12500 TI Boulevard, MS 8640, Dallas, Texas 75243

PCN#20160624002
Qualify New Assembly Material set for Selected Device(s)
Change Notification / Sample Request

Date: 6/27/2016
To: TOKYO ELECTRON DEVICE (DSTR) 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).

Sincerely,

PCN Team
SC Business Services

20160624002
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.

DEVICE	CUSTOMER PART NUMBER
TPS56121DQPR	null
TPS53319DQPT	null
TPS56121DQPT	null
TPS56221DQPT	null
TPS53319DQPR	null
TPS53353DQPT	null
TPS53353DQPR	null
TPS53318DQPR	null
TPS53318DQPT	null
TPS53355DQPT	null
TPS56221DQPR	null

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

PCN Number:	20160624002	**PCN Date:**	06/27/2016
Title:	Qualify New Assembly Material set for Selected Device(s)		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	09/27/2016	**Estimated Sample Availability:**	Date provided at sample request

Change Type:

☐	Assembly Site	☐	Design	☐	Wafer Bump Site
☒	Assembly Process	☐	Data Sheet	☐	Wafer Bump Material
☒	Assembly Materials	☐	Part number change	☐	Wafer Bump Process
☐	Mechanical Specification	☐	Test Site	☐	Wafer Fab Site
☐	Packing/Shipping/Labeling	☐	Test Process	☐	Wafer Fab Materials
				☐	Wafer Fab Process

PCN Details

Description of Change:

Texas Instruments is pleased to announce the qualification of new assembly material set to add Cu as an additional bond wire option for devices listed in "Product affected" section below. Devices will remain in current assembly facility and piece part changes as follows:

Group 1 Device:

Material	Current	Proposed
Wire	0.96 mil Au	0.96 mil Cu
Mount compound	4220838 (Solder paste)	4207123 (Epoxy)

Group 2 Device:

Material	Current	Proposed
Wire	0.96 mil Au	0.80 mil Cu

Reason for Change:

Continuity of supply.
1) To align with world technology trends and use wiring with enhanced mechanical and electrical properties
2) Maximize flexibility within our Assembly/Test production sites.
3) Cu is easier to obtain and stock

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):

None

Anticipated impact on Material Declaration

☐	No Impact to the Material Declaration	☒	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 website.

Changes to product identification resulting from this PCN:

None

Group 1 Product Affected:			
HPA01110DQPR	TPS53353DQPT	TPS544B25RVFT	TPS56121DQPR
HPA01111DQPR	TPS53355ADQPR	TPS544C24RVFR	TPS56121DQPT
SN1109022DQPR	TPS53355ADQPT	TPS544C24RVFT	TPS56221ADQPR
TPS53318DQPR	TPS53355DQPR	TPS544C25RVFR	TPS56221BDQPR
TPS53318DQPT	TPS53355DQPT	TPS544C25RVFT	TPS56221BDQPT
TPS53319DQPR	TPS544B24RVFR	TPS56121ADQPR	TPS56221DQPR
TPS53319DQPT	TPS544B24RVFT	TPS56121BDQPR	TPS56221DQPT
TPS53353DQPR	TPS544B25RVFR	TPS56121BDQPT	

Group 2 Product Affected:
AM1705DPTPD4

Group 1 Qualification Report

Cu Wire Qualification on Std Al (0.6um) bond pads for Clip QFN Devices in TI Clark

Approve Date 10-June-2016

Product Attributes

Attributes	Qual Device: CSD95372AQ5M POWER STAGE	Qual Device: TPS544C24RVFR TOP AVATAR
Assembly Site	CLARK AT	CLARK AT
Package Family	LSON-CLIP	LQFN-CLIP
Flammability Rating	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	CFAB, MH8	CFAB, MH8
Wafer Fab Process	LBC7, N35ULD11L1P1M0C1, N35ULD11L1P1M0C4	LBC7X, N35ULD09L1P1M0C1

- QBS: Qual By Similarity
- Qual Device CSD95372AQ5M POWER STAGE is qualified at LEVEL2-260C
- Qual Device TPS544C24RVFR TOP AVATAR is qualified at LEVEL2-260C
- Device CSD95372AQ5M POWER STAGE contains multiple dies.
- Device TPS544C24RVFR TOP AVATAR contains multiple dies.

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: CSD95372AQ5M POWER STAGE	Qual Device: TPS544C24RVFR TOP AVATAR
AC	**Autoclave 121C	121C, 2 ATM (96 Hours)	3/231/0	-
HAST	**Biased HAST	130C/85%RH/33.3 psia (96 Hours), Vddmax	3/231/0	-
HTSL	High Temp. Storage Bake	150C (1000 Hours)	3/231/0	-
TC	**T/C -55C/125C	-55C/+125C (700 Cycles)	3/231/0	3/231/0

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

Group 2 Qualification Report

TEXAS INSTRUMENTS — Digital Signal Processing

Qualification Report
PTP packages
Copper wire qualification

Report compiled 8th August 2015

Qualification Information			
Qual Type:	Major Change	**Affected Sites:**	Wafer fab : TSMC-14 A/T : TI PHILIPPINES
Affected business:	TI DSP products	**Status:**	Released
Project Reference: The qualification was based on TI QSS 009-401 and Automotive Electronic Council AEC-Q100 rev G where test groups A and C were conducted to prove the change.			

CONSTRUCTION INFORMATION

Package Attributes: PTP Package			
Assembly Site	PHI	**Mold Compound**	4211649
Bond Wire Composition	Cu	**Package Designator**	PTP
Moisture Sensitivity Level	LEVEL3-260C	**Package Size**	24 x 24 mm
Mount Compound	4208458	**Pin Count**	176
Package Family	PowerPad LQFP	**Leadframe Finish**	NiPdAu

QUALIFICATION RESULTS : PTP PACKAGE
Tests groups A and C only were run for this change.

Test Type	Duration / Stress /Test	Lots	Results	Fail	Qualification vehicle
AEC Q100: TEST GROUPS A – ACCELERATED ENVIRONMENT STRESS TESTS					
PC : Preconditioning	MSL3/ 260C	3 lots : All units prior to AC, TC, HTSL	0 / 864		TMS320C6743PTP
	CSAM inspection after Preconditioning	864 units	Validated no internal delamination observed		TMS320C6743PTP
UHAST: Unbiased HAST	110C/2ATM/264 hours	3 lots x 77 units	0/231 @ 264 hours		TMS320C6743PTP
Temperature Cycle	-65C/150C for 500 cycles	3 lots x 77 units	0/231 @ 500 cycles		TMS320C6743PTP
HTSL : High temp storage	150C for 1000 hours	1 lots x 45 units	0/231 @ 1000 hours		TMS320C6743PTP
Reliability data on Biased Humidity testing is QBS to 52C1RFPT that share same x021 bond pad / bonding process/ package BOM.					
THB : Biased Humidity*	85C/85% RH 1000 hours	3 lots x 77 units	0/231 @ 1000 hours		52C1RFPT
*=devices were preconditioned to MSL3/260C prior to THB					
AEC Q100: TEST GROUPS C – PACKAGE INTEGRITY TESTS					
WBP: Wire Bond pull	Cpk > 1.67	1 lot x 5 parts x 30 bonds	Pass		x021 QFP family data
WBS: Wire Bond Shear	Cpk > 1.67	1 lot x 5 parts x 30 bonds	Pass		x021 QFP family data
Data taken post group A reliability testing on x021 QFP devices show no change after package reliability testing					

Use Disclaimer

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Quality and Reliability Data Disclaimer

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customer should provide adequate design and operating safeguards.

Quality and reliability data provided by Texas Instruments is intended to be an estimate of product performance based upon history only. It does not imply that any performance levels reflected in such data can be met if the product is operated outside the conditions expressly stated in the latest published data sheet for a device.

Reliability data shows characteristic failure mechanisms of the specific environmental stress as documented in the industry standards for each stress condition.

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