

PCN Number:	20180327001		PCN Date:	April 2, 2018																
Title:	Qualification of AP3 as an additional Assembly & Test site for select devices																			
Customer Contact:	PCN Manager	Dept:	Quality Services																	
Proposed 1st Ship Date:	July 2, 2018	Estimated Sample Availability:	Date Provided at Sample request																	
Change Type:																				
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design	<input type="checkbox"/>																
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet	<input type="checkbox"/>																
<input type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change	<input type="checkbox"/>																
<input type="checkbox"/>	Mechanical Specification	<input checked="" type="checkbox"/>	Test Site	<input type="checkbox"/>																
<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	<input type="checkbox"/>																
PCN Details																				
Description of Change:																				
Texas Instruments Incorporated is announcing the qualification AP3 as Additional Assembly and Test Site for select devices listed in the "Product Affected" Section. Material differences between sites 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>PSI Technologies</td> <td>PSI</td> <td>PHL</td> <td>Calamba</td> </tr> <tr> <td>UTAC Thailand</td> <td>NS2</td> <td>THA</td> <td>Bangkok</td> </tr> <tr> <td>Amkor P3</td> <td>AP3</td> <td>PHL</td> <td>Biñan</td> </tr> </tbody> </table>					Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly Site City	PSI Technologies	PSI	PHL	Calamba	UTAC Thailand	NS2	THA	Bangkok	Amkor P3	AP3	PHL	Biñan
Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly Site City																	
PSI Technologies	PSI	PHL	Calamba																	
UTAC Thailand	NS2	THA	Bangkok																	
Amkor P3	AP3	PHL	Biñan																	
Material Differences:																				
	PSI Technologies	UTAC Thailand	Amkor P3																	
Wire Type	Cu	Au	Au																	
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 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 from the TI Eco-Info website . There is no impact to the material meeting current regulatory compliance requirements with this PCN change.																	
Changes to product identification resulting from this PCN:																				
<table border="1"> <thead> <tr> <th colspan="3">Assembly Site</th> </tr> </thead> <tbody> <tr> <td>PSI Technologies</td> <td>Assembly Site Origin (22L)</td> <td>ASO: PSI</td> </tr> <tr> <td>UTAC Thailand</td> <td>Assembly Site Origin (22L)</td> <td>ASO: NS2</td> </tr> <tr> <td>Amkor P3</td> <td>Assembly Site Origin (22L)</td> <td>ASO: AP3</td> </tr> </tbody> </table>					Assembly Site			PSI Technologies	Assembly Site Origin (22L)	ASO: PSI	UTAC Thailand	Assembly Site Origin (22L)	ASO: NS2	Amkor P3	Assembly Site Origin (22L)	ASO: AP3				
Assembly Site																				
PSI Technologies	Assembly Site Origin (22L)	ASO: PSI																		
UTAC Thailand	Assembly Site Origin (22L)	ASO: NS2																		
Amkor P3	Assembly Site Origin (22L)	ASO: AP3																		

Sample product shipping label (not actual product label)

TEXAS INSTRUMENTS
 MADE IN: Malaysia
 2DC: 2Q:
 MSL 2 /260C/1 YEAR SEAL DT
 MSL 1 /235C/UNLIM 03/29/04
 OPT:
 ITEM: 39
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:

CSD59978Q5MC	CSD95472Q5MCT	CSD95490Q5MCT	CSD95494Q5MCT
CSD95472Q5MC	CSD95490Q5MC	CSD95494Q5MC	

Qualification Report

CSD95490Q5MC and CSD95494Q5MC - AMKOR Pkg Qualification

Approve 03/19/2018

Product Attributes

Attributes	Qual Device: <u>CSD95490Q5MC</u> <u>AIZU FFAB</u>	Qual Device: <u>CSD95490Q5MC</u> <u>CFAB MIHO</u>	QBS Product Reference: <u>CSD95490Q5MC</u>	QBS Product Reference: <u>CSD95490Q5MC</u>
Assembly Site	AMKOR AP3	AMKOR AP3	UTAC	UTAC
Package Family	QFN6x5(MM)	QFN6x5(MM)	QFN6x5(MM)	QFN6x5(MM)
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	FFAB AIZU CFAB	MIHO CFAB CFAB	MIHO CFAB CFAB	FFAB AIZU CFAB
Wafer Process	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL2-260C: CSD95490Q5MC CFAB MIHO, CSD95490Q5MC AIZU FFAB, CSD95494Q5MC

- Devices contain multiple dies: CSD95494Q5MC, CSD95490Q5MC AIZU FFAB, CSD95490Q5MC CFAB MIHO

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>CSD95490Q5MC</u> <u>AIZU FFAB</u>	Qual Device: <u>CSD95490Q5MC</u> <u>CFAB MIHO</u>	QBS Product Reference: <u>CSD95490Q5MC</u>	QBS Product Reference: <u>CSD95490Q5MC</u>
AC	Autoclave 121C	96 Hours	-	-	3/231/0	-
DIOL	Dynamic Intermittent Operating Life	10000 Cycles	-	-	3/231/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	1/77/0	2/154/0	3/231/0	2/154/0
HBM	ESD - HBM	3000V	-	-	-	1/3/0
CDM	ESD - CDM	2000 V	-	-	-	1/3/0
HTSL	High Temp. Storage Bake, 150C	1000 Hours	-	-	3/161/0	-
LU	Latch-up	(per JESD78)	-	-	-	1/6/0
SD	Solderability	8 Hours Steam Age, Pb-Free	1/10/0	2/20/0	-	-
TC	Temperature Cycle, -55/125C	700 Cycles	1/77/0	2/154/0	3/231/0	3/231/0

- 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

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

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

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 products. Customers are solely responsible to conduct sufficient engineering and additional qualification testing to determine whether a device is suitable for use in their applications. Using TI products outside limits stated in TI's datasheet may void TI's warranty. See TI's Terms of Sale at "<http://www.ti.com/lstds/ti/legal/termsofsale.page>"

Qualification Report

CSD95472Q5MC and CSD59978Q5MC Offloading to Amko

Approve 03/16/2018

Product Attributes

Attributes	Qual Device: <u>CSD59978Q5MC</u>	Qual Device: <u>CSD95472Q5MC</u>	QBS Product Reference: <u>CSD59978Q5MC</u>	QBS Product Reference: <u>CSD95490Q5MC</u>	QBS Product Reference: <u>CSD95490Q5MC</u>
Assembly Site	AMKOR AP3	AMKOR AP3	PSI	UTAC-THAILAND	UTAC-THAILAND
Package Family	QFN6x5(MM)	QFN6x5(MM)	QFN6x5(MM)	QFN6x5(MM)	QFN6x5(MM)
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	MIHO CFAB CFAB	MIHO CFAB CFAB	MIHO CFAB CFAB	MIHO CFAB CFAB	FFAB AIZU CFAB
Wafer Process	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010

Attributes	QBS Product Reference: <u>CSD95490Q5MC AIZU</u>	QBS Product Reference: <u>CSD95490Q5MC AIZU</u> <u>FFAB</u>	QBS Product Reference: <u>CSD95490Q5MC CFAB</u>	QBS Product Reference: <u>CSD95490Q5MC CFAB</u> <u>MIHO</u>
Assembly Site	UTAC -THAILAND	AMKOR AP3	UTAC -THAILAND	AMKOR AP3
Package Family	QFN6x5(MM)	QFN6x5(MM)	QFN6x5(MM)	QFN6x5(MM)
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	FFAB AIZU CFAB	FFAB AIZU CFAB	FFAB CFAB CFAB	MIHO CFAB CFAB
Wafer Process	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010	LBC7 NEXFET GEN2.2 LV2010 NEXFET GEN2.2 LV2010

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>CSD59978Q5M</u> <u>C</u>	Qual Device: <u>CSD95472Q5M</u> <u>C</u>	QBS Product Reference: <u>CSD59978Q5M</u> <u>C</u>	QBS Product Reference: <u>CSD95490Q5M</u> <u>C</u>	QBS Product Reference: <u>CSD95490Q5M</u> <u>C</u>
AC	Autoclave 121C	96 Hours	-	-	-	3/231/0	-
DIOL	Dynamic Intermittent Operating Life	10000 Cycles	-	-	-	3/231/0	-
ED	Electrical Characterization	Per Datasheet Parameters	-	Pass	Pass	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	3/231/0	2/154/0
HBM	ESD - HBM	3000V	-	-	1/3/0	-	1/3/0
CDM	ESD - CDM	1500 V	-	-	1/3/0	-	1/3/0
HTSL	High Temp. Storage Bake, 150C	1000 Hours	-	-	-	3/161/0	-
LU	Latch-up	(per JESD78)	-	-	1/6/0	-	1/6/0
SD	Solderability	8 Hours Steam Age, Pb-Free	-	-	-	-	-
TC	Temperature Cycle, -55/125C	700 Cycles	-	3/231/0	-	3/231/0	3/231/0
YLD	FTY and Bin Summary	-	Pass	Pass	-	-	-

Type	Test Name / Condition	Duration	QBS Product Reference: <u>CSD95490Q5MC</u> <u>AIZU</u>	QBS Product Reference: <u>CSD95490Q5MC</u> <u>AIZU FFAB</u>	QBS Product Reference: <u>CSD95490Q5MC</u> <u>CFAB</u>	QBS Product Reference: <u>CSD95490Q5MC</u> <u>CFAB MIHO</u>
AC	Autoclave 121C	96 Hours	-	-	-	-
DIOL	Dynamic Intermittent Operating Life	10000 Cycles	-	-	-	-
ED	Electrical Characterization	Per Datasheet Parameters	-	-	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	1/77/0	-	2/154/0
HBM	ESD - HBM	3000V	-	-	-	-
CDM	ESD - CDM	1500 V	-	-	-	-
HTSL	High Temp. Storage Bake, 150C	1000 Hours	-	-	-	-
LU	Latch-up	(per JESD78)	-	-	-	-
SD	Solderability	8 Hours Steam Age, Pb-Free	-	1/10/0	-	2/20/0
TC	Temperature Cycle, -55/125C	700 Cycles	-	1/77/0	-	2/154/0
YLD	FTY and Bin Summary	-	Pass	Pass	Pass	Pass

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

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