



PCN Number:	20211216002.2		PCN Date:	December 20, 2021																					
Title:	Qualification of TI Mexico as an alternate Assembly & Test site for Select Devices																								
Customer Contact:	PCN Manager	Dept:	Quality Services																						
Proposed 1st Ship Date:	June 20, 2022	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 checked="" 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 checked="" type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Site																				
<input 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 Incorporated is announcing the qualification of TI Mexico as an additional Assembly & Final site for the list of devices shown below. Construction differences between the 2 sites are as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>TI Melaka</th> <th>TI Mexico</th> </tr> </thead> <tbody> <tr> <td>Lead Finish</td> <td>Matte Sn/Non RLF</td> <td>NiPdAu/RLF</td> </tr> <tr> <td>Mount Compound</td> <td>8075531</td> <td>4224423</td> </tr> <tr> <td>Mold Compound</td> <td>8095179</td> <td>4211649</td> </tr> <tr> <td>Bond wire composition/Diameter</td> <td>Au, 1.3 mils</td> <td>Cu, 1.3 mils</td> </tr> </tbody> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Current</th> <th>Additional</th> </tr> </thead> <tbody> <tr> <td>Final Test Site</td> <td>TI Melaka</td> <td>TI Mexico</td> </tr> </tbody> </table>						TI Melaka	TI Mexico	Lead Finish	Matte Sn/Non RLF	NiPdAu/RLF	Mount Compound	8075531	4224423	Mold Compound	8095179	4211649	Bond wire composition/Diameter	Au, 1.3 mils	Cu, 1.3 mils		Current	Additional	Final Test Site	TI Melaka	TI Mexico
	TI Melaka	TI Mexico																							
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Final Test Site	TI Melaka	TI Mexico																							
<p>Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ</p> <p>Upon expiration of this PCN, TI will combine lead free solutions in a single standard part number, for example; LP2998QMR/NOBP – can ship with both Matte Sn and NiPdAu.</p>																									
Reason for Change:																									
Supply continuity																									
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																				
Changes to product identification resulting from this PCN:																									
Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City																						
TIEM	CU6	MYS	Melaka																						

FMX	MEX	MEX	Aguascalientes				
Sample product shipping label (not actual product label)							
 <p>MADE IN: Malaysia 2DC: 20:</p> <table border="1"> <tr> <td>MSL 2 /260C/1 YEAR</td> <td>SEAL DT</td> </tr> <tr> <td>MSL 1 /235C/UNLIM</td> <td>03/29/04</td> </tr> </table> <p>OPT: ITEM: 39 LBL: 5A (L)T0:1750</p>		MSL 2 /260C/1 YEAR	SEAL DT	MSL 1 /235C/UNLIM	03/29/04	 <p>(1P) SN/4LS0/NSR (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>	
MSL 2 /260C/1 YEAR	SEAL DT						
MSL 1 /235C/UNLIM	03/29/04						
<div style="border: 1px solid black; border-radius: 10px; padding: 5px; display: inline-block;"> G3 = Matte Sn G4 = NiPdAu </div>							
Product Affected:							
LP2998QMR/NOPB	LP2998QMRE/NOPB	LP2998QMRX/NOPB					



TI Information
Selective Disclosure

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

TIEMA to FMX - 8-pin DDA Offload - LP2998QMRX/NOPB Automotive Grade 1
Approved 10-Dec-2021

Product Attributes

Attributes	Qual Device: LP2998QMRX/NOPB	QBS Process Reference: LM4128AQ1MF-4.1
Automotive Grade Level	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C
Product Function	Power Management	Power Management
Wafer Fab Supplier	MAINEFAB	MAINEFAB
Die Revision	A	A
Assembly Site	FMX	TIEMA
Package Type	HSOIC	SOT23
Package Designator	DDA	DBV
Ball/Lead Count	8	5

- QBS: Qual By Similarity
- Qual Device LP2998QMRX/NOPB is qualified at LEVEL3-260CG

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: LP2998OMRX/NOPB	QBS Process Reference: LM4128AQ1MF-4.1
Test Group A – Accelerated Environment Stress Tests								
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 1-260C	-	-
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 3-260C	No Fails	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	-
TC-WBP	A4	MIL-STD883 Method 2011	1	60	Auto Post TC Bond Pull	per MIL-STD 883 Method 2011	3/180/0	-
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	3/135/0	-
Test Group B – Accelerated Lifetime Simulation Tests								
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 150C	408 Hours	3/231/0	-
ELFR	B2	AEC Q100-008	3	800	Auto Early Life Failure Rate Grade 1, 150C	24 Hours	-	3/2400/0
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	3/90/0	-
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	Wires	3/90/0	-
SD	C3	JEDEC JESD22-B102	1	15	Solderability	Pb	3/45/0	-
SD	C3	JEDEC JESD22-B102	1	15	Solderability	Pb Free	3/45/0	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Auto Physical Dimensions	Cpk>1.67	3/30/0	-
SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Solder Balls	N/A	-
LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	Leads	3/60/0	-

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	Auto ESD HBM	500V, 1000V, 1500V, 2000V, 2500V*	-	-
CDM	E3	AEC Q100-011	1	3	Auto ESD CDM	250V, 500V, 750V, 1000V*	-	-
LU	E4	AEC Q100-004	1	6	Auto Latch-up	25C, 125C	-	-
ED	E5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67 Room, hot, and cold test	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: 20200702-134870

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

**CS065 AI pad FMX 8DDA Package with 1.3 mil Cu wire
(Q100H, Q006, Grade 1, -40/125C)
Approved 10-Dec-2021**

**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: LP2998QMRX/NOPB
Test Group A – Accelerated Environment Stress Tests							
PC	A1	-	3	22	SAM Analysis, Pre Stress	Completed	3/66/0
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 3-260C	No fails
PC	A1	-	3	22	SAM Analysis, Post Precon	Completed	3/66/0
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	3/231/0
HAST	A2	-	3	1	Cross Section, Post bHAST 96 Hours	Completed	3/3/0
HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 96 Hours	Wires	3/90/0
HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 96 Hours	Wires	3/90/0
HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 96 Hours	Wires	3/90/0
HAST	A2	JEDEC JESD22-A110	3	70	Biased HAST, 130C/85%RH	192 Hours	3/210/0
HAST	A2	-	3	1	Cross Section, Post bHAST 192 Hours	Completed	3/3/0
HAST	A2	-	3	22	SAM Analysis, Post bHAST, 192 Hours	Completed	3/66/0
HAST	A2	-	3	30	Wire Bond Shear, Post bHast, 192 Hours	Wires	3/90/0
HAST	A2	-	3	30	Bond Pull over Stitch, post bHAST, 192 Hours	Wires	3/90/0

Type	#	Test Spec	Min Lot Qty	SS/ Lot	Test Name / Condition	Duration	Qual Device: LP2998QMRX/NOPB
HAST	A2	-	3	30	Bond Pull over Ball, Post bHAST, 192 Hours	Wires	3/90/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0
TC	A4	-	3	1	Cross Section, Post T/C 500 Cycles	Completed	3/3/0
TC	A4	-	3	22	SAM Analysis, Post T/C, 500 Cycles	Completed	3/66/0
TC	A4	-	3	30	Wire Bond Shear, Post T/C 500 Cycles	Wires	3/90/0
TC	A4	-	3	30	Bond Pull over Stitch Post T/C 500 Cycles	Wires	3/90/0
TC	A4	-	3	30	Bond Pull over Ball Post T/C 500 Cycles	Wires	3/90/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	70	Temperature Cycle, -65/150C	1000 Cycles	3/231/0
TC	A4	-	3	1	Cross Section, Post T/C 1000 Cycles	Completed	3/3/0
TC	A4	-	3	22	SAM Analysis, Post T/C, 1000 Cycles	Completed	3/66/0
TC	A4	-	3	30	Wire Bond Shear, Post T/C 1000 Cycles	Wires	3/90/0
TC	A4	-	3	30	Bond Pull over Stitch, Post T/C, 1000 Cycles	Wires	3/90/0
TC	A4	-	3	30	Bond Pull over Ball, Post T/C, 1000 Cycles	Wires	3/90/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	1000 Cycles	N/A
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle -40/125C	2000 Cycles	N/A
HTSL	A6	JEDEC JESD22-A103	3	45	High Temp Storage Bake 150C	1000 Hours	3/135/0
HTSL	A6	-	3	1	Cross Section, Post HTSL 1000 Hours	Completed	3/3/0
HTSL	A6	JEDEC JESD22-A103	3	44	High Temp Storage Bake 150C	2000 Hours	3/132/0
HTSL	A6	-	3	1	Cross Section, Post HTSL 2000 Hours	Completed	3/3/0
Test Group C – Package Assembly Integrity Tests							
WBS	C1	AEC Q100-001	3	30	Wire Bond Shear, Cpk>1.67	Wires	3/90/0
WBP	C2	MIL-STD883 Method 2011	3	30	Bond Pull, Cpk >1.67	Wires	3/90/0

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Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

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Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20200702-134870

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

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WW PCN Team	PCN_ww_admin_team@list.ti.com

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