWK	UCC21540ADWK	UCC21540DWK	UCC21542ADWKR
UCC21530DWKR	UCC21540ADWKR	UCC21540DWKR	UCC21542DWKR

Qualification Report

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

Approve Date 31-Jan-2023

Product Attributes

Attributes	Qual Device: UCC21320QDWKRQ1	QBS Reference: ISQW7841EQDWEQ1	QBS Reference: UCC21520QDWRQ1	QBS Reference: ISO7741FEDWRQ1	QBS Reference: ISO6741QDWQ1	QBS Reference: UCC21520AQDWRQ1	QBS Reference: TMP451AQDQERQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 0	Grade 1	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 125	-40 to 125	-40 to 125	-40 to 150	-40 to 125	-40 to 125	-40 to 125
Product Function	Power Management	Interface	Power Management	Interface	Interface	Power Management	Power Management
Wafer Fab Supplier	DP1DM5, DP1DM5, DP1DM5	DP1DM5, DP1DM5	DP1DM5, DP1DM5	MH8, MH8	MH8, MH8	MH8, MH8, MH8	DP1DM5
Assembly Site	MLA	TAI	TAI	TAI	MLA	MLA	UTL1
Package Group	SOIC	SOIC	SOIC	SOIC	SOIC	SOIC	QFN
Package Designator	DWK	DWE	DW	DW	DW	DW	DQF
Pin Count	14	16	16	16	16	16	8

QBS: Qual By Similarity

Qual Device UCC21320QDWKRQ1 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: UCC21320QDWKRQ1	QBS Reference: ISOW7841FQDWEQ1	QBS Reference: UCC21520QDWRQ1	QBS Reference: SO7741FEDWRQ1	QBS Reference: ISOW6741QDWRQ1	QBS Reference: UCC21520AQDWRQ1	QBS Reference: TMP451AQDQFRQ1
Test Group A - Accelerated Environment Stress Tests														
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL2 260C	1 Step	No Fails	-	-	-	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	-	-	-	-	3/231/0	3/231/0	-
ACU/HAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	3/231/0	-	-	-	3/231/0	3/231/0	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	3/231/0	-	-	-	3/231/0	3/231/0	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	-	-	3/135/0	-	-
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	-	3/231/0	3/231/0	-	3/231/0	1/77/0	-
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	150C	1000 Hours	-	-	-	3/231/0	-	-	-
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	150C	408 Hours	-	-	-	-	-	-	3/231/0
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	125C	48 Hours	-	3/840/3 ¹	-	-	-	-	-
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	150C	24 Hours	-	-	-	-	-	-	3/2400/0
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	150C	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	3/90/0	3/90/0	3/90/0	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	3/90/0	3/90/0	3/90/0	3/90/0
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	1/15/0	1/15/0	1/15/0	1/15/0	1/15/0	-
SD	C3	JEDEC J-STD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	1/15/0	1/15/0	1/15/0	1/15/0	1/15/0	-
PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	3/30/0	2/20/0	3/30/0	3/30/0	3/30/0	3/30/0	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	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDD8	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
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	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	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	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	3/90/0	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>

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

Location	E-Mail
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