PCN Number:	20200124000.2	**PCN Date:**	Jan 31 2020
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:	Jul 29 2020	**Estimated Sample Availability:**	Date provided at sample request

Change Type:

☒	Assembly Site	☐	Design	☐	Wafer Bump Site
☐	Assembly Process	☐	Data Sheet	☐	Wafer Bump Material
☐	Assembly Materials	☐	Part number change	☐	Wafer Bump Process
☐	Mechanical Specification	☒	Test Site	☐	Wafer Fab Site
☐	Packing/Shipping/Labeling	☐	Test Process	☐	Wafer Fab Materials
				☐	Wafer Fab Process

PCN Details

Description of Change:

Texas Instruments is pleased to announce the qualification of TI Malaysia as an additional assembly and test site for the list of devices below. There are no construction differences between the current and new site.

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

Reason for Change:

Continuity of Supply

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None

Anticipated impact on Material Declaration

☒	No Impact to the Material Declaration	☐	Material Declarations or Product Content reports are driven from production data and will be available following the production release. Upon production release the revised reports can be obtained at the site link below http://www.ti.com/quality/docs/materialcontentsearch.tsp

Changes to product identification resulting from this PCN:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TI Mexico	MEX	MEX	Aguascalientes
TI Malaysia	**MLA**	**MYS**	**Kuala Lumpur**

Sample product shipping label (not actual product label)

Product Affected:

TCAN1042DQ1	TCAN1042HGVDQ1	TCAN1043HDQ1	TCAN1051HDRQ1

TCAN1042DRQ1	TCAN1042HGVDRQ1	TCAN1043HDRQ1	TCAN1051HGDQ1
TCAN1042GDQ1	TCAN1042HVDQ1	TCAN1043HGDQ1	TCAN1051HGDRQ1
TCAN1042GDRQ1	TCAN1042HVDRQ1	TCAN1043HGDRQ1	TCAN1051HGVDQ1
TCAN1042GVDQ1	TCAN1042VDQ1	TCAN1051DQ1	TCAN1051HGVDRQ1
TCAN1042GVDRQ1	TCAN1042VDRQ1	TCAN1051DRQ1	TCAN1051HVDQ1
TCAN1042HDQ1	TCAN1043DQ1	TCAN1051GDQ1	TCAN1051HVDRQ1
TCAN1042HDRQ1	TCAN1043DRQ1	TCAN1051GVDQ1	TCAN1051VDQ1
TCAN1042HGDQ1	TCAN1043GDQ1	TCAN1051GVDRQ1	TCAN1051VDRQ1
TCAN1042HGDRQ1	TCAN1043GDRQ1	TCAN1051HDQ1	TCAN1051GDRQ1

TI Information
Selected Disclosure

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: TCAN1043DQ1	QBS Product Reference: TCAN1043DQ1 (FMX)	QBS Product Family Reference: TCAN1042DQ1	QBS Product Family Reference: TCAN1042HVDQ1	QBS Product Family Reference: TCAN1051VDQ1	QBS Process Reference: TCAN1042HVDRQ1	QBS Process Reference: TCAN1051VDRQ1
Test Group A – Accelerated Environment Stress Tests													
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	No Fails	-	No Fails	No Fails	1 Fail (1)	No Fails	No Fails
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-	1/77/0	1/77/0	1/77/0	2/154/0	1/77/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	-	1/77/0	1/77/0	1/77/0	2/154/0	1/77/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-	1/77/0	1/77/0	1/77/0	2/154/0	1/77/0
TC-WBP	A4	MIL-STD883 Method 2011	1	60	Bond Pull Post T/C 500 Cycles	Wires	1/60/0	-	1/30/0	1/30/0	1/30/0	2/60/0	1/30/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	N/A	-	-	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 175C	500 Hours	1/45/0	-	-	-	-	2/90/0	1/45/0

Type	#	Test Spec	Min Lot Qty	SS/ Lot	Test Name / Condition	Duration	Qual Device: TCAN1043DQ1	QBS Product Reference: TCAN1043DQ1 (FMX)	QBS Product Family Reference: TCAN1042HVDQ1	QBS Product Family Reference: TCAN1042HVDQ1	QBS Product Family Reference: TCAN1051VDQ1	QBS Process Reference: TCAN1042HVDRQ1	QBS Process Reference: TCAN1051VDRQ1
Test Group B – Accelerated Lifetime Simulation Tests													
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	1/77/0	-	-	-	-	-	-
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	300 Hours	-	-	1/77/0	1/77/0	1/77/0	2/154/1 (2)	1/77/0
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	-	2/1600/0	1/800/0
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	N/A	-	-	-	-	-
Test Group C – Package Assembly Integrity Tests													
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear Cpk>1.67	Wires	1/30/0	-	-	-	-	2/60/0	1/30/0
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull Cpk>1.67	Wires	1/30/0	-	-	-	-	2/60/0	1/30/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	PB Free Solder	1/15/0	-	-	-	-	-	-
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	PB Solder	1/15/0	-	-	-	-	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk >1.67	3/30/0	-	-	-	-	-	-

							Qual Device: TCAN1043DQ1	QBS Product Reference: TCAN1043DQ1 (FMX)	QBS Product Family Reference:	QBS Product Family Reference: TCAN1042HVDQ1	QBS Product Family Reference: TCAN1051VDQ1	QBS Process Reference: TCAN1042HVDRQ1	QBS Process Reference: TCAN1051VDRQ1
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	4000 V	-	1/3/0	-	-	-	-	-
CDM	E3	AEC Q100-011	1	3	ESD - CDM	1500 V	-	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	1/30/0	3/90/0	-	-	-	-	-

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

TI Qualification ID: 20190404-129345

Notes/ Comments:
(1)EOS. QEM-EVAL-1905-00063. Discounted
(2)EOS. QEM-EVAL-1801-00348. Discounted

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: TCAN1042DQ1	Qual Device: TCAN1042HVDQ1	Qual Device: TCAN1051VDQ1	Qual Device: TCAN1051DQ1	QBS Product Reference: TCAN1042DQ1	QBS Product Reference: TCAN1042HVDRQ1	QBS Product Reference: TCAN1051DQ1	QBS Product Reference: TCAN1051VDRQ1
Test Group A – Accelerated Environment Stress Tests														
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	No Fails	No Fails	1 Fail (1)	No Fails	-	-	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	1/77/0	1/77/0	1/77/0	-	-	-	-	-
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	1/77/0	1/77/0	1/77/0	-	-	-	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	1/77/0	1/77/0	1/77/0	1/77/0	-	-	-	-
TC-BP	A4	MIL-STD883 Method 2011	1	60	Post Temp Cycle Bond Pull	Wires	1/50/0	1/50/0	1/50/0	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 175C	500 Hours	1/45/0	1/45/0	1/45/0	-	-	-	-	-
Test Group B – Accelerated Lifetime Simulation Tests														
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	300 Hours	1/77/0	1/77/0	1/77/0	-	-	-	-	-
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	-	2/1600/0	-	1/800/0
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	N/A	N/A	N/A	-	-	-	-
Test Group C – Package Assembly Integrity Tests														
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear Cpk>1.67	Wires	1/30/0	1/30/0	1/30/0	1/30/0	-	-	-	-
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull Cpk>1.67	Wires	1/30/0	1/30/0	1/30/0	1/30/0	-	-	-	-
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Free Solder	1/15/0	-	-	-	-	-	-	-
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Solder	1/15/0	-	-	-	-	-	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk > 1.67	-	1/10/0	1/10/0	1/10/0	-	-	-	-

								Qual Device: TCAN1042DQ1	Qual Device: TCAN1042HVDQ1	Qual Device: TCAN1051VDQ1	Qual Device: TCAN1051DQ1	QBS Product Reference: TCAN1042DQ1	QBS Product Reference: TCAN1042HVDRQ1	QBS Product Reference: TCAN1051DQ1	QBS Product Reference: TCAN1051VDRQ1
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	-	-	-	-
	TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	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 Injection Carrier	-	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	-	-	-	-
	SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	-	-	-	-

								Qual Device: TCAN1042DQ1	Qual Device: TCAN1042HVDQ1	Qual Device: TCAN1051VDQ1	Qual Device: TCAN1051DQ1	QBS Product Reference: TCAN1042DQ1	QBS Product Reference: TCAN1042HVDRQ1	QBS Product Reference: TCAN1051DQ1	QBS Product Reference: TCAN1051VDRQ1
Test Group E – Electrical Verification Tests															
	HBM	E2	AEC Q100-002	1	3	ESD - HBM	6000 V	-	-	-	-	1/3/0	1/3/0	1/3/0	1/3/0
	HBM	E2	AEC Q100-002	1	3	ESD - HBM (Bus Pins Only)	16000 V	-	-	-	-	1/3/0	1/3/0	1/3/0	1/3/0
	CDM	E3	AEC Q100-011	1	3	ESD - CDM	1500 V	-	-	-	-	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	1/30/0	1/30/0	1/30/0	1/30/0	1/30/0	3/90/0	1/30/0	3/90/0

A1 (PC): Preconditioning:
Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

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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

Notes/ Comments:
(1) EOS. QEM-EVAL-1905-00063. Discounted

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