

PCN Number:	20170621000		PCN Date:	June 28, 2017	
Title:	TPS25740/25740ARSM, TPS25741RSM Design Change and Datasheet Updates				
Customer Contact:	PCN Manager	Dept:	Quality Services		
Proposed 1st Ship Date:	Sept 28, 2017	Estimated Sample Availability:	Date provided at sample request.		
Change Type:					
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Assembly Materials
<input checked="" type="checkbox"/>	Design	<input checked="" type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification
<input 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:

Group 1 Devices: Design and Datasheet Changes

This notification is to inform of a design change to the TPS25740/25740ARSM, and TPS25741RSM devices. Affected devices are listed in the Product Affected section of this document. The design changes are summarized as follows:

1. Change tSrcTransition timer from 24ms to 30ms to meet USB-IF requirement. The USB-IF waived this in compliance testing, with the understanding that it would be corrected within 1.5 years.
2. Change how a fault condition is handled to ensure so that GDNG is disabled even if CTL pins are grounded after a PD contract is negotiated.
3. Correct how a failure to receive GoodCRC in response to Source Capabilities message is handled in a certain corner case. This corner case should never be seen in practice, and it is not part of USB-IF compliance testing.
4. Disconnect PCTRL pin to GDPG gate driver circuit to prevent GDPG from turning on temporarily at startup if PCTRL is high before VDD or VPWR is high (TPS25741 only).
5. Disable watchdog timer in order to reduce average sleep mode power consumption.

The datasheet numbers will also be changing:

	Current	New
Product	Datasheet Number	Datasheet Number
TPS25740 TPS25740A	SLVSDG8A	SLVSDG8B
TPS25741 TPS25741A	SLVSDJ5B	SLVSDJ5C

The product datasheet(s) is also updated as seen in the change revision history below:

TPS25740, TPS25740A USB Type-C and USB PD Source Controller

4 Revision History

Changes from Revision A (May 2016) to Revision B	Page
• Added <i>Feature</i> : Port Power Management	1
• Changed the Input resistance MAX value From: 5 M Ω To: 6 M Ω in the <i>Electrical Characteristics</i> table	9
• Changed the unloaded output voltage on CC pin, V _(OCN) MIN value From: 2.8 V To: 2.7 V and the MAX value From 5.5 V To: 4.35 V in the <i>Electrical Characteristics</i> table	10
• Deleted t _{WD} Watchdog Timer From the <i>Timing Requirements</i> table	11
• Changed the t _{ST} TYP value From: 24 ms To: 30 ms in the <i>Switching Characteristics</i> table	12
• Deleted sentence from <i>Output Power Supply (DVDD)</i> : "It will also be pulsed high for t _{CcDeb} every t _{WD} when there is nothing connected."	34
• Deleted the last sentence from the <i>Sleep Mode</i> section: "The device also wakes up every t _{WD} and checks for a connection before returning to sleep mode."	35
• Added test: "The TPS25740/TPS25740A Design Calculator Tool.." to the <i>Application Information</i> section	36
• Changed capacitor From: 10 μ F To: 6.8 μ F in the Figure 36	36
• Added sentence "All slew rate control methods" to the <i>Voltage Transition Requirements</i> section	41
• Changed section title From: V _{OUT} Ripple Filtering using R _F and C _F To: Tuning OCP Using R _F and C _F . Updated section text	43
• Changed From: A 10 μ F, 25 V, \pm 10% X5R or X7R ceramic capacitor To: A 6.8 μ F, 25 V, \pm 10% X5R or X7R ceramic capacitor in the <i>Configurable Components</i> section	45
• Changed From: "Type-C receptacle" To: "Type-C plug" in Figure 56	48
• Changed From: A 10 μ F, 25 V, \pm 10% X5R or X7R ceramic capacitor to: A 6.8 μ F, 25 V, \pm 10% X5R or X7R ceramic capacitor in the <i>Configurable Components</i> section	49
• Changed section title From: Dual-Port A/C Power Source (Wall Adaptor) To: Dual-Port Power Managed A/C Power Source (Wall Adaptor)	53
• Added the TPS25740/TPS25740A Design Calculator Tool link and the TPS25740EVM-741 and TPS25740AEVM-741 EVM User's Guide link to the <i>Documentation Support</i> section	57

TPS25741, TPS25741A USB Type-C™ and USB Power Delivery Host Port Controllers

4 Revision History

Changes from Revision B (January 2017) to Revision C	Page
• Changed Shunt capacitance, VCONN value From: MAX = 10 μ F To: MIN = 10 μ F MAX = 220 μ F in the <i>Recommended Operating Conditions</i> table.....	7
• Deleted the row for TPS25741A Input resistance, and changed the MAX value From: 5 M Ω To: 6 M Ω in the <i>Electrical Characteristics</i> table	10
• Changed the Unloaded output voltage on CC pin MIN value From: 2.8 V to 2.7 V and the MAX value From: 5.5 V to 4.35 V in the <i>Electrical Characteristics</i> table.....	11
• Deleted t_{WD} Watchdog Timer from the <i>Timing Requirements</i> table	12
• Deleted t_{ST} row for TPS25741A in the <i>Switching Characteristics</i> table	13
• Deleted the last sentence from the <i>Sleep Mode</i> section: "The TPS25741 will wake up every t_{WD} and check for a connection before returning to sleep mode".....	38
• Added test: "The TPS25740/TPS25740A Design Calculator Tool.." to the <i>Application Information</i> section	39
• Added sentence "All slew rate control methods" to the <i>Voltage Transition Requirements</i> section.....	44
• Deleted the <i>Enabling Power Muxing Architecture</i> section.....	47
• Added text: "The following example is based on TPS25741..." to the <i>A/C Multiplexing Power Source</i> section.....	47
• Deleted Q4 and Note from Figure 50	47
• Changed From: A 400 pF, 50 V, \pm 5% COG/NPO ceramic To: A 470 pF, 50 V, \pm 5% COG/NPO ceramic in the <i>Configurable Components</i> section	48
• Changed From: R_F/C_F : Not used To: R_F/C_F : Provide filtering of both ripple... in the <i>Configurable Components</i> section	48
• Changed From: A 400 pF, 50 V, \pm 5% COG/NPO ceramic To: A 470 pF, 50 V, \pm 5% COG/NPO ceramic in the <i>Configurable Components</i> section	53
• Added document links to the <i>Documentation Support</i> section.....	60

These changes may be reviewed at the datasheet links provided:

- <http://www.ti.com/lit/ds/symlink/tps25740.pdf>
- <http://www.ti.com/lit/ds/symlink/tps25740a.pdf>
- <http://www.ti.com/lit/ds/symlink/tps25741.pdf>
- <http://www.ti.com/lit/ds/symlink/tps25741a.pdf>

Group 2 Devices: Datasheet Changes only

No design changes

Affected devices are listed in the product affected section of this document.

Reason for Change:

Die change to comply with latest Type-C PD USB spec.

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

None

Product Affected: Group 1 Devices

TPS25740ARGER	TPS25740RGER	TPS25741RSMR	
TPS25740ARGET	TPS25740RGET	TPS25741RSMT	

Product Affected: Group 2 Devices

TPS25741ARSMR
TPS25741ARSMT

Qualification Report

TPS25740RGE, TPS25740ARGE and TPS25741RSM with G2TPS25740B2 Die Rev Approve Date 20-Jun-2017

Product Attributes

Attributes	Qual Device: TPS25740ARGE	Qual Device: TPS25740RGE	Qual Device: TPS25741RSM	QBS Product Reference: TPS25741ARSM	QBS Product Reference: TPS25741RSM	QBS Process Reference: DRV2603RUN	QBS Process Reference: LM3631YFFR	QBS Package Reference: ADS9110RGE	QBS Package Reference: AFE4490RHA
Assembly Site	CLARK	CLARK	CLARK	CLARK	CLARK-AT	CLARK-AT	TI-CLARK	CLARK-AT	CLARK-AT
Package Family	QFN	QFN	VQFN	VQFN	VQFN	QFN	YFF	VQFN	QFN
Flammability Rating	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	UL 94 V-0	UL 94 V-0
Wafer Fab Supplier	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	RFAB	DMOS5	DMOS5
Wafer Process	LBC8LV	LBC8LV	LBC8LV	LBC8LV	LBC8LV	LBC8LV	LBC8LV	LBC8LV	LBC8LV

- QBS: Qual By Similarity

- Qual Devices qualified at LEVEL2:260C: TPS25741RSM, TPS25740ARGE, TPS25740RGE

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: TPS25740ARGE	Qual Device: TPS25740RGE	Qual Device: TPS25741RSM	QBS Product Reference: TPS25741ARSM	QBS Product Reference: TPS25741RSM	QBS Process Reference: DRV2603RUN	QBS Process Reference: LM3631YFFR	QBS Package Reference: ADS9110RGE	QBS Package Reference: AFE4490RHA
AC	Autoclave 121C	96 Hours	-	-	-	-	-	-	-	-	1/77/0
ED	Electrical Characterization	Per Datasheet Parameters	-	Pass	-	Pass	Pass	Pass	-	Pass	Pass
ELFR	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	-	-	2/231/0	-	-
HAST	Biased HAST, 110C/85%RH	264	-	-	-	-	1/77/0	-	-	-	-
HBM	ESD - HBM	2500 V	-	-	-	1/3/0	1/3/0	-	-	1/3/0	-
CDM	ESD - CDM	1000 V	-	-	-	1/3/0	1/3/0	-	-	-	-
HTOL	Life Test, 125C	1000 Hours	-	-	-	-	-	-	1/77/0	-	-
HTOL	Life Test, 140C	480 Hours	-	-	-	-	-	3/231/0	-	-	-
HTOL	Life Test, 150C	300 Hours	-	-	-	-	1/77/0	-	-	1/77/0	-
HTSL	High Temp. Storage Bake, 150C	500 Hours	-	-	-	-	-	-	1/77/0	-	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	-	-	-	-	1/77/0	-	-	-	-
LU	Latch-up	(per JEDEC78)	-	-	-	1/6/0	1/6/0	3/18/0	3/18/0	1/6/0	1/6/0
TC	Temperature Cycle, -55/125C	700 Cycles	-	-	-	-	-	-	1/77/0	-	-
TC	Temperature Cycle, -65/150C	500 Cycles	-	-	-	-	1/77/0	-	-	1/77/0	-
UHAST	Unbiased HAST, 130C/85%RH	96 Hours	-	-	-	-	-	-	-	1/77/0	-
WBP	Bond Pull	Wires	-	-	-	-	-	-	-	-	1/76/0
WBS	Ball Bond Shear	Wires	-	-	-	-	-	-	-	-	1/76/0
YLD	Yield	Final Test	Pass	Pass	Pass	-	-	-	-	-	-

- Preconditioning was performed for Auto Dave, 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 JEDEC47: -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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