

PCN Number:	20141218000		PCN Date:	12/19/2014	
Title:	Qualification of Amkor Philippines and JCAP China as an Alternate Assembly and Test site for Select Devices				
Customer Contact:	PCN Manager	Phone:	+1(214)480-6037	Dept:	Quality Services
Proposed 1st Ship Date:	03/19/2015		Estimated Sample Availability:	Provided upon Request	
Change Type:					
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input checked="" type="checkbox"/>	Assembly Materials
<input type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification
<input checked="" type="checkbox"/>	Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Wafer Fab Materials	<input type="checkbox"/>	Wafer Fab Process
	<input type="checkbox"/>		Part number change		
PCN Details					
Description of Change:					
Texas Instruments is pleased to announce the qualification of Amkor Philippines and JCAP China as alternate Assembly and test sites for the devices listed below. The material set will remain the same for the devices in Group 1b and 2. Group 1a BOM differences are noted below:					
		PSi	Clark	Amkor	
Mold Compound		SID#202828	4208625	SID#202828	
Lead Finish		Matte Sn	NiPdAu	Matte Sn	
	Current Assembly/Test Site	New Assembly/Test Site			
Group 1B	PSi	Amkor			
	Current Probe/Backend Site	New Probe/Backend Site			
Group 2	TI Clark	JCAP China			
Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.					
Reason for Change:					
Continuity of Supply					
Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):					
None					
Changes to product identification resulting from this PCN:					
Assembly Site					
PSi	Assembly Site Origin (22L)		ASO: PAC		
TI Clark	Assembly Site Origin (22L)		ASO: QAB		
Amkor Philippines	Assembly Site Origin (22L)		ASO: AP3		
JCAP China	Assembly Site Origin (22L)		ASO: JCP		
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

G4



(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

Topside Device marking:

Assembly site code for PAC= E

Assembly site Code for QAB = I

Assembly site code for AP3= 3

Assembly site code for JCP= P

Product Affected

Group 1a Device List – Power Block Devices:

CSD58865Q5D	CSD86350Q5D	CSD87330Q3D	CSD87350Q5D
CSD86330Q3D			

Group 1b Device List – Discrete Devices:

CSD16556Q5B	CSD17556Q5BT	CSD18509Q5B	CSD18540Q5B
CSD16570Q5B	CSD17570Q5B	CSD18509Q5BT	CSD18540Q5BT
CSD16570Q5BT	CSD17570Q5BT	CSD18532Q5B	CSD19532Q5B
CSD17556Q5B	CSD18502Q5B	CSD18532Q5BT	CSD19532Q5BT

Group 2 Device List:

CSD13381F4	CSD17483F4	CSD23381F4T	CSD25481F4T
CSD13381F4R	CSD17483F4R	CSD23382F4	CSD25483F4
CSD13381F4T	CSD17483F4T	CSD23382F4T	CSD25483F4R
CSD17381F4	CSD23381F4	CSD25481F4	CSD25483F4T
CSD17381F4R	CSD23381F4R	CSD25481F4R	CSD68829F4
CSD17381F4T			

Group 1a/1b Qualification Data:



Amkor-AP3 (Final) PowerBlock™(Q5D & Q3) Qualification Summary

CSD87350Q5D Package Qualification Test Summary				
Stress	Conditions	Test Duration	Sample Size	Results
THB	85°C/85%R.H./80% Rated Vds	1K hrs	3 lots x 77 units	Pass
Autoclave	121°C/100% RH	96 hrs	3 lots x 77 units	Pass
Intermittent Op Life	Delta Tj = 100°C 2 min on/2 min off	10K cycles	3 lots x 77 units	Pass
Temp Cycle	-55°C to 125°C	1K cycles	3 lots x 77 units	Pass
CSD87330Q3D Package Qualification Test Summary				
Stress	Conditions	Test Duration	Sample Size	Results
THB	85°C/85%R.H./80% Rated Vds	1K hrs	3 lots x 77 units	Pass
Autoclave	121°C/100% RH	96 hrs	3 lots x 77 units	Pass
Intermittent Op Life	Delta Tj = 100°C 2 min on/2 min off	10K cycles	3 lots x 77 units	Pass
Temp Cycle	-55°C to 125°C	1K cycles	3 lots x 77 units	Pass

These PowerBlock™ devices are qualified by similarity and verified by performing a mask qualification for each to the conditions shown in the table below:

Group 1a Device List – Power Block Devices:				
CSD58865Q5D	CSD86330Q3D	CSD86350Q5D	CSD87330Q3D	
	CSD87350Q5D			
Stress	Conditions	Test Duration	Sample Size	Results
HTRB	150°C/80% Rated Vds	168 hrs	1 lot x 77 units	Pass
HTGB	150°C/80% Rated Vgs	168 hrs	1 lot x 77 units	Pass

TI Information – Selective Disclosure



Amkor-AP3 (Intermediate) Q5B Discrete Qualification Summary

CSD17556Q5B with 4mil die Qualification Test Summary				
Stress	Conditions	Test Duration	Sample Size	Results
THB	85°C/85%R.H./80% Rated Vds	500 hrs	1 lot x 77 units	Pass
Autoclave	121°C/100% RH	96 hrs	1 lot x 77 units	Pass
Intermittent Op Life	Delta Tj = 100°C 2 min on/2 min off	5K cycles	1 lot x 77 units	Pass
Temp Cycle	-55°C to 125°C	1K cycles	1 lot x 77 units	Pass

CSD17570Q5B with 2mil die Qualification Test Summary				
Stress	Conditions	Test Duration	Sample Size	Results
THB	85°C/85%R.H./80% Rated Vds	500 hrs	1 lot x 77 units	Pass
Autoclave	121°C/100% RH	96 hrs	1 lot x 77 units	Pass
Intermittent Op Life	Delta Tj = 100°C 2 min on/2 min off	10K cycles	1 lot x 77 units	Pass
Temp Cycle	-55°C to 125°C	500 cycles	1 lot x 77 units	Pass

These Discrete devices are qualified by similarity and verified by performing a mask qualification for each to the conditions shown in the table below:

Group 1b Device List – Discrete Devices:				
CSD16556Q5B	CSD17570Q5B	CSD18532Q5B	CSD19532Q5B	
CSD17556Q5B	CSD17570Q5BT	CSD18532Q5BT	CSD19532Q5BT	
CSD17556Q5BT	CSD18540Q5B	CSD16570Q5B	CSD18509Q5B	
CSD18502Q5B	CSD18540Q5BT	CSD16570Q5BT	CSD18509Q5BT	
Stress	Conditions	Test Duration	Sample Size	Results
HTRB	150°C/80% Rated Vds	168 hrs	1 lot x 77 units	Pass
HTGB	150°C/80% Rated Vgs	168 hrs	1 lot x 77 units	Pass

TI Information – Selective Disclosure



Attributes	CSD87350Q5D	CSD87330Q3D	CSD17556Q5B	CSD17570Q5B
Assembly site	Amkor – AP3	Amkor – AP3	Amkor – AP3	Amkor – AP3
Package Family	DQY	DQZ	DNK	DNK
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Site	CFAB	CFAB	CFAB	CFAB
Wafer Fab Process	30N10 Gen_2.0	30N10 Gen_2.0	30N20 Gen_1.3	30N20 Gen_1.4

MSL1 preconditioning performed on all Q5D, Q5B & Q3D devices prior to THB, Autoclave, & Temp Cycle stresses:

- Bake: 24 hours @ 125°C
- Damp Heat: 168 hours @ 85°C/85% RH (Level 1)
- 3X reflow + flux + rinse, 260°C Pb free reflow temp

Group 2 Qualification Data:



Product Qualification Final Report

May 14, 2014

CSD17381F4

TI Released: May 19, 2014

CSD17381F4 Manufacturing Sources			
Wafer Fab: CFAB (China)	Assembly Site: Clark (Philippines)	Test Site: Clark (Philippines)	Wafer Fab: Fab (Country) Assembly Site: Assembly (Country) Test Site: Test (Country)
Wafer Fab: CFAB (China)	Assembly Site: JCAP (China)	Test Site: JCAP (China)	Wafer Fab: Fab (Country) Assembly Site: Assembly (Country) Test Site: Test (Country)

Qualification Results CSD17381F4 (APN tbd)					
Test Type	Conditions/Duration	# Lots	SS/Lot	Fails	Source
SILICON Qual High Temp. Reversed Bias 1000hrs @ 150°C Vds 80%		CFAB 3	77	0	CSD17381F4
SILICON Qual High Temp. Gate Bias 1000hrs @ 150°C Vgs 80%		CFAB 3	77	0	CSD17381F4
SILICON Qual ESD: HBM	7000V	CFAB 1	3	0	CSD17381F4
SILICON Qual ESD: CDM	2000V	CFAB 1	3	0	CSD17381F4
SILICON Qual Temperature Humidity Bias* 1000 hrs 85°C/ 85% humidity, 80% Vds		CFAB 3	77	0	CSD17381F4
SILICON Qual IOL (Power Cycle) 10K cycles, Delta Tj =100°C; 2min on/ 2min off		CFAB 3	77	0	CSD17381F4
		JCAP 3	77	0	CSD23382F4
PACKAGE Qual Temperature Cycling* 1000 cycles -55°C to 125°C (cingulated die) & 1000 cycles -10°C to +100°C (daughter card mounted)		Clark 3&	77	0	CSD17381F4
		JCAP 3	77	0	CSD23382F4
PACKAGE Qual Autoclave* 96hrs 121°C @ 2 ATM		-	-	-	Not applicable to YJC (Not plastic encapsulated)
PACKAGE Qual Physical Dimensions Per Product Specification		Clark 3	5	0	CSD17381F4
		JCAP 3	5	0	CSD23382F4

*Units undergo pre-conditioning before stress.

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

Location	E-Mail
USA	PCNAmericasContact@list.ti.com
Europe	PCNEuropeContact@list.ti.com
Asia Pacific	PCNAsiaContact@list.ti.com
Japan	PCNJapanContact@list.ti.com