



**12500 TI Boulevard, MS 8640, Dallas, Texas 75243**

**PCN#20180814000**

**Qualify TI Chengdu (CDAT) as an additional Assembly & Test site for select devices  
Change Notification / Sample Request**

**Date:** August 27, 2018  
**To:** PREMIER FARNELL PCN

Dear Customer:

This is an announcement of a change to a device that is currently offered by Texas Instruments. The details of this change are on the following pages.

We request you acknowledge receipt of this notification within **30** days of the date of this notice. Lack of acknowledgement of this notice within 30 days constitutes acceptance of the change. If you require samples or additional data to support your evaluation, please request within 30 days.

The proposed first ship date is indicated on page 3 of this notification, unless customer agreement has been reached on an earlier implementation of the change.

This notice does not change the end-of-life status of any product. Should product affected be on a previously issued product withdrawal/discontinuance notice, this notification does not extend the life of that product or change the life time buy offering/discontinuance plan.

For questions regarding this notice, contact your local Field Sales Representative or the PCN Manager ([PCN\\_ww\\_admin\\_team@list.ti.com](mailto:PCN_ww_admin_team@list.ti.com)).

Sincerely,

PCN Team  
SC Business Services

**20180814000**  
**Attachment: 1**

**Products Affected:**

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

<b>DEVICE</b>	<b>CUSTOMER PART NUMBER</b>
INA3221AIRGVT	null
MSP430F5171IRSBT	null
MSP430F5172IRSBT	null
MSP430I2041TRHBT	null
TPS25944ARVCT	null
TPS25942ARVCT	null
TPS25944LRVCT	null

Technical details of this Product Change follow on the next page(s).

<b>PCN Number:</b>	20180814000	<b>PCN Date:</b>	Aug 27, 2018																
<b>Title:</b>	Qualify TI Chengdu (CDAT) as an additional Assembly & 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>	Nov 27, 2018	<b>Estimated Sample Availability:</b>	Provided upon Request																
<b>Change Type:</b>																			
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design																
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet																
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change																
<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																
<b>PCN Details</b>																			
<b>Description of Change:</b>																			
Texas Instruments is pleased to announce the qualification of TI Chengdu (CDAT) as an additional Assembly & Test site for the list of devices shown below. 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 City</th> </tr> </thead> <tbody> <tr> <td>TI Clark</td> <td>QAB</td> <td>PHL</td> <td>Angeles City</td> </tr> <tr> <td>TI Malaysia</td> <td>MLA</td> <td>MYS</td> <td>Kuala Lumpur</td> </tr> <tr> <td><b>TI Chengdu</b></td> <td><b>CDA</b></td> <td><b>CHN</b></td> <td><b>Chengdu</b></td> </tr> </tbody> </table>				Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly City	TI Clark	QAB	PHL	Angeles City	TI Malaysia	MLA	MYS	Kuala Lumpur	<b>TI Chengdu</b>	<b>CDA</b>	<b>CHN</b>	<b>Chengdu</b>
Assembly Site	Assembly Site Origin	Assembly Country Code	Assembly City																
TI Clark	QAB	PHL	Angeles City																
TI Malaysia	MLA	MYS	Kuala Lumpur																
<b>TI Chengdu</b>	<b>CDA</b>	<b>CHN</b>	<b>Chengdu</b>																
<b>Material Differences:</b>																			
<b>Group 1 Device:</b>																			
	<b>TI Clark</b>	<b>TI Malaysia</b>	<b>TI Chengdu</b>																
Mold compound	4208625	4208625	4222198																
<b>Group 2 Device:</b>																			
	<b>TI Clark</b>	<b>TI Chengdu</b>																	
Mount compound	4207768	4207123																	
Mold compound	4208625	4222198																	
Test coverage, insertions, conditions will remain consistent with current testing and verified with test MQ.																			
<b>Reason for Change:</b>																			
Continuity of Supply																			
<b>Anticipated impact on Material Declaration</b>																			
<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 <a href="#">TI Eco-Info website</a> . There is no impact to the material meeting current regulatory compliance requirements with this PCN change.																
<b>Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):</b>																			
None																			
<b>Changes to product identification resulting from this PCN:</b>																			

Assembly Site		
TI Clark Philippines	Assembly Site Origin (22L)	ASO: QAB
TI Malaysia	Assembly Site Origin (22L)	ASO: MLA
TI Chengdu	Assembly Site Origin (22L)	ASO: CDA

Sample product shipping label (not actual product label)





MADE IN: Malaysia  
2DC: 2d:  
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

**Group 1 Product Affected:**

HD3SS460IRNHR	MSP430F5152IRSBT	MSP430I2031TRHBR	TPS25942ARVCT
HD3SS460IRNHT	MSP430F5171IRSBR	MSP430I2031TRHBT	TPS25942LRVCR
HD3SS460RNHR	MSP430F5171IRSBT	MSP430I2040TRHBR	TPS25942LRVCT
HD3SS460RNHT	MSP430F5172IRSBR	MSP430I2040TRHBT	TPS25944ARVCR
MSP430F5131IRSBR	MSP430F5172IRSBT	MSP430I2041TRHBR	TPS25944ARVCT
MSP430F5131IRSBT	MSP430I2020TRHBR	MSP430I2041TRHBT	TPS25944LRVCR
MSP430F5132IRSBR	MSP430I2020TRHBT	MSP430V591IRSBR	TPS25944LRVCT
MSP430F5132IRSBT	MSP430I2021TRHBR	TPS25940ARVCR	TPS65235RUKR
MSP430F5151IRSBR	MSP430I2021TRHBT	TPS25940ARVCT	TPS65235RUKT
MSP430F5151IRSBT	MSP430I2030TRHBR	TPS25940LRVCT	
MSP430F5152IRSBR	MSP430I2030TRHBT	TPS25942ARVCR	

**Group 2 Product Affected:**

BQ294712DSGR	BQ294712DSGT	INA3221AIRGVR	INA3221AIRGVT
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## Group 1 Qualification Report

### CDAT QFN Second Source Assembly Qualification for MSP430F51XX

Approve Date 08-Aug-2018

#### Product Attributes

Attributes	Qual Device: <u>MSP430F5172IRSB</u>
Assembly Site	CDAT
Package Family	WQFN
Flammability Rating	UL 94 V-0
Wafer Fab Supplier	TSMC-WF3
Wafer Process	0.18UM-TSMC

- Qual Device MSP430F5172IRSB is qualified at LEVEL2-260C

## Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>MSP430F5172IRSB</u>
AC	Autoclave 121C	96 Hours	3/231/0
HAST	Biased HAST, 110C/85%RH	264 Hours	3/77/0
HTSL	High Temp. Storage Bake, 150C	1000 Hours	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0

- Preconditioning was performed for Autoclave, Biased HAST, Temperature Cycle, and HTSL.

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/lscs/ti/legal/termsofsale.page>"

## Qualifying devices (TPS25940ARVC, TPS25940LRVC, TPS25942ARVC, TPS25942LRVC, TPS25944ARVC, TPS25944LRVC) in CDAT

Approve Date 06-Aug-2018

### Product Attributes

Attributes	Qual Device: <u>TPS25940ARVCR</u>	QBS Product Reference: <u>TPS25940ARVC</u>	QBS Product Reference: <u>TPS25940LRVC</u>	QBS Product Reference: <u>TPS25940LRVC</u>
Assembly Site	CDAT	CLARK	CLARK	CLARK
Package Family	QFN	QFN	QFN	QFN
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	RFAB	RFAB	RFAB	RFAB
Wafer Process	LBC7	LBC7	LBC7	LBC7

Attributes	QBS Product Reference: <u>TPS25942ARVC</u>	QBS Product Reference: <u>TPS25942LRVC</u>	QBS Package Reference: <u>TPS254900AIRVCRQ1</u>
Assembly Site	CLARK	CLARK	CDAT
Package Family	QFN	QFN	QFN
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	RFAB	RFAB	RFAB
Wafer Process	LBC7	LBC7	LBC7

- QBS: Qual By Similarity

- Qual Device TPS25940ARVCR is qualified at LEVEL2-260C

## Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>TPS25940ARVCR</u>	QBS Product Reference: <u>TPS25940ARVC</u>	QBS Product Reference: <u>TPS25940LRVC</u>	QBS Product Reference: <u>TPS25940LRVC</u>
AC	Autoclave 121C	96 Hours	-	1/77/0	-	-
ED	Electrical Characterization	Per Datasheet Parameters	-	Pass	Pass	-
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	3/2400/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	2/77/0	2/154/0
HBM	ESD - HBM	2500 V	-	1/3/0	-	-

CDM	ESD - CDM	750 V	-	1/3/0	-	-
HTOL	Life Test, 125C	1000	-	-	-	-
HTOL	Life Test, 150C	300 Hours	-	1/77/0	-	3/231/0
HTSL	High Temp. Storage Bake, 150C	1000	-	-	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	1/77/0	-	1/77/0
LU	Latch-up	(per JESD78)	-	1/6/0	-	3/18/0
PD	Physical Dimensions	--	-	1/20/0	-	2/40/0
SD	Solderability	Pb	-	-	-	-
SD	Solderability	8 Hours Steam Age; Pb-Free	-	1/22/0	-	3/80/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	1/77/0	-	2/154/0
WBP	Bond Pull	Wires	1/30/0	1/30/0	-	3/94/0
WBS	Ball Bond Shear	Wires	1/76/0	1/76/0	-	3/108/0

Type	Test Name / Condition	Duration	QBS Product Reference: <u>TPS25942ARVC</u>	QBS Product Reference: <u>TPS25942LRVC</u>	QBS Package Reference: <u>TPS254900AIRVCRQ1</u>
AC	Autoclave 121C	96 Hours	-	-	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0
HBM	ESD - HBM	2500 V	-	-	1/3/0
CDM	ESD - CDM	750 V	-	-	-
HTOL	Life Test, 125C	1000	-	-	3/231/0
HTOL	Life Test, 150C	300 Hours	-	-	-
HTSL	High Temp. Storage Bake, 150C	1000	-	-	1/77/0
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	-
LU	Latch-up	(per JESD78)	-	-	-
PD	Physical Dimensions	--	-	-	1/30/0
SD	Solderability	Pb	-	-	1/15/0
SD	Solderability	8 Hours Steam Age; Pb-Free	-	-	1/15/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	3/231/0
WBP	Bond Pull	Wires	-	-	3/90/0
WBS	Ball Bond Shear	Wires	-	-	3/90/0

- 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

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## TPS65235RUK Houyi II CDAT Qualification

Approve Date 06-Jun-2018

### Product Attributes

Attributes	Qual Device: <u>TPS65235RUK</u>	QBS Product Reference: <u>TPS65235RUK</u>	QBS Product Reference: <u>TPS65235-2RUK</u>	QBS Process Reference: <u>TPS51217DSC</u>	QBS Package Reference: <u>TPS51285BRUKR</u>	QBS Package Reference: <u>TPS53641RSBR</u>	QBS Package Reference: <u>BQ294504DRVR</u>
<b>Assembly Site</b>	CDAT	CLARK-AT	CDAT	CLARK-AT	CDAT	CDAT	CDAT
<b>Package Family</b>	QFN/ SON	QFN/ SON	QFN/ SON	QFN/ SON	QFN/ SON	QFN/ SON	QFN/ SON
<b>Flammability Rating</b>	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
<b>Wafer Fab Supplier</b>	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB
<b>Wafer Process</b>	LBC7	LBC7	LBC7	LBC7	LBC7X	LBC7X	LBC7

- QBS: Qual By Similarity

- Qual Device TPS65235RUK is qualified at LEVEL2-260C

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>TPS65235RUK</u>	QBS Product Reference: <u>TPS65235RUK</u>	QBS Product Reference: <u>TPS65235-2RUK</u>	QBS Process Reference: <u>TPS51217DSC</u>
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass	Pass	Pass
HBM	ESD - HBM	4000 V	-	1/3/0	-	-
CDM	ESD - CDM	1500 V	-	1/3/0	-	3/9/0
LU	Latch-up	(per JESD78)	-	1/6/0	-	3/18/0
HTOL	Life Test, 135C	635 Hours	-	-	-	3/231/0
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	1/77/0	3/231/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	3/231/0
AC	Autoclave, 121C	96 Hours	-	-	-	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	1/77/0	3/231/0
WBP	Bond Pull	Wires	-	-	-	-
WBS	Ball Bond Shear	Wires	-	-	-	-

Type	Test Name / Condition	Duration	QBS Package Reference: <u>TPS51285BRUKR</u>	QBS Package Reference: <u>TPS53641RSBR</u>	QBS Package Reference: <u>BQ294504DRVR</u>
ED	Electrical Characterization	Per Datasheet Parameters	-	-	-
HBM	ESD - HBM	4000 V	-	-	-
CDM	ESD - CDM	1500 V	-	-	-
LU	Latch-up	(per JESD78)	-	-	-
HTOL	Life Test, 135C	635 Hours	-	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	3/231/0	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0
AC	Autoclave, 121C	96 Hours	3/231/0	3/231/0	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0
WBP	Bond Pull	Wires	3/228/0	3/228/0	-
WBS	Ball Bond Shear	Wires	3/228/0	3/228/0	-

- 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

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## MSP430I204X CDAT Second Source Assembly Qualification

Approve Date 10-Aug-2018

### Product Attributes

Attributes	Qual Device #1: <u>MSP430I2040TRHB</u>	QBS Package Reference #2: <u>MSP430F5172IRSB</u>	QBS Package Reference #3: <u>MSP430FR2633IRHB</u>
<b>Assembly Site</b>	CDAT	CDAT	CHENGDU
<b>Package Family</b>	VQFN	WQFN	VQFN
<b>Flammability Rating</b>	UL 94 V-0	UL 94 V-0	UL 94 V-0
<b>Wafer Fab Supplier</b>	TSMC-F10	TSMC-WF3	DMOS6
<b>Wafer Fab Process</b>	0.18UM-TSMC	0.18UM-TSMC	HPE035

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device #1: <u>MSP430I2040TRHB</u>	QBS Package Reference #2: <u>MSP430F5172IRSB</u>	QBS Package Reference #3: <u>MSP430FR2633IRHB</u>
AC	Autoclave 121C	96 Hours	1/77/0	3/231/0	3/231/0
HAST	Biased HAST, 110C/85%RH	264 Hours	QBS #2,3	3/77/0	3/231/0
HTSL	High Temp. Storage Bake, 150C	1000 Hours	QBS #2,3	3/231/0	3/231/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0	3/231/0

Preconditioning was performed for Autoclave, Biased HAST, Temperature Cycle, and HTSL.

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

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**HD3SS460RNHR and HD3SS460IRNH in CDAT**  
Approve Date 13-Aug-2018

**Product Attributes**

Attributes	Qual Device: <u>HD3SS460RNH</u>	QBS Process Reference: <u>HD3SS3411TRWAQ1</u>
Die Revision	A	CC0
Wafer Fab Supplier	FFAB	FFAB
Wafer Process	1833BICOM3ZL	1833BICOM3ZL_RF
Assembly Site	CDAT	CLARK-AT
Package Family	QFN	QFN
Package Designator	RNH	RWA
Pin Count	30	18
Flammability Rating	UL 94 V-0	UL 94 V-0

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL2-260C: HD3SS460IRNH, HD3SS460RNH

**Qualification Results**

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

Type	Test Name / Condition	Duration	Qual Device: <u>HD3SS460RNH</u>	QBS Process Reference: <u>HD3SS3411TRWAQ1</u>
AC	Autoclave 121C	96 Hours	1/77/0	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass
ELFR	Early Life Failure Rate, 140C	24 Hours	-	3/2400/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0
HBM	ESD - HBM	4000 V	1/3/0	1/3/0
CDM	ESD - CDM	1500 V	1/3/0	1/3/0
HTOL	Life Test, 140C	480 Hours	-	3/231/0
HTSL	High Temp. Storage Bake, 150C	1000 Hours	3/231/0	2/90/0
LU	Latch-up 90C	(per JESD78)	1/6/0	1/6/0
LU	Latch-up 25C	(per JESD78)	1/6/0	1/6/0
PD	Physical Dimensions	Cpk>1.67	3/15/0	3/30/0
SD	Surface Mount Solderability	Pb Free	3/15/0	1/15/0
SD	Surface Mount Solderability	Pb	3/15/0	1/15/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0
MQ	Manufacturing Assembly	(per mfg. Site specification)	Pass	Pass
BPC	Bond Pad Cratering Check		3/6/0	
TPI	Thermal Path Integrity	MSL2 at 260C( +5/-0C)	3/26/0	-
UHAST	Unbiased HAST, 130C/85%RH	96 Hours	1/77/0	-
WBP	Bond Pull	Wires	3/228/0	3/228/0
WBS	Ball Bond Shear	Wires	3/228/0	3/228/0

- 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

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## Group 2 Qualification Report

### Qualification of BQ294712DSG in RFAB and CDAT using 8-pin TQFN with 0.96 mil Cu wire

Approve Date 23-Jul-2018

#### Product Attributes

Attributes	Qual Device: <u>BQ294712DSG</u>	QBS Product Reference: <u>BQ294700DSG</u>	QBS Process Reference: <u>TLS2602DCA</u> (CARDINAL)	QBS Process Reference: <u>TPS2543QRTE</u>	QBS Package Reference: <u>OPA2170AIDSGR</u>	QBS Package Reference: <u>OPA2333PIDSG</u>
<b>Assembly Site</b>	CHENGDU A/T	CLARK-AT	TAI	CLARK-AT	CDAT	CDAT
<b>Package Family</b>	SON, 2 x 2 MM	DSG	HTSSOP	TQFN	WSON	QFN
<b>Flammability Rating</b>	-	-	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
<b>Wafer Fab Supplier</b>	RFAB	RFAB	RFAB	RFAB	DM0S5	AIZU
<b>Wafer Process</b>	LBC7	LBC7	LBC7	LBC7	50HPA07HV	50HPA07

- QBS: Qual By Similarity

- Qual Device BQ294712DSG is qualified at LEVEL2-260CG

#### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>BQ294712DSG</u>	QBS Product Reference: <u>BQ294700DSG</u>	QBS Process Reference: <u>TLS2602DCA</u> (CARDINAL)	QBS Process Reference: <u>TPS2543QRTE</u>
AC	Autoclave 121C	96 Hours	-	-	1/77/0	3/231/0
ED	Electrical Distributions	Cpk>1.67 Room, Hot, & Cold	-	-	-	3/90/0
ED	Electrical Characterization	Per Datasheet Parameters	-	Pass	-	-
ELFR	Early Life Failure Rate, 150C	24 Hours	-	-	-	3/2640/0
HAST	Biased HAST, 110C/85%RH	264 Hours	-	-	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	-	3/231/0
HBM	ESD - HBM	4000 V	-	1/3/0	-	1/3/0
CDM	ESD - CDM	1500 V	-	1/3/0	-	1/3/0
HTOL	Life Test, 125C	1000 Hours	-	-	3/231/0	-
HTOL	Life Test, 150C	408 Hours	-	-	-	3/231/0
HTSL	High Temp Storage Bake	420 Hours	-	-	-	-

	170C					
HTSL	High Temp Storage Bake 175C	500 Hours	-	-	-	3/149/0
LU	Latch-up	(per JESD78)	-	1/6/0	3/18/0	1/6/0
PD	Physical Dimensions	--	-	-	-	3/90/0
SD	Surface Mount Solderability	Pb Free	-	-	-	2/30/0
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	1/77/0	3/231/0
UHAST	Unbiased HAST, 130C/85%RH	96 Hours	-	-	-	-

Type	Test Name / Condition	Duration	QBS Package Reference: <u>OPA2170AIDSGR</u>	QBS Package Reference: <u>OPA2333PIDSG</u>
AC	Autoclave 121C	96 Hours	-	-
ED	Electrical Distributions	Cpk>1.67 Room, Hot, & Cold	-	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	Pass
ELFR	Early Life Failure Rate, 150C	24 Hours	-	-
HAST	Biased HAST, 110C/85%RH	264 Hours	-	3/231/0
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-
HBM	ESD - HBM	4000 V	3/9/0	1/3/0
CDM	ESD - CDM	1500 V	2/6/0	1/3/0
HTOL	Life Test, 125C	1000 Hours	-	-
HTOL	Life Test, 150C	408 Hours	-	-
HTSL	High Temp Storage Bake 170C	420 Hours	3/231/0	3/231/0
HTSL	High Temp Storage Bake 175C	500 Hours	-	-
LU	Latch-up	(per JESD78)	1/6/0	1/6/0
PD	Physical Dimensions	--	1/5/0	-
SD	Surface Mount Solderability	Pb Free	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0
UHAST	Unbiased HAST, 130C/85%RH	96 Hours	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/lscs/ti/legal/termsofsale.page>

## QFN Offload from Clark-AT to CDAT: INA3221AIRGVR

Approve Date 20-Aug-2018

### Product Attributes

Attributes	Qual Device: <u>INA3221AIRGVR</u>	QBS Package Reference: <u>BQ24196RGER</u>	QBS Package Reference: <u>BQ294504DRVVR</u>	QBS Package Reference: <u>OPA2314AIDRBR</u>	QBS Package Reference: <u>TRS3122ERGER</u>
Assembly Site	CDAT	CDAT	CDAT	CDAT	CHENGDU A/T
Package Family	QFN	VQFN	WSON	VSON	VQFN
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	AIZU	RFAB	RFAB	DP1-DM5	RFAB
Wafer Fab Process	50HPA07	LBC7	LBC7	50HPA07	LBC7

- QBS: Qual By Similarity

- Qual Device INA3221AIRGVR is qualified at LEVEL2-260C

### Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>INA3221AIRGVR</u>	QBS Package Reference: <u>BQ24196RGER</u>	QBS Package Reference: <u>BQ294504DRVVR</u>	QBS Package Reference: <u>OPA2314AIDRBR</u>	QBS Package Reference: <u>TRS3122ERGER</u>
AC	Autoclave 121C	96 Hours	-	3/231/0	3/231/0	-	3/231/0
ED	Electrical Characterization	Per Datasheet Parameters	-	-	-	1/30/0	1/30/0
FLAM	Flammability (IEC 695-2-2)	--	-	-	-	-	3/15/0
FLAM	Flammability (UL 94V-0)	--	-	-	-	-	3/15/0
FLAM	Flammability (UL-1694)	--	-	-	-	-	3/15/0
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	-	3/231/0
HTOL	Life Test, 150C	300 Hours	-	-	-	-	1/77/0
HTSL	High Temp Storage Bake 150C	1000 Hours	-	-	-	-	3/231/0
MSL	Moisture Sensitivity, JEDEC	Level 1-260C	-	-	3/36/0	-	-
MSL	Moisture Sensitivity, JEDEC	Level 2-260C	3/36/0	3/36/0	-	-	3/36/0
PD	Physical Dimensions	(per mechanical drawing)	3/15/0	-	-	-	3/30/0
SD	Solderability	8 Hours Steam Age	3/66/0	-	-	3/66/0	1/22/0
TC	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0	3/231/0	3/231/0	3/231/0

Type	Test Name / Condition	Duration	Qual Device: <u>INA3221AIRGVR</u>	QBS Package Reference: <u>BQ24196RGER</u>	QBS Package Reference: <u>BQ294504DRVVR</u>	QBS Package Reference: <u>OPA2314AIDRBR</u>	QBS Package Reference: <u>TRS3122ERGER</u>
VM	Visual / Mechanical	(per mfg. Site specification)	-	-	-	-	3/984/0
WBP	Bond Pull	Wires	3/228/0	3/228/0	3/228/0	3/228/0	3/228/0
WBS	Ball Bond Shear	Wires	3/228/0	3/228/0	3/228/0	3/228/0	3/228/0

- 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

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