

PCN Number:	20191213000.1A	PCN Date:	Mar 25, 2020																		
Title:	Qualification of UTAC as an additional AT site for Select Devices																				
Customer Contact:	PCN Manager	Dept:	Quality Services																		
Proposed 1st Ship Date:	April 13, 2020	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 type="checkbox"/>	Test Site																		
<input 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:																					
<p>Revision A is to announce the addition of new a device that was not included on the original PCN notification. These new device is under Group 2 of the Product affected section below. The expected first shipment date for this new device will be 90 days from this notice (June 25, 2020) for this newly added device only. The proposed 1st ship date of Apr 13, 2020 still applies for the original set of devices.</p> <p>Texas Instruments is pleased to announce the qualification of UTAC as an additional assembly site for the list of devices below. There are no construction differences between the current and new site.</p> <p>Group 1 Device – No material difference between sites</p> <p>Group 2 Device: Material Differences</p> <table border="1"> <thead> <tr> <th></th> <th>TI Clark</th> <th>UTAC</th> </tr> </thead> <tbody> <tr> <td>Mount (Controller die)</td> <td>4207123</td> <td>PZ0138</td> </tr> <tr> <td>Mold</td> <td>4222198</td> <td>CZ0421</td> </tr> <tr> <td>Lead finish</td> <td>NiPdAu</td> <td>Matte Sn</td> </tr> </tbody> </table> <p>Marking Difference:</p> <table border="1"> <thead> <tr> <th></th> <th>TI Clark</th> <th>UTAC</th> </tr> </thead> <tbody> <tr> <td>Top Side Symbol</td> <td> <div style="border: 1px solid black; padding: 5px; text-align: center;"> TPS543C20A TI YMS LLLL E4 ○ </div> <p>TI = TI LETTERS YM = YEAR MONTH DATE CODE LLLL = ASSEMBLY LOT CODE S = ASSEMBLY SITE CODE O = PIN 1 INDICATOR</p> </td> <td> <div style="border: 1px solid black; padding: 5px; text-align: center;"> TPS543C20A TI YMS LLLL E3 ○ </div> <p>TI = TI LETTERS YM = YEAR MONTH DATE CODE LLLL = ASSEMBLY LOT CODE S = ASSEMBLY SITE CODE O = PIN 1 INDICATOR</p> </td> </tr> </tbody> </table>					TI Clark	UTAC	Mount (Controller die)	4207123	PZ0138	Mold	4222198	CZ0421	Lead finish	NiPdAu	Matte Sn		TI Clark	UTAC	Top Side Symbol	<div style="border: 1px solid black; padding: 5px; text-align: center;"> TPS543C20A TI YMS LLLL E4 ○ </div> <p>TI = TI LETTERS YM = YEAR MONTH DATE CODE LLLL = ASSEMBLY LOT CODE S = ASSEMBLY SITE CODE O = PIN 1 INDICATOR</p>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> TPS543C20A TI YMS LLLL E3 ○ </div> <p>TI = TI LETTERS YM = YEAR MONTH DATE CODE LLLL = ASSEMBLY LOT CODE S = ASSEMBLY SITE CODE O = PIN 1 INDICATOR</p>
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Reason for Change:																					
Continuity of Supply																					
Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):																					
None																					
Anticipated impact on Material Declaration																					

<input type="checkbox"/>	No Impact to the Material Declaration	<input checked="" 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
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Changes to product identification resulting from this PCN:

Assembly Site	Assembly Site Origin (22L)	Assembly Country Code (23L)	Assembly City
TI Clark	QAB	PHL	Angeles City, Pampanga
Amkor	AP3	PHL	Binan
UTAC	NSE	THA	Bangkok

Sample product shipping label (not actual product label)

Group 2 Device:
ECAT: E3 = Matte Sn
ECAT: E4 = NiPdAu

Product Affected: Group 1

CSD59972BQ5MC	CSD95372BQ5MC	CSD95378BQ5MCT	CSD96497Q5MC
CSD59973BQ5MC	CSD95372BQ5MCT	CSD95472Q5MC	CSD96497Q5MCT
CSD59974BQ5MC	CSD95378BQ5MC	CSD95472Q5MCT	SN1605024Q5MC
CSD59978Q5MC			

Product Affected: Group 2

TPS543C20ARVFR

Group 1 Qualification Report

Approve Date 09-Dec-2019

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>CSD59973Q5MC</u>	Qual Device: <u>CSD95372BQ5MC</u>	Qual Device: <u>CSD95472Q5MC</u>	QBS Package Reference: <u>CSD95490Q5MC</u>	QBS Package Reference: <u>CSD95490Q5MC</u>	QBS Package Reference: <u>CSD95480RWJ</u>
AC	Autoclave 121C	96 Hours		3/231/0		-	3/231/0	-
ED	Electrical Characterization	-	Pass	Pass	Pass	Pass	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours		-		2/154/0	3/231/0	3/231/0
HBM	ESD - HBM	3000V				1/3/0	-	1/3/0
CDM	ESD - CDM	2000 V				1/3/0	-	1/3/0
DIOL	Dynamic	10000				-	3/231/0	-

	Intermittent Operating Life	Cycles						
HTOL	Life Test, 125C	1000 Hours				-	-	3/231/0
HTSL	High Temp. Storage Bake, 150C	1000 Hours				-	3/161/0	3/231/0
LU	Latch-up	(per JESD78)				1/6/0	-	1/6/0
TC	Temperature Cycle, -55/125C	700 Cycles		3/231/0		3/231/0	3/231/0	3/231/0
UHAIST	Unbiased HAST, 130C/85%RH	96 Hours				-	-	3/231/0
YLD	FTY and BIN Summary	-	Pass	Pass	Pass	Pass	Pass	Pass

- QBS: Qual By Similarity
 - Qual Devices qualified at LEVEL2-260C: CSD59973Q5MC, CSD95372BQ5M, CSD95472Q5MC
 - Devices contain multiple dies: CSD59973Q5MC, CSD95372BQ5M, CSD95472Q5MC
 - 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
- Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

Group 2 Qualification Data

Approve Date 12-Feb-2020

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TPS543C20RVF	QBS Product Reference: TPS543B20RVF	QBS Product Reference: TPS548B22RVF PG1.0	QBS Product Reference: TPS548D22RVF PG1.0
AC	Autoclave 121C	96 Hours	-	-	-	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	-	-
HAS T	Biased HAST, 110C/85%RH	264 Hours	3/231/0	-	-	-
HAS T	Biased HAST, 130C/85%RH	96 Hours	-	-	-	1/77/0
HBM	ESD - HBM	2500 V	1/3/0	1/3/0	1/3/0	-
CDM	ESD - CDM	1500 V	1/3/0	1/3/0	1/3/0	1/3/0
HTOL	Life Test, 150C	300 Hours	1/77/0	-	3/231/0	-
HTOL	Life Test, 155C	240 Hours	-	-	-	3/231/0
LU	Latch-up	(per JESD78)	1/6/0	1/6/0	1/6/0	1/6/0
TC	Temperature Cycle, -55/125C	700 Cycles	3/231/0	1/77/0	3/231/0	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0	3/231/0

- QBS: Qual By Similarity
- Qual Device TPS543C20RVF is qualified at LEVEL2-260C
- Device TPS543C20RVF contains multiple dies.

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

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