

PCN Number:	20210623007.2		PCN Date:	June 25, 2021												
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:	Dec 25, 2021	Estimated Sample Availability:	Date provided at sample request													
Change Type:																
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design	<input type="checkbox"/>	Wafer Bump Site											
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet	<input type="checkbox"/>	Wafer Bump Material											
<input type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change	<input type="checkbox"/>	Wafer Bump Process											
<input type="checkbox"/>	Mechanical Specification	<input checked="" type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Site											
<input checked="" type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process	<input type="checkbox"/>	Wafer Fab Materials											
		<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process											
PCN Details																
Description of Change:																
<p>Texas Instruments is pleased to announce the qualification of TI Malaysia as an additional Assembly and Test site for the list of SOIC devices shown below. No material differences between sites.</p> <p>Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.</p>																
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:																
<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 (22L)</th> <th style="text-align: center;">Assembly Country Code (23L)</th> <th style="text-align: center;">Assembly City</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">TI Mexico</td> <td style="text-align: center;">MEX</td> <td style="text-align: center;">MEX</td> <td style="text-align: center;">Aguascalientes</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 (22L)	Assembly Country Code (23L)	Assembly City	TI Mexico	MEX	MEX	Aguascalientes	TI Malaysia	MLA	MYS	Kuala Lumpur
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)																
<p> 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)TO:1750 </p> <p> (1P) SN74LS07NSR (Q) 2000 (D) 0336 (31T) LOT: 3959047MLA (4W) TKY (1T) 7523483SI2 (P) (2P) REV: (V) 0033317 (20L) CSO: SHE (21L) CCO:USA (22L) ASO: MLA (23L) ACO: MYS </p>																
Product Affected:																
LM2903BQDRQ1																

Qualification Data
Automotive New Product Qualification Summary
(As per AEC-Q100 / Q006 and JEDEC Guidelines)
 Approved 12-May-2021

Product Attributes

Attributes	Qual Device: <u>LM2903BQDRQ1</u>	QBS Package Reference: <u>LM2904BQDRQ1</u>
Automotive Grade Level	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C
Product Function	Signal Chain	Signal Chain
Wafer Fab Supplier	CFAB	CFAB
Die Revision	A0	B
Assembly Site	MLA	FMX
Package Type	SOIC	SOIC
Package Designator	D	D
Ball/Lead Count	8	8

- QBS: Qual By Similarity

- Qual Device LM2903BQDRQ1 is 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: <u>LM2903BQDRQ1</u>	QBS Package Reference: <u>LM2904BQDRQ1</u>
Test Group A – Accelerated Environment Stress Tests								
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Automotive Preconditioning Level 1	ATE	3/924/0	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-
UHAST		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, -65/150C	500 Cycles	3/231/0	-
Post TC-BP	A4	MIL-STD883 Method 2011	1	60	Post Temp Cycle Bond Pull	Wires	3/72/0	-
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, 150C	1000 Hours	3/231/0	-
Test Group B – Accelerated Lifetime Simulation Tests								
HTOL	B1	JEDEC JESD22-	3	77	Life Test, 150C	300 Hours	3/231/0	3/231/0

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>LM2903BQDRQ1</u>	QBS Package Reference: <u>LM2904BQDRQ1</u>
		A108						
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48/hrs @125C	1/800/0	3/2400/4 (1)
EDR	B3	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	Wire Bond Shear (Cpk>1.67)	-	3/90/0	-
WBP	C 2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	-	3/90/0	-
SD	C 3	JEDEC JESD22-B102	1	15	Pb Free Surface Mount Solderability	Pb Free/Solder -	1/15/0	-
SD	C 3	JEDEC JESD22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	Pb	1/15/0	-
PD	C 4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	3/30/0	-
LI	C 6	JEDEC JESD22-B105	1	50	Lead Integrity	-	-	-
Test Group D – Die Fabrication Reliability Tests								
EM	D 1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	-
Tddb	D 2	JESD35	-	-	Time Dependant 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 - Q100	2000 V/ESDH	1/3/0	-
CDM	E3	AEC Q100-011	1	3	ESD - CDM - Q100	1000 V/ESDC	1/3/0	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>LM2903BQDRQ1</u>	QBS Package Reference: <u>LM2904BQDRQ1</u>
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.

Note (1): ELFR fails due to a defect screenable at production test. See 8D attached to eQDB

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

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