

PCN Number:	20190117000.1	PCN Date:	Jan 22, 2019
Title:	Qualification of CIRTEK as an additional Assembly site & TIEM as an additional Test site for select devices		
Customer Contact:	PCN Manager	Dept:	Quality Services
Proposed 1st Ship Date:	Apr 22, 2019	Estimated Sample Availability:	Date Provided at Sample request
Change Type:			
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet
<input type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change
<input type="checkbox"/>	Mechanical Specification	<input checked="" type="checkbox"/>	Test Site
<input checked="" type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Site
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Material
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Site
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Materials
<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process

PCN Details

Description of Change:

Texas Instruments Incorporated is announcing the qualification of CIRTEK as an additional Assembly site & TIEM as an additional Test site for select devices listed in the "Product Affected" Section. No material differences between sites.

Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly Site City
Team Pacific Corporation	TPC	PHL	Taguig
CIRTEK	CTK	PHL	Biñan

Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.

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 from the TI Eco-Info website . There is no impact to the material meeting current regulatory compliance requirements with this PCN change.
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Changes to product identification resulting from this PCN:

Assembly Site		
Team Pacific Corporation	Assembly Site Origin (22L)	ASO: TPC
CIRTEK	Assembly Site Origin (22L)	ASO: CTK

Sample product shipping label (not actual product label)

Product Affected Group 1: Assembly in CIRTEK & Test in TIEM

LF156H	LM118H/NOPB	LM158AH/NOPB	LM317HVK STEEL/NOPB
LF156H/NOPB	LM119H	LM158H	LM317K STEEL
LF198AH/NOPB	LM119H/NOPB	LM158H/NOPB	LM317K STEEL/NOPB
LF198H	LM120H-12	LM185BH	LM323K STEEL
LF198H/NOPB	LM120H-12/NOPB	LM185BH/NOPB	LM323K STEEL/NOPB
LF256H	LM120H-15	LM185BYH-1.2/NOPB	LM335AH/NOPB
LF256H/NOPB	LM120H-15/NOPB	LM185H-1.2/NOPB	LM335H
LF298H	LM120H-5.0	LM185H-2.5/NOPB	LM335H/NOPB
LF298H/NOPB	LM120H-5.0/NOPB	LM193AH	LM337H
LF356H	LM134H	LM193AH/NOPB	LM337H/NOPB
LF356H/NOPB	LM134H/NOPB	LM193H	LM338K STEEL
LF398H	LM136AH-2.5	LM193H/NOPB	LM338K STEEL/NOPB
LF398H/NOPB	LM136AH-2.5/NOPB	LM201AH	LM340K-5.0
LF412MH	LM136AH-5.0	LM201AH/NOPB	LM340K-5.0/NOPB
LF412MH/NOPB	LM136AH-5.0/NOPB	LM236AH-5.0/NOPB	LM34DH
LF442AMH	LM136H-2.5	LM236H-2.5	LM34DH/NOPB
LF442AMH/NOPB	LM136H-2.5/NOPB	LM236H-2.5/NOPB	LM350K STEEL
LM101AH	LM136H-5.0	LM236H-5.0	LM350K STEEL/NOPB
LM101AH/NOPB	LM136H-5.0/NOPB	LM236H-5.0/NOPB	LM358H/NOPB
LM109H	LM137H	LM258H	LM35DH
LM109H/NOPB	LM137H/NOPB	LM258H/NOPB	LM35DH/NOPB
LM109K	LM138K STEEL	LM293H	LM361H/NOPB
LM109K STEEL	LM138K STEEL/NOPB	LM293H/NOPB	LM723CH
LM109K STEEL/NOPB	LM140K-12	LM301AH	LM723CH/NOPB
LM10BH	LM140K-12/NOPB	LM301AH/NOPB	LM723H
LM10BH/NOPB	LM140K-15	LM309H	LM723H/NOPB
LM10CH	LM140K-15/NOPB	LM309H/NOPB	LM741CH
LM10CH/NOPB	LM140K-5.0	LM309K STEEL	LM741CH/NOPB
LM111H	LM140K-5.0/NOPB	LM309K STEEL/NOPB	LM741H
LM111H/NOPB	LM140LAH-12	LM311H	LM741H/NOPB
LM117H	LM140LAH-12/NOPB	LM311H/NOPB	LM78M05CH
LM117H/NOPB	LM140LAH-15	LM317AH	LM78M05CH/NOPB
LM117HVH	LM140LAH-15/NOPB	LM317AH/NOPB	MC1558G
LM117HVH/NOPB	LM140LAH-5.0	LM317H	U5B7741312
LM117K	LM140LAH-5.0/NOPB	LM317H/NOPB	U5B7741393
LM117K STEEL	LM1558H	LM317HVH	
LM117K STEEL/NOPB	LM1558H/NOPB	LM317HVH/NOPB	
LM118H	LM158AH	LM317HVK STEEL	

Product Affected Group 2: Assembly in CIRTEK

5962-0722901QXA	LF198H/883	LM136AH-5.0/883/MPGD	LM235H
5962-0722903QYA	LF412MH/883	LM136H-5.0/883	LM235H/NOPB
5962-8759401XA	LM101AH/883	LM137H/883	LM34AH
5962-8759402XA	LM10H/883	LM137HVH/883	LM34AH/NOPB
5962-8759405XA	LM111H/883	LM137K/883	LM34CAH
5962-8760401GA	LM117H/883	LM138K-MIL	LM34CAH/NOPB
5962-8760801GA	LM117H/883/MABI	LM140H-12/883	LM35AH
5962-8771002GA	LM117HVH-QML	LM140H-15/883	LM35AH/NOPB
5962-8777801XA	LM117HVH/883	LM140H-5.0/883	LM35CAH
5962-9452602MGA	LM117HVH-QML	LM140K-12/883	LM35CAH/NOPB
8418002XA	LM117HVH/883	LM140LAH-12/883	LM35CH
8601401IA	LM117K/883	LM140LAH-15/883	LM35CH/NOPB
JL101ABGA	LM117K/883/MABI	LM140LAH5.0/883	LM35H
JL111BGA	LM118H/883	LM1558H/883	LM35H/NOPB
JL111BGA/MABI	LM119H-SMD	LM158AH-SMD	LM555H/883
JL117BXA	LM119H/883	LM158AH/883	LM723H/883
JL117BXA/MABI	LM120H-12/883	LM158H/883	LM741H/883
JL137BXA	LM120H-15/883	LM158H/883/MABI	LM747H/883
JL156BGA	LM120H-5.0/883	LM185BYH1.2-SMD	LM748H/883
JL193BGA	LM120K-12/883	LM185BYH2.5/883	M38510/10103BGA
JL198BGA	LM120K-15/883	LM185H-1.2-SMD	M38510/10304BGA
JM38510/10103BGA	LM135AH	LM185H-1.2/883	M38510/11202BGA
JM38510/10304BGA	LM135AH/NOPB	LM185H-2.5-SMD	M38510/11402BGA
JM38510/11202BGA	LM135H	LM185H-2.5/883	M38510/11703BXA
JM38510/11402BGA	LM135H/NOPB	LM193AH/883	M38510/11803BXA
JM38510/11703BXA	LM136AH-2.5/883	LM193H/883	M38510/11803BXX
JM38510/11803BXA	LM136AH-2.5/883/MPGD	LM195H/883	M38510/12501BGA
JM38510/12501BGA	LM136AH-5.0-SMD	LM235AH	
LF156H/883	LM136AH-5.0/883	LM235AH/NOPB	

Qualification Report

CIRTEK Assembly Qualification of HiREL Products Assembled in TO-CAN Packages

Approve Date 20-Dec-2018

Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

Type	Test Name / Condition	Duration	Qual Device: <u>LF412MH/883</u>	Qual Device: <u>LM10CH/NOPB</u>	Qual Device: <u>LM117HVH/883</u>	Qual Device: <u>LM119H/883</u>
-	B2 Bond Strength	Condition C or D	1/22/0	-	1/22/0	1/22/0
-	B3 Solderability	245C	1/22/0	-	-	-
	C1 Life Test	125C 1000 Hrs	1/45/0	-	-	-
-	D1 Physical Dimensions	-	1/15/0	-	1/15/0	1/15/0
-	D2 Lead Integrity	Condition B2	1/45/0	-	1/45/0	1/45/0
-	D3 Sequence	-	1/15/0	-	1/15/0	1/15/0
-	D4 Sequence	-	1/15/0	-	1/15/0	1/15/0
-	D5 Salt Atmosphere	Condition A	1/15/0	-	1/15/0	1/15/0
-	D6 Internal Gas	100C,	1/3/0	-	1/3/0	1/3/0

Type	Test Name / Condition	Duration	Qual Device: <u>LF412MH/883</u>	Qual Device: <u>LM10CH/NOPB</u>	Qual Device: <u>LM117HVK/883</u>	Qual Device: <u>LM119H/883</u>
	Analysis	Moisture,O2, Fluorocarbon				
-	D7 Adhesion of Lead Finish	-	1/15/0	-	-	-
-	D9 Solder Heat	-	1/3/0	-	-	-
-	Fine and Gross Leak	-	-	1/39/0	-	-
-	Fine and Gross Leak	Post-1000 Hours Bake	1/45/0	-	-	-
-	Fine and Gross Leak	Post-500 Cycles Temp Cycle	1/45/0	-	-	-
-	PIND	-	1/0/0	-	1/0/0	1/0/0
-	PO Integrity Etch	-	1/5/0	-	1/5/0	1/5/0
-	Sn Whisker Test	-	-	3/27/0	-	-
DS	Die Shear	-	1/3/0	1/10/0	1/3/0	1/3/0
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	-	1/30/0	1/30/0
EVAL	Thermal Impedance	-	1/1/0	-	1/1/0	1/1/0
LI	Lead Fatigue	-	-	1/22/0	-	-
LFA	Lead Finish Adhesion	-	-	1/15/0	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	PASS	PASS	PASS	PASS
PD	Physical Dimensions	(per mechanical drawing)	-	1/5/0	-	-
RS	Resistance to Solvents	(ink symbol only)	-	1/22/0	-	-
SH	Solder Heat	260C, 10 seconds	-	1/22/0	-	-
SD	Solderability	Bake	-	1/22/0	-	-
TC	Temperature Cycle - 65C/150C	500 Cycles	1/45/0	-	-	-
TM	Thermal Impedance Modeling	-	1/1/0	-	1/1/0	1/1/0
VM	Visual / Mechanical	(per mfg. Site specification)	-	1/30/0	-	-
VQR	Visual Quality Reliability Inspection	Post High Temp Storage Bake	1/2/0	-	-	-
VQR	Visual Quality Reliability Inspection	Post Temperature Cycle	1/5/0	-	-	-
WBP	Bond Pull	-	-	1/30/0	-	-
XRAY	X-ray	Internal, Top and Side View	1/5/0	1/5/0	1/5/0	1/5/0
YLD	FTY and Bin Summary	Compare against baseline	PASS	-	PASS	PASS

Type	Test Name / Condition	Duration	Qual Device: <u>LM137HVH/883</u>	Qual Device: <u>LM138K-STEEL/NOPB</u>	Qual Device: <u>LM185H-1.2/883</u>	Qual Device: <u>LM748H/883</u>
-	B2 Bond Strength	Condition C or D	1/22/0	-	1/22/0	1/22/0
-	B3 Solderability	245C	-	-	-	-
	C1 Life Test	125C 1000 Hrs	-	-	-	1/45/0
-	D1 Physical Dimensions	-	-	-	-	-
-	D2 Lead Integrity	Condition B2	-	-	-	-
-	D3 Sequence	-	1/15/0	-	1/15/0	1/15/0

Type	Test Name / Condition	Duration	Qual Device: LM137HVH/883	Qual Device: LM138K- STEEL/NOPB	Qual Device: LM185H- 1.2/883	Qual Device: LM748H/883
-	D4 Sequence	-	1/15/0	-	1/15/0	1/15/0
-	D5 Salt Atmosphere	Condition A	-	-	-	-
-	D6 Internal Gas Analysis	100C, Moisture, O ₂ , Fluorocarbon	-	-	-	-
-	D7 Adhesion of Lead Finish	-	-	-	-	-
-	D9 Solder Heat	-	-	-	-	-
-	Fine and Gross Leak	-	-	1/39/0	-	-
-	Fine and Gross Leak	Post-1000 Hours Bake	-	-	-	-
-	Fine and Gross Leak	Post-500 Cycles Temp Cycle	-	-	-	-
-	PIND	-	1/0/0	-	1/0/0	-
-	PO Integrity Etch	-	-	-	-	-
-	Sn Whisker Test	-	-	-	-	-
DS	Die Shear	-	-	1/10/0	-	-
ED	Electrical Characterization	Per Datasheet Parameters	1/30/0	-	1/30/0	1/30/0
EVAL	Thermal Impedance	-	1/1/0	-	1/1/0	1/1/0
LI	Lead Fatigue	-	-	1/22/0	-	-
LFA	Lead Finish Adhesion	-	-	1/15/0	-	-
MQ	Manufacturability (Assembly)	(per mfg. Site specification)	PASS	PASS	PASS	PASS
PD	Physical Dimensions	(per mechanical drawing)	-	1/5/0	-	-
RS	Resistance to Solvents	(ink symbol only)	-	1/22/0	-	-
SH	Solder Heat	260C, 10 seconds	-	1/22/0	-	-
SD	Solderability	Bake	-	1/22/0	-	-
TC	Temperature Cycle - 65C/150C	500 Cycles	-	-	-	-
TM	Thermal Impedance Modeling	-	1/1/0	-	1/1/0	1/1/0
VM	Visual / Mechanical	(per mfg. Site specification)	-	1/30/0	-	-
VQR	Visual Quality Reliability Inspection	Post High Temp Storage Bake	-	-	-	-
VQR	Visual Quality Reliability Inspection	Post Temperature Cycle	-	-	-	-
WBP	Bond Pull	-	-	1/30/0	-	-
XRAY	X-ray	Internal, Top and Side View	1/5/0	1/5/0	1/5/0	1/5/0
YLD	FTY and Bin Summary	Compare against baseline	PASS	-	PASS	PASS

- The following are equivalent HTOL options based on an activation energy of 0.7eV: 125C/1000 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/1000 Hours, and 170C/420 Hours

- The following are equivalent Temperature Cycle options per JESD47: -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

THIS INFORMATION RELATING TO QUALITY AND RELIABILITY IS PROVIDED "AS IS." Product information detailed in this report may not accurately reflect TI's current product materials, processes and testing used in the construction of the TI

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