

PCN Number:	20221216009.1		PCN Date:	December 21, 2022												
Title:	Qualification of TI Mexico as Additional Assembly Site for Select HSOIC Package Device															
Customer Contact:	PCN Manager	Dept:	Quality Services													
Proposed 1st Ship Date:	Mar 20, 2023	Sample requests accepted until:	Jan 20, 2023*													
*Sample requests received after (Jan 20, 2023) will not be supported.																
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 checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change	<input type="checkbox"/>	Wafer Bump Process											
<input type="checkbox"/>	Mechanical Specification	<input 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"/>	Wafer Fab Process											
PCN Details																
Description of Change:																
Texas Instruments Incorporated is announcing the qualification TI Mexico as Additional Assembly Site for select device listed in the "Product Affected" Section. Current assembly sites and Material differences are as follows.																
<table border="1"> <thead> <tr> <th>Assembly Site</th> <th>Assembly Site Origin</th> <th>Assembly Country Code</th> <th>Assembly Site City</th> </tr> </thead> <tbody> <tr> <td>ASESH</td> <td>ASH</td> <td>CHN</td> <td>Shanghai</td> </tr> <tr> <td>TI Mexico</td> <td>MEX</td> <td>MEX</td> <td>Aguascalientes</td> </tr> </tbody> </table>					Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly Site City	ASESH	ASH	CHN	Shanghai	TI Mexico	MEX	MEX	Aguascalientes
Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly Site City													
ASESH	ASH	CHN	Shanghai													
TI Mexico	MEX	MEX	Aguascalientes													
Material Differences:																
	ASESH	TI Mexico														
Mount Compound	EY1000063	4147858														
Mold compound	EN20000519	4211880														
Lead finish	NiPdAuAg	NiPdAu														
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													
<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change													
Changes to product identification resulting from this PCN:																

Assembly Site		
ASESH	Assembly Site Origin (22L)	ASO: ASH
TI-Mexico	Assembly Site Origin (22L)	ASO: MEX

Sample product shipping label (not actual product label)



TEXAS INSTRUMENTS
 MADE IN: Malaysia
 2DC: 2D:
 MSL 2 /260C/1 YEAR SEAL DT
 MSL 1 /235C/UNLIM 03/29/04
 OPT: 39
 ITEM: LBL: 5A (L)T0:1750

(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

Product Affected:

LM5168FDDAR

Qualification Report

Approve Date 31-Aug-2022

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: LM5169FQDDA RQ1	QBS Reference: LM5141QRGER Q1	QBS Reference: LM5169FQDD ARQ1
Test Group A - Accelerated Environment Stress Tests										
PC	A1	JEDEC J-STD-020 JESD22A113	3	77	Preconditioning	MSL2 260C	1 Step	3/693/0	-	-
HAST	A2	JEDEC JESD22A110	3	77	Biased HAST	110C/85% RH	264 Hours	3/231/0	-	-
AC/UHA ST	A3	JEDEC JESD22A102/JE DEC JESD22-A118	3	77	Unbiased HAST	110C/85% RH	264 Hours	3/231/0	-	-
TC	A4	JEDEC JESD22- A104 and Appendix 3	3	77	Temperature Cycle	- 65C/150C	500 Cycles	3/231/0	-	-
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	1/5/0	-	-
HTSL	A6	JEDEC JESD22A103	1	45	High Temperature Storage Life	175C	500 Hours	3/135/0	-	-
Test Group B - Accelerated Lifetime Simulation Tests										
HTOL	B1	JEDEC JESD22A108	1	77	Life Test	150C	300 Hours	1/77/0	-	2/154/0

ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	125C	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	-	-
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	3/90/0	-	-
SD	C3	JEDEC JESD22B102	1	15	PB-Free Solderability	>95% Lead Coverage	-	1/15/0	-	-
PD	C4	JEDEC JESD22B100 and B108	1	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
Tddb	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	-	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
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	-	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
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	-	500 Volts	1/3/0	-	-
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100004	-	1/6/0	-	-
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	3/90/0	-	-

QBS: Qual By Similarity

Qual Device LM5169xQDDARQ1 is qualified at MSL2 260C

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/>

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Location	E-Mail
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