

PCN Number:	20190718002.2		PCN Date:	Jul 24, 2019	
Title:	Qualification of MIHO8 and UTAC3 as an additional Fab and Assembly site options for select ABCD5HV devices				
Customer Contact:	PCN Manager		Dept:	Quality Services	
Proposed 1st Ship Date:	Jan 24, 2020		Estimated Sample Availability:	Date provided at sample request.	
Change Type:					
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Assembly Materials
<input type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification
<input type="checkbox"/>	Test Site	<input 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 checked="" 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 its MIHO8 and UTAC3 as additional fabrication facility and Assembly site options for the selected devices listed in the "Product Affected" section.					
Current Fab Site			Additional Fab Site		
Current Fab Site	Process	Wafer Diameter	Additional Fab Site	Process	Wafer Diameter
MAINEFAB	ABCD5HV	200 mm	MIHO8	ABCD5HV	200 mm
There are no construction differences between the 2 Assembly site options.					
Qual details are provided in the Qual Data Section.					
Reason for Change:					
Continuity of Supply					
Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):					
None					
Anticipated impact on Material Declaration					
<input checked="" type="checkbox"/>	No Impact to the Material Declaration	<input type="checkbox"/>	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:					
Fab Site Information:					
Chip Site	Chip Site Origin Code (20L)	Chip Site Country Code (21L)	Chip Site City		
MAINEFAB	CUA	USA	South Portland		
MIHO8	MH8	JPN	Ibaraki		
Assembly Site Information:					
Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly Site City		
UTAC1	NSE	THA	Bangkok		
UTAC3	NS3	THA	Bangpakong		

Sample product shipping label (not actual product label)



MADE IN: Malaysia
2DC: 2Q:



(1P) SN74LS07NSR
(Q) 2000 (D) 0336
(31T) LOT: 3959047MLA
(4W) TKY (1T) 7523483S12
(P)
(2P) REV: (V) 0033517
(20L) CSO: SHE (21L) CCO: USA
(22L) ASO: MLA (23L) ACO: MYS

MSL 2 / 260C / 1 YEAR SEAL DT
MSL 1 / 235C / UNLIM 03/29/04

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

Product Affected:

Group 1: MIH08 Fab and UTAC3 Assembly Site

TCAN1042DRBQ1	TCAN1042HGVDRBQ1	TCAN1043HDMTQ1	TCAN1051HDRBQ1
TCAN1042DRBQ1	TCAN1042HGVDRBQ1	TCAN1043HDMTQ1	TCAN1051HDRBQ1
TCAN1042DRBRQ1	TCAN1042HGVDRBRQ1	TCAN1043HDMTRQ1	TCAN1051HDRBRQ1
TCAN1042DRBRQ1	TCAN1042HGVDRBRQ1	TCAN1043HDMTRQ1	TCAN1051HDRBRQ1
TCAN1042DRBTQ1	TCAN1042HGVDRBTQ1	TCAN1043HDMTTQ1	TCAN1051HDRBTQ1
TCAN1042DRBTQ1	TCAN1042HGVDRBTQ1	TCAN1043HDMTTQ1	TCAN1051HDRBTQ1
TCAN1042GDRBQ1	TCAN1042HVDRBQ1	TCAN1043HGDMTQ1	TCAN1051HGDRBQ1
TCAN1042GDRBQ1	TCAN1042HVDRBQ1	TCAN1043HGDMTQ1	TCAN1051HGDRBQ1
TCAN1042GDRBRQ1	TCAN1042HVDRBRQ1	TCAN1043HGDMTRQ1	TCAN1051HGDRBRQ1
TCAN1042GDRBRQ1	TCAN1042HVDRBRQ1	TCAN1043HGDMTRQ1	TCAN1051HGDRBRQ1
TCAN1042GDRBTQ1	TCAN1042HVDRBTQ1	TCAN1043HGDMTTQ1	TCAN1051HGDRBTQ1
TCAN1042GDRBTQ1	TCAN1042HVDRBTQ1	TCAN1043HGDMTTQ1	TCAN1051HGDRBTQ1
TCAN1042GVDRBQ1	TCAN1042VDRBQ1	TCAN1051DRBQ1	TCAN1051HGVDRBQ1
TCAN1042GVDRBQ1	TCAN1042VDRBQ1	TCAN1051DRBQ1	TCAN1051HGVDRBQ1
TCAN1042GVDRBRQ1	TCAN1042VDRBRQ1	TCAN1051DRBRQ1	TCAN1051HGVDRBRQ1
TCAN1042GVDRBRQ1	TCAN1042VDRBRQ1	TCAN1051DRBRQ1	TCAN1051HGVDRBRQ1
TCAN1042GVDRBTQ1	TCAN1042VDRBTQ1	TCAN1051DRBTQ1	TCAN1051HGVDRBTQ1
TCAN1042GVDRBTQ1	TCAN1042VDRBTQ1	TCAN1051DRBTQ1	TCAN1051HGVDRBTQ1
TCAN1042HDRBQ1	TCAN1043DMTQ1	TCAN1051GDRBQ1	TCAN1051HVDRBQ1
TCAN1042HDRBQ1	TCAN1043DMTQ1	TCAN1051GDRBQ1	TCAN1051HVDRBQ1
TCAN1042HDRBRQ1	TCAN1043DMTRQ1	TCAN1051GDRBRQ1	TCAN1051HVDRBRQ1
TCAN1042HDRBRQ1	TCAN1043DMTRQ1	TCAN1051GDRBRQ1	TCAN1051HVDRBRQ1
TCAN1042HDRBTQ1	TCAN1043DMTTQ1	TCAN1051GDRBTQ1	TCAN1051HVDRBTQ1
TCAN1042HDRBTQ1	TCAN1043DMTTQ1	TCAN1051GDRBTQ1	TCAN1051HVDRBTQ1
TCAN1042HGDRBQ1	TCAN1043GDMTQ1	TCAN1051GVDRBQ1	TCAN1051VDRBQ1
TCAN1042HGDRBQ1	TCAN1043GDMTQ1	TCAN1051GVDRBQ1	TCAN1051VDRBQ1
TCAN1042HGDRBRQ1	TCAN1043GDMTRQ1	TCAN1051GVDRBRQ1	TCAN1051VDRBRQ1
TCAN1042HGDRBRQ1	TCAN1043GDMTRQ1	TCAN1051GVDRBRQ1	TCAN1051VDRBRQ1
TCAN1042HGDRBTQ1	TCAN1043GDMTTQ1	TCAN1051GVDRBTQ1	TCAN1051VDRBTQ1
TCAN1042HGDRBTQ1	TCAN1043GDMTTQ1	TCAN1051GVDRBTQ1	TCAN1051VDRBTQ1

Group 2: MIH08 Fab Site Only

TCAN1043DQ1	TCAN1043GDQ1	TCAN1043HDQ1	TCAN1043HGQ1
TCAN1043DRQ1	TCAN1043GDRQ1	TCAN1043HDRQ1	TCAN1043HGDRQ1

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

**TCAN1042/VDRBRQ1 and TCAN1051/VDRBQ1 in MIHO8 and UTL3 (Q100H, Q006, Grade 1, -40/125C)
Approved 09-May-2019**

Product Attributes

Attributes	Qual Device: TCAN1042DRBQ1	Qual Device: TCAN1042HVDRBQ1	Qual Device: TCAN1051VDRBQ1	Qual Device: TCAN1051DRBQ1	QBS Process Reference: TCAN1042HVDRQ1	QBS Process Reference: TCAN1051VDRQ1
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	Interface	Interface	Interface	Interface	Interface	Interface
Wafer Fab Supplier	MIHO 8	MIHO 8	MIHO 8	MIHO 8	MIHO8	MIHO8
Die Revision	A	B	A	A	B	A1
Assembly Site	UTL3	UTL3	UTL3	UTL3	FMX	FMX
Package Type	SON	SON	SON	SON	SOIC	SOIC
Package Designator	DRB	DRB	DRB	DRB	D	D
Ball/Lead Count	8	8	8	8	8	8

- QBS: Qual By Similarity

- Qual Devices TCAN1042DRBQ1, TCAN1042HVDRBQ1, and TCAN1051VDRBQ1 are qualified at LEVEL1-260C

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: TCAN1042DRBQ1 1	Qual Device: TCAN1042HVDRBQ1 1	Qual Device: TCAN1051VDRBQ1 1	Qual Device: TCAN1051DRBQ1 1	QBS Process Reference: TCAN1042HVDRQ1 1	QBS Process Reference: TCAN1051VDRQ1 1
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	No Fails	No Fails	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	-	2/154/0	1/77/0

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name / Condition	Duration	Qual Device: TCAN1042DRBQ1 1	Qual Device: TCAN1042HVDRBQ1 1	Qual Device: TCAN1051VDRBQ1 1	Qual Device: TCAN1051DRBQ1 1	QBS Process Reference: TCAN1042HVDRQ1 1	QBS Process Reference: TCAN1051VDRQ1 1
AC	A3	JEDEC JESD22 -A102	3	77	Autoclave 121C	96 Hours	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	1/77/0	1/77/0	1/77/0	1/77/0	2/154/0	1/77/0
TC-BP	A4	MIL-STD883 Method 2011	1	60	Post Temp Cycle Bond Pull	Wires	1/45/0 (1)	1/60/0	1/60/0	1/45/0 (1)	-	-
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	-	2/90/0	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	-	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	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	-	-

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name / Condition	Duration	Qual Device: <u>TCAN1042DRBQ</u> 1	Qual Device: <u>TCAN1042HVDRBQ</u> 1	Qual Device: <u>TCAN1051VDRBQ</u> 1	Qual Device: <u>TCAN1051DRBQ</u> 1	QBS Process Reference: <u>TCAN1042HVDRQ</u> 1	QBS Process Reference: <u>TCAN1051VDRQ</u> 1
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability, Dry Bake Precondition	PB-Free Solder	-	-	1/15/0	-	-	-
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability, Dry Bake Precondition	Pb Solder	-	-	1/15/0	-	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	-	-	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	-	-
TDD B	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	-	-
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	-	-
Test Group E – Electrical Verification Tests												
HBM	E2	AEC Q100-002	1	3	ESD - HBM	7000 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	-	-

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name / Condition	Duration	Qual Device: <u>TCAN1042DRBQ</u> 1	Qual Device: <u>TCAN1042HVDRBQ</u> 1	Qual Device: <u>TCAN1051VDRBQ</u> 1	Qual Device: <u>TCAN1051DRBQ</u> 1	QBS Process Reference: <u>TCAN1042HVDRQ</u> 1	QBS Process Reference: <u>TCAN1051VDRQ</u> 1
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	2/30/0	1/30/0

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: 20170831-123150

Notes:

- 1.) Pulled from 5 units
- 2.) EOS. QEM-EVAL-1801-00348. Discounted

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

**TCAN1043DMTRQ1 in Miho8 to Q100H and UTL3 (Grade 1, -40/125C)
Approved 09-May-2019**

Product Attributes

Attributes	Qual Device: <u>TCAN1043DMTQ1</u>	QBS Process Reference: <u>TCAN1042HVDRQ1</u>	QBS Process Reference: <u>TCAN1051VDRQ1</u>	QBS Package Reference: <u>TCAN1042DRBQ1</u>	QBS Package Reference: <u>TCAN1042HVDRBQ1</u>	QBS Package Reference: <u>TCAN1051VDRBQ1</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	Interface	Interface	Interface	Interface	Interface	Interface
Wafer Fab Supplier	MIHO8	MIHO8	MIHO8	MIHO8	MIHO8	MIHO8
Die Revision	C	B	A1	A	B	A
Assembly Site	UTL3	FMX	FMX	UTL3	UTL3	UTL3
Package Type	SON	SOIC	SOIC	SON	SON	SON
Package Designator	DMT	D	D	DRB	DRB	DRB
Ball/Lead Count	14	8	8	8	8	8

- QBS: Qual By Similarity

- Qual Device TCAN1043DMTQ1 is qualified at LEVEL2-260C

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>TCAN1043DMTQ1</u>	QBS Process Reference: <u>TCAN1042HVDRQ1</u>	QBS Process Reference: <u>TCAN1051VDRQ1</u>	QBS Product Family Reference: <u>TCAN1042DRBQ1</u>	QBS Product Family Reference: <u>TCAN1042HVDRBQ1</u>	QBS Product Family Reference: <u>TCAN1051VDRBQ1</u>
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	No Fails	No Fails
PC	A1	JEDEC J-STD-	3	77	Preconditioning	Level 2-260C	No Fails	-	-	-	-	-

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name / Condition	Duration	Qual Device: <u>TCAN1043DMTQ1</u>	QBS Process Reference: <u>TCAN1042HVDRQ1</u>	QBS Process Reference: <u>TCAN1051VDRQ1</u>	QBS Product Family Reference: <u>TCAN1042DRBQ1</u>	QBS Product Family Reference: <u>TCAN1042HVDRBQ1</u>	QBS Product Family Reference: <u>TCAN1051VDRBQ1</u>
		020 JESD22 -A113										
HAS T	A2	JEDEC JESD22 -A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	2/154/0	1/77/0	1/77/0	1/77/0	1/77/0
AC	A3	JEDEC JESD22 -A102	3	77	Autoclave 121C	96 Hours	3/231/0	2/154/0	1/77/0	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	3/231/1 (1)	2/154/0	1/77/0	1/77/0	1/77/0	1/77/0
TC-WBP	A4	MIL-STD883 Method 2011	1	60	Bond Pull over Ball Post T/C 500 Cycles	Wires	1/60/0	-	-	-	-	-
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	2/90/0	1/45/0	1/45/0	1/45/0	1/45/0
Test Group B – Accelerated Lifetime Simulation Tests												
HTO L	B1	JEDEC JESD22 -A108	3	77	Life Test, 125C	1000 Hours	3/231/0	-	-	-	-	-
HTO L	B1	JEDEC JESD22 -A108	3	77	Life Test, 150C	300 Hours	-	2/154/1 (2)	1/77/0	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	-	-	-	-	-

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name / Condition	Duration	Qual Device: TCAN1043DMTQ 1	QBS Process Reference: TCAN1042HVDRO 1	QBS Process Reference: TCAN1051VDRO 1	QBS Product Family Reference: TCAN1042DRBQ 1	QBS Product Family Reference: TCAN1042HVDRO 1	QBS Product Family Reference: TCAN1051VDRO 1
Test Group C – Package Assembly Integrity Tests												
WBS	C 1	AEC Q100-001	1	30	Wire Bond Shear Cpk>1.67	Wires	3/90/0	-	-	1/30/0	1/30/0	1/30/0
WBP	C 2	MIL-STD883 Method 2011	1	30	Bond Pull Cpk>1.67	Wires	3/90/0	-	-	1/30/0	1/30/0	1/30/0
SD	C 3	JEDEC JESD22-B102	1	15	Surface Mount Solderability, Bake Precon	Pb Free Solder	1/15/0	-	-	-	-	-
SD	C 3	JEDEC JESD22-B102	1	15	Surface Mount Solderability, Bake Precon	Pb Solder	1/15/0	-	-	-	-	-
PD	C 4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	3/30/0	-	-	-	-	-
Test Group D – Die Fabrication Reliability Tests												
EM	D 1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	-	-	-	-	-
TDD B	D 2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	Completed Per Process Technology Requirements	-	-	-	-	-
HCI	D 3	JESD60 & 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	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	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 L): -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: 20180221-124873

Notes/ Comments:

1. EIPD/EOS. QEM-EVAL-1902-00370. Discounted
2. EIPD/EOS. QEM-EVAL-1801-00348. Discounted

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

**TCAN1043DQ1 in FMX (14D) and Miho8 (Grade 1, -40/125C)
Approved 14-Jun-2019**

Product Attributes

Attributes	Qual Device: TCAN1043DQ1	QBS Process Reference: TCAN1042HVDRQ1	QBS Process Reference: TCAN1051VDRQ1	QBS Package Reference: TCAN1043DQ1 (PG3.0)	QBS Package Reference: TCAN1043DQ1(PG1.0)
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	Interface	Interface	Interface	Interface	Interface
Wafer Fab Supplier	MIHO8	MIHO8	MIHO8	MAINEFAB	MAINEFAB
Die Revision	C	B	A1	C	A
Assembly Site	FMX	FMX	FMX	FMX	FMX
Package Type	SOIC	SOIC	SOIC	SOIC	SOIC
Package Designator	D	D	D	D	D
Ball/Lead Count	14	8	8	14	14

- QBS: Qual by Similarity
- Qual Device TCAN1043DQ1 is qualified at LEVEL 1-260C

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: TCAN1043DQ1	QBS Process Reference: TCAN1042HVDRQ1	QBS Process Reference: TCAN1051VDRQ1	QBS Package Reference: TCAN1043DQ1 (PG3.0)	QBS Package Reference: TCAN1043DQ1 (PG1.0)
Test Group A – Accelerated Environment Stress Tests											
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	1 Fail (1)	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	2/154/0	1/77/0	1/77/0	2/154/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	2/154/0	1/77/0	1/77/0	2/154/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: TCAN1043DQ1	QBS Process Reference: TCAN1042HVDRQ1	QBS Process Reference: TCAN1051VDRQ1	QBS Package Reference: TCAN1043DQ1 (PG3.0)	QBS Package Reference: TCAN1043DQ1 (PG1.0)
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	2/154/0	1/77/0	1/77/0	2/154/0
TC-WBP	A4	MIL-STD883 Method 2011	1	60	Bond Pull Post Temp Cycle	Wires	1/60/0	-	-	-	-
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	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, 140C	480 Hours	-	-	-	1/77/0	-
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	300 Hours	-	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	-	-	-	-
Test Group C – Package Assembly Integrity Tests											
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear, Cpk>1.67	Wires	3/228/0	-	-	-	-
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull, Cpk>1.67	Wires	3/228/0	-	-	-	-
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	-	-	-	2/20/0	1/10/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: TCAN1043DQ1	QBS Process Reference: TCAN1042HVDRQ1	QBS Process Reference: TCAN1051VDRQ1	QBS Package Reference: TCAN1043DQ1 (PG3.0)	QBS Package Reference: TCAN1043DQ1 (PG1.0)
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 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	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: 20190404-129347

Notes/ Comments:

- (1) EOS. QEM-EVAL-1902-00383. Discounted
- (2) EOS. QEM-EVAL-1801-00348. Discounted

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