




<b>PCN Number:</b>	20220715000.2	<b>PCN Date:</b>	July 18, 2022
<b>Title:</b>	Qualification of TI Taiwan as an additional assembly and test site for select Devices		
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>	<b>Dept:</b>	Quality Services
<b>Proposed 1<sup>st</sup> Ship Date:</b>	Jan 11, 2023	<b>Sample Requests accepted until:</b>	Aug 18, 2022
<b>*Sample requests received after Aug 18, 2022 will not be supported.</b>			
<b>Change Type:</b>			
<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 type="checkbox"/> Packing/Shipping/Labeling	<input type="checkbox"/> Test Process	<input type="checkbox"/> Wafer Fab Materials	
		<input type="checkbox"/> Wafer Fab Process	
<b>PCN Details</b>			
<b>Description of Change:</b>			
Texas Instruments Incorporated is announcing the qualification of TI Taiwan as an alternate Assembly and test site for devices listed below in the product affected section. There are no construction differences between the two assembly sites.			
Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ			
<b>Reason for Change:</b>			
Supply continuity			
<b>Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):</b>			
None			
<b>Impact on Environmental Ratings</b>			
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.			
<b>RoHS</b>	<b>REACH</b>	<b>Green Status</b>	<b>IEC 62474</b>
<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change
<b>Changes to product identification resulting from this PCN:</b>			
<b>Assembly Site</b>	<b>Assembly Site Origin (22L)</b>	<b>Assembly Country Code (23L)</b>	<b>Assembly City</b>
TIPI	PHI	PHL	Baguio City
<b>TI Taiwan</b>	<b>TAI</b>	<b>TWN</b>	<b>Chung Ho, New Taipei City</b>
Sample product shipping label (not actual product label)			
  			
MADE IN: Malaysia 2DC: 20: MSL 2 /260C/1 YEAR SEAL DT MSL 1 /235C/UNLIM 03/29/04 OPT: ITEM: 39 <b>LBL: 5A (L)T0:1750</b>			
(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			

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**Product Affected:**

BQ75614PAPRQ1	BQ79616PAPRQ1	BQ79652PAPRQ1	BQ79656PAPRQ1	
BQ75614PAPTQ1	BQ79616PAPTQ1	BQ79652PAPTQ1	BQ79656PAPTQ1	
BQ756506PAPRQ1	BQ79631PAPRQ1	BQ79654PAPRQ1	SB79616PAPRQ1	
BQ79612PAPRQ1	BQ79631PAPTQ1	BQ79654PAPTQ1	ST79616PAPRQ1	
BQ79614PAPRQ1				

TI Information  
Selective Disclosure

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

BQ79616-Q1 Grade 1 (RFAB LBC9/CD-PR/CD-BP/TITL Assembly/TITL test - Qual of TITL test site for BQ79616  
Approve Date 25-MAY -2022

**Product Attributes**

Attributes	Qual Device: BQ79616PAPRQ1	QBS Reference: BQ79616PAPRQ1_PG2.0	QBS Reference: BQ79616PAPRQ1_PG2.1	QBS Reference: P1105082F1PLPR	QBS Reference: DRV3203QPHPQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125
Product Function	Power Management	Power Management	Power Management	ASIC	Power Management
Wafer Fab Supplier	RFAB	RFAB	RFAB	DP1DM5	RFAB
Assembly Site	TAI	PHI	PHI	TAI	TAI
Package Group	QFP	QFP	QFP	QFP	QFP
Package Designator	PAP	PAP	PAP	PLP	PHP
Pin Count	64	64	64	128	48

- QBS: Qual By Similarity
- Qual Device BQ79616PAPRQ1 is qualified at MSL3 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: BQ79616PAPRQ1	QBS Reference: BQ79616PAPRQ1_PG2.0	QBS Reference: BQ79616PAPRQ1_PG2.1	QBS Reference: P1105082F1PLPR	QBS Reference: DRV3203QPHPQ1
<b>Test Group A - Accelerated Environment Stress Tests</b>												
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	1/77/0	-	1/77/0	3/231/0	3/231/0
AC/UHAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	1/77/0	-	-	-	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	3/231/0	3/231/0	1/77/0	3/234/0	3/231/0
TC-BP	A4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	-	-	-	-	-	1/5/0	-
PTC	A5	JEDEC JESD22-A105	1	45	PTC	-40/125C	1000 Cycles	-	1/45/0	-	1/45/0	-
PTC	A5	JEDEC JESD22-A105	1	45	PTC	-40/125C	500 Cycles	-	-	-	-	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	1/45/0	3/135/0	-	-	-
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	175C	500 Hours	-	-	-	1/45/0	3/135/0

Test Group B - Accelerated Lifetime Simulation Tests												
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	125C	1000 Hours	-	3/231/0	-	-	-
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	3/90/0	1/30/0	-	-
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Devices: BQ79616PAPRQ1	QBS Reference: BQ79616PAPRQ1 Pg2.0	QBS Reference: BQ79616PAPRQ1Pg2.1	QBS Reference: P1105082FIPLFR	QBS Reference: DRV3203QPHPQ1
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	3/90/0	3/90/0	1/30/0	-	-
SD	C3	JEDEC JESD22-B102	1	15	PB Solderability	>95% Lead Coverage	-	1/15/0	1/15/0	-	-	1/15/0
SD	C3	JEDEC JESD22-B102	1	15	PB-Free Solderability	>95% Lead Coverage	-	1/15/0	1/15/0	-	-	1/15/0
PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	3/30/0	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	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	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	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	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	Completed Per Process Technology Requirements
Test Group E - Electrical Verification Tests												
ESD	E2	AEC Q100-002	1	3	ESD HBM	-	2500 Volts	-	-	1/3/0	-	-
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	750 Volts	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 Room, hot, and cold	-	3/90/0	3/90/0	1/30/0	-	-

- 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/>

TI Qualification ID: R-CHG-2111-021

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

Location	E-Mail
WW Change Management Team	<a href="mailto:PCN_ww_admin_team@list.ti.com">PCN_ww_admin_team@list.ti.com</a>

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