PCN Number:	20190221000.1	**PCN Date:**	Feb 27, 2019
Title:	Design Change of Select Devices		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	May 27, 2019	**Estimated Sample Availability:**	Date provided at sample request.

Change Type:					
☐	Assembly Site	☐	Assembly Process	☐	Assembly Materials
☒	Design	☐	Electrical Specification	☐	Mechanical Specification
☐	Test Site	☐	Packing/Shipping/Labeling	☐	Test Process
☐	Wafer Bump Site	☐	Wafer Bump Material	☐	Wafer Bump Process
☐	Wafer Fab Site	☐	Wafer Fab Materials	☐	Wafer Fab Process
		☐	Part number change		

PCN Details

Description of Change:

This notification is to inform of a design change to TPS65903x family of devices. The design change is a metal change that will remove the POR (power on reset) constraints and improve the LDO1 and LDO2 functionality.

With previous silicon revisions, a POR could not be reliably generated in the following conditions:

1. VCC1 falling slew rate below 2.0V is faster than 90 mV/ms
2. VCC1 (Input power to the device) is turned off then turned back on after a short delay

New silicon will allow these conditions to still generate a proper POR.

New silicon will also fix LDO1 and LDO2 occurrence where they get stuck off when VCC1 drops below VSYS_LO and POR.

The device revision register (DESIGNREV) will reflect the change in silicon by changing contents from 0x3 to 0x4. There is no change in part number or top side marking.

The register map can be found here: http://www.ti.com/lit/pdf/sliu015

Note: The silicon updates do not require system design changes.

Affected devices are listed in the Product Affected section of this document.

Reason for Change:

Remove POR generation restrictions and allow LDO1 and LDO2 to reliably turn on when VCC1 drops between VSYS_LO and POR.

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

None

Product Affected:

TPS6590376ZWSR	TPS6590377ZWST	TPS6590379ZWSR	TPS659037A394ZWSR
TPS6590376ZWST	TPS6590378ZWSR	TPS6590379ZWST	TPS659037A398ZWSR
TPS6590377ZWSR	TPS6590378ZWST	TPS659037A38CZWSR	TPS659037A399ZWSR

Qualification Report
Approve Date 4-Feb-2019

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

Type	Test Name / Condition	Duration	Qual Device: TPS6590371ZWSR	QBS Product: TPS659039XXIZWSRQ1	QBS Product: TPS659039XXIZWSRQ1	QBS Product: TPS659039XXIZWSRQ1
THB	85C/85%RH	1000 Hrs	-	-	1/77/0	2/154/0
uHAST	Unbiased HAST, 110C/85%RH	264 Hours	-	-	1/77/0	2/154/0
TC	Temperature Cycle - 65/150C	1000 Cycles	-	-	1/77/0	2/154/0
HTSL	High Temp Storage Bake 150C	500 Hours	-	-	1/45/0	1/45/0
HTOL	Life Test, 125C	1000 Hours	-	-	1/77/0	2/154/0
WBP	Bond Pull	Wires	-	-	1/30/0	1/30/0
WBS	Ball Bond Shear	Wires	-	-	1/30/0	1/30/0
CDM	ESD - CDM	750 V (all pins)	-	1/3/0 (MIHO and RFAB each)	1/3/0	1/3/0
		250V (all pins)	1/3/0	-	-	-
HBM	ESD - HBM	2000 V	-	1/3/0 (MIHO and RFAB each)	1/3/0	1/3/0
PD	Physical Dimensions	-	-	-	1/10/0	2/20/0
ED	Electrical Characterization	Per Datasheet Parameters	-	Pass	Pass	Pass
LU	Latch-up	(Per JESD78)	-	1/6/0 at 105C I2C and SPI balls, 90 mA LDOVANA_OUT, -60 mA All other balls, 100 mA (MIHO and RFAB each)	1/6/0 at 105C I2C and SPI balls, 90 mA LDOVANA_OUT, -60 mA All other balls, 100 mA	1/6/0 at 105C I2C and SPI balls, 90 mA LDOVANA_OUT, -60 mA All other balls, 100 mA

- 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

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

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USA	PCNAmericasContact@list.ti.com
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