

<b>PCN Number:</b>		20140714000		<b>PCN Date:</b>		07/16/2014	
<b>Title:</b>		TPS793X family to NFME					
<b>Customer Contact:</b>		PCN_ww_admin_team@list.ti.com		<b>Phone:</b>		+1(214)480-6037	
<b>Dept:</b>		Quality Services					
<b>Proposed 1<sup>st</sup> Ship Date:</b>		01/16/2015		<b>Estimated Sample Availability:</b>		Date provided at sample request	
<b>Change Type:</b>							
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design	<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change	<input type="checkbox"/>	Wafer Bump Process	<input type="checkbox"/>	
<input type="checkbox"/>	Mechanical Specification	<input checked="" type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	
<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process	<input type="checkbox"/>	Wafer Fab Materials	<input type="checkbox"/>	
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process	<input type="checkbox"/>	
<b>PCN Details</b>							
<b>Description of Change:</b>							
Texas Instruments Incorporated is announcing the qualification of NFME for TPS79X family of devices to offload from Lingsen to NFME. Material changes are as follows:							
<b>Pin 5 Pkg DBV</b>	<b>From:</b>	<b>To:</b>	<b>Pin 6 Pkg DBV</b>	<b>From:</b>	<b>To:</b>		
<b>Leadframe</b>	SID# 0009202506	SID# L-05 Cu, NiPdAu	<b>Leadframe</b>	SID# 0009202610	SID# L-06 Cu, NiPdAu		
<b>Die Attach</b>	SID# 0003C10332	SID# A-03	<b>Die Attach</b>	SID# 0003C10332	SID# A-03		
<b>Mold Compound</b>	SID# 0011G60007	SID#R-13	<b>Mold Compound</b>	SID# 0011G60007	SID#R-13		
<b>Bond Wire</b>	SID# 0005M31201 1.2 MIL Au	SID# W-06 1.3 MIL Au	<b>Bond Wire</b>	SID# 0005M31201 1.2 MIL Au	SID# W-06 1.3 MIL Au		
<b>Reason for Change:</b>							
<ul style="list-style-type: none"> <li>Mitigate capacity shortage in the Lingsen assembly/test site.</li> <li>Dual source Assembly &amp; Test operations for TPS793X-SOT devices from LEN to NFME.</li> </ul>							
<b>Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):</b>							
None							
<b>Changes to product identification resulting from this PCN:</b>							
<b>Current</b>							
<b>Assembly Site</b>	<b>Assy site code (22L)</b>		<b>Assy country code (23L)</b>				
Lingsen (Lingsen Precision Industries)	LIN		Taiwan				
<b>New</b>							
<b>Chip Site</b>	<b>Assy site code (22L)</b>		<b>Assy country code (23L)</b>				
<b>NFME (Nantong Fujitsu Microelectronics)</b>	<b>NFM</b>		<b>China</b>				

**Example shipping label (not actual product label)**

 <b>TEXAS INSTRUMENTS</b> MADE IN: Malaysia 2DC: 2Q:	 G4		(1P) SN74LS07NSR (Q) 2000 (D) 0336 (31T) LOT: 3959047MLA (4W) TKY (1T) 7523483SI2 (P) (2P) REV: (V) 0033317 (21) CSO: SML (21L) CCO:USA (22) ASO: MLA (23L) ACO: MYS
MSL 2 / 260C/1 YEAR SEAL DT MSL 1 / 235C/UNLIM 03/29/04 OPT: ITEM: 39 <b>LBL: 5A (L)T0:1750</b>			

**Product Affected:**

TPS79301DBVRG4Q1	TPS79318DBVRQ1	TPS793285QDBVRQ1
TPS79301DBVRQ1	TPS79325DBVRG4Q1	TPS79333DBVRG4Q1
TPS79318DBVRG4Q1	TPS79325DBVRQ1	TPS79333DBVRQ1

**Automotive Product Qualification Summary**

(As per AEC-Q100 and JEDEC Guidelines)

<b>Supplier Name:</b>	Texas Instruments Inc.	<b>Supplier Wafer Fabrication Site:</b>	Texas Instruments Dallas fab (DFAB)
<b>Supplier Code:</b>		<b>Supplier Die Revision:</b>	B
<b>Supplier Part Number:</b>	TPS73201QDBVRQ1	<b>Supplier Assembly/Test Site:</b>	NFME
<b>Customer Name:</b>		<b>Supplier Package / Pin:</b>	DBV / 5
<b>Customer Part Number:</b>		<b>Pb-Free Lead Frame (Y/N):</b>	Y
<b>Device Description:</b>	Regulator	<b>Green Mold Compound (Y/N):</b>	Y
<b>MSL Rating:</b>	Level1	<b>Operating Temp Range:</b>	-40C to +125C
<b>Peak Solder Reflow Temp:</b>	260C	<b>Automotive Grade Level :</b>	1

Test	#	Reference	Test Conditions	Min Lots (2)	SS / lot (2)	Min Total (2)	Results Lot/pass/fail	Comments: (N/A =Not Applicable)	Exceptions to AEC - Q100
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**TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS**

PC	A1	JESD22-113 J-STD-020	Preconditioning: SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, HTSL, and HTOL	Performed on ALL SMD devices prior to THB/HAST, AC/UHST, TC and PTC					
HAST	A2	JESD22-A101 JESD22-A110	Highly Accelerated Stress Test: 130°C/85%/96 hours or 110°C/85%/264 hours	3	77	231	3/231/0		
AC	A3	JESD22-A102 JESD22-A118	Autoclave: 121°C/15 psig/96 hours	3	77	231	3/231/0		
TC	A4	JESD22-A104	Temperature Cycle: -65°C/+150°C/500 cycles Post Temperature Cycle Bond Pull: 3 grams minimum	3 1	77 5	231 5	3/231/0 1/5/0		

**TEST GROUP B – ACCELERATED LIFETIME SIMULATION TESTS**

HTOL	B1	JESD22-A108	High Temp Operating Life: 125°C/1000 hours	3	77	231	3/231/0	QBS to current data	
ELFR	B2	AEC-Q100-008	Early Life Failure Rate:	3	800	2400	3/800/0	QBS to current data	

**TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS**

WBS	C1	AEC-Q100-001	Wire Bond Shear Test: (Cpk > 1.67)	30 bonds	5 parts min.	30 bonds	Pass		
WBP	C2	Mil-Std-883 Method 2011	Wire Bond Pull: Each bonder used (Cpk > 1.67)	30 bonds	5 parts min.	30 bonds	Pass		
SD	C3	JESD22-B102	Solderability: (>95% coverage) 8 hr steam age (1 hour for Au-plated leads)	1	30	30	1/30/0		
PD	C4	JESD22-B100 JESD22-B108	Physical Dimensions: (Cpk > 1.67)	3	10	30	3/10/0		

**TEST GROUP E- ELECTRICAL VERIFICATION**

TEST	E1	User/Supplier Specification	Pre and Post Stress Electrical Test:	All	All	All	Pass		
HBM	E2	AEC-Q100-002	Electrostatic Discharge, Human Body Model: (2kV - H2 or better)	1	See Test Method			QBS to current device data	
CDM	E3	AEC-Q100-101	Electrostatic Discharge, Charged Device Model: (750V corner leads, 500V for all other pins)	1	See Test Method		Pass		
LU	E4	AEC-Q100-004	Latch-Up:	1	6	6		QBS to current device data	
ED	E5	AEC-Q100-009	Electrical Distributions: (Cpk > 1.67)	1	30	30	Pass		

- (1) Grade 0 (or A): -40°C to +150°C ambient operating temperature range  
 Grade 1 (or Q): -40°C to +125°C ambient operating temperature range  
 Grade 2 (or T): -40°C to +105°C ambient operating temperature range  
 Grade 3 (or I): -40°C to +85°C ambient operating temperature range  
 Grade 4 (or C): -0°C to +150°C ambient operating temperature range
- (2) These are recommended minimum lot/sample sizes. Lot/sample size may be reduced depending on available data.
- (3) Generic data may be used.

**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 or agreed-to customer specification for a device.

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

## Assembly Qualification

### Ball Shear Data

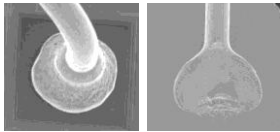
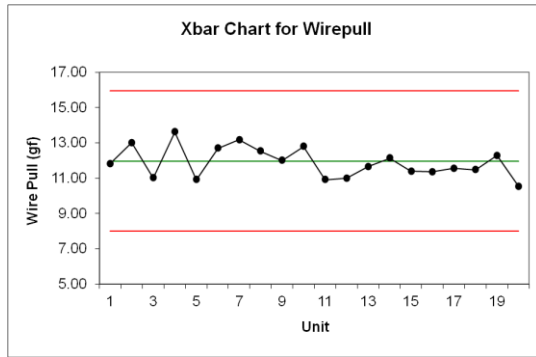
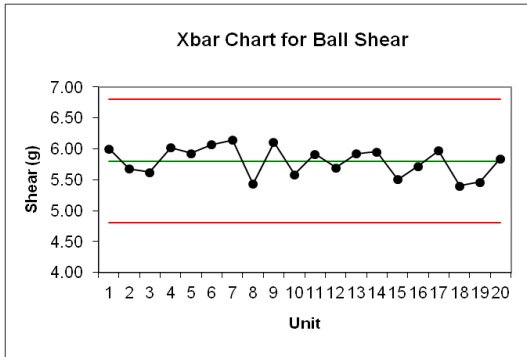


Min	5.13
Max	6.67
Ave	5.80
Stdev	0.33
CPk	1.80
Spec Criteria (LSL) (g)	4.00
Stability	PASS
Capability	PASS
Pass/Fail	PASS

### Wire Pull Data



Min	9.10
Max	14.74
Ave	11.89
Stdev	1.33
CPk	1.99
Spec Criteria (LSL) (g)	4
Stability	PASS
Capability	PASS
Pass/Fail	PASS



No visual anomalies seen.

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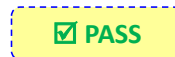
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## Electrical Characterization

Legend:

CPK < 1.33
1.33 < CPK < 1.67
CPK > 1.67



Spec Parameter	Test Parameter	LSL	USL	Units	Temp @	Mean	StDev	CPk
VOUT Accuracy	P1100001_VregOut Vin *1mA	2.88	3.12	V	-40	3.006	2.15E-02	1.77
VOUT Accuracy	P1100001_VregOut Vin *1mA	2.88	3.12	V	25	3.008	1.97E-02	1.90
VOUT Accuracy	P1100001_VregOut Vin *1mA	2.88	3.12	V	125	2.983	8.47E-03	4.05
VOUT Accuracy	P1200001_VregOut VinMin *50mA	2.88	3.12	V	-40	2.993	2.15E-02	1.75
VOUT Accuracy	P1200001_VregOut VinMin *50mA	2.88	3.12	V	25	2.988	1.95E-02	1.85
VOUT Accuracy	P1200001_VregOut VinMin *50mA	2.88	3.12	V	125	2.946	8.87E-03	2.48
Ground-pin Current	P120100001_Iq Gnd *Vin 1mA		5.80E-06	Amps	-40	2.90E-06	5.31E-08	18.23
Ground-pin Current	P120100001_Iq Gnd *Vin 1mA		5.80E-06	Amps	25	3.43E-06	1.40E-07	5.64
Ground-pin Current	P120100001_Iq Gnd *Vin 1mA		5.80E-06	Amps	125	4.41E-06	1.22E-07	3.81
Ground-pin Current	P120200001_Iq Gnd *Vin 50mA		5.80E-06	Amps	-40	2.953E-06	5.07E-08	18.72
Ground-pin Current	P120200001_Iq Gnd *Vin 50mA		5.80E-06	Amps	25	3.493E-06	1.25E-07	6.15
Ground-pin Current	P120200001_Iq Gnd *Vin 50mA		5.80E-06	Amps	125	4.322E-06	1.62E-07	3.04
Dropout Voltage	P130100001_DropOut *50mA	0.75		V	-40	0.3605	6.53E-03	19.88
Dropout Voltage	P130100001_DropOut *50mA	0.75		V	25	0.4604	2.65E-03	36.43
Dropout Voltage	P130100001_DropOut *50mA	0.75		V	125	0.5974	8.42E-03	6.04
Dropout Voltage	P130500001_DropOut *15mA	0.75		V	-40	0.1023	1.84E-03	117.34
Dropout Voltage	P130500001_DropOut *15mA	0.75		V	25	0.1305	7.13E-04	289.62
Dropout Voltage	P130500001_DropOut *15mA	0.75		V	125	0.1695	2.35E-03	82.34
Output Current Limit	P180100001_ *ILimit	0.125	0.75	Amps	-40	0.3392	3.31E-03	21.57
Output Current Limit	P180100001_ *ILimit	0.125	0.75	Amps	25	0.2902	1.46E-03	37.72
Output Current Limit	P180100001_ *ILimit	0.125	0.75	Amps	125	0.1632	7.49E-03	1.70
VOUT Accuracy	P4000001_VregOut 3.2 *15mA	2.88	3.12	V	-40	2.998	2.05E-02	1.92
VOUT Accuracy	P4000001_VregOut 3.2 *15mA	2.88	3.12	V	25	2.991	1.76E-02	2.10
VOUT Accuracy	P4000001_VregOut 3.2 *15mA	2.88	3.12	V	125	2.949	9.94E-03	2.31

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## TPS79301 - Electrical Characterization

Parameter	Temp	LTL	UTL	Units				Notes
					Avg	StdDev	CPK	
Vreg VIN 3.2v *1mA load	125C	1.129	1.31	VOLTS	1.219E+00	1.935E-03	15.55	
Vreg VIN 5.5v *1mA load	125C	1.129	1.31	VOLTS	1.220E+00	2.078E-03	14.46	
Vreg VIN 5.5v *200mA lo	125C	1.129	1.31	VOLTS	1.245E+00	2.408E-03	9.05	
Vreg VIN 3.2v *200mA lo	125C	1.129	1.31	VOLTS	1.244E+00	2.459E-03	8.92	
Func_Dis VIN 2.7v *10mA loa	125C	-0.8	0.8	VOLTS	1.141E-01	7.991E-02	2.86	
Vdrop VIN 5.5v *200mA lo	125C	73	107	mVOLTS	9.295E+01	2.581E+00	1.81	
siqq Input standby *I	125C	-100	50	nAMPS	3.452E+00	1.975E+00	7.86	
siqq Input standby *I2	125C	-100	50	nAMPS	3.531E+00	1.967E+00	7.87	
siqq Input standby *Delta	125C	-60	30	nAMPS	7.939E-02	1.118E+00	8.92	
lih VENB *0.9v	125C	-0.1	0.1	uAMPS	3.914E-04	1.202E-03	27.62	
lih VENB *1.8v	125C	-0.1	0.1	uAMPS	2.997E-03	3.355E-03	9.64	
iqq_gnd VIN 5.5v *10mA loa	125C	-220	218	uAMPS	-2.060E+02	1.863E+00	2.51	
iqq_gnd VIN 5.5v *100mA lo	125C	-220	218	uAMPS	-2.060E+02	1.833E+00	2.54	
iqq_gnd Delta 5.5 *10mA loa	125C	-120	120	uAMPS	-4.572E+01	2.962E-01	83.60	
OUT ILimit *VIN 5.5v	125C	285	600	mAMPS	3.912E+02	1.453E+01	2.44	
Vreg VIN 3.2v *1mA load	32C	1.129	1.31	VOLTS	1.220E+00	2.290E-03	13.11	
Vreg VIN 5.5v *1mA load	32C	1.129	1.31	VOLTS	1.221E+00	2.258E-03	13.21	
Vreg VIN 5.5v *200mA lo	32C	1.129	1.31	VOLTS	1.241E+00	2.355E-03	9.72	
Vreg VIN 3.2v *200mA lo	32C	1.129	1.31	VOLTS	1.241E+00	2.387E-03	9.61	
Func_Dis VIN 2.7v *10mA loa	32C	-0.8	0.8	VOLTS	2.134E-01	7.076E-02	2.76	
Vdrop VIN 5.5v *200mA lo	32C		107	mVOLTS	8.379E+01	3.847E+00	2.01	
siqq Input standby *I	32C	-100	50	nAMPS	8.107E-01	9.304E-01	17.62	
siqq Input standby *I2	32C	-100	50	nAMPS	1.036E+00	1.085E+00	15.04	
siqq Input standby *Delta	32C	-60	30	nAMPS	2.254E-01	4.271E-01	23.24	
lih VENB *0.9v	32C	-0.1	0.1	uAMPS	7.272E-04	1.160E-03	28.53	
lih VENB *1.8v	32C	-0.1	0.1	uAMPS	3.045E-03	3.117E-03	10.37	
iqq_gnd VIN 5.5v *10mA loa	32C	-220	218	uAMPS	-1.972E+02	1.540E+00	4.94	
iqq_gnd VIN 5.5v *100mA lo	32C	-220	218	uAMPS	-1.972E+02	1.525E+00	4.99	
iqq_gnd Delta 5.5 *10mA loa	32C	-120	120	uAMPS	-4.432E+01	3.277E-01	76.97	
OUT ILimit *VIN 5.5v	32C	285	600	mAMPS	3.928E+02	1.651E+01	2.18	
Vreg VIN 3.2v *1mA load	-40C	1.129	1.31	VOLTS	1.218E+00	3.271E-03	9.07	
Vreg VIN 5.5v *1mA load	-40C	1.129	1.31	VOLTS	1.218E+00	4.698E-03	6.31	
Vreg VIN 5.5v *200mA lo	-40C	1.129	1.31	VOLTS	1.235E+00	3.441E-03	7.26	
Vreg VIN 3.2v *200mA lo	-40C	1.129	1.31	VOLTS	1.235E+00	3.172E-03	7.88	
Func_Dis VIN 2.7v *10mA loa	-40C	-0.8	0.8	VOLTS	1.740E-01	7.400E-02	2.82	
Vdrop VIN 5.5v *200mA lo	-40C		107	mVOLTS	6.969E+01	4.831E+00	2.57	
siqq Input standby *I	-40C	-100	50	nAMPS	4.913E-01	9.005E-01	18.33	
siqq Input standby *I2	-40C	-100	50	nAMPS	5.773E-01	1.055E+00	15.62	
siqq Input standby *Delta	-40C	-60	30	nAMPS	8.597E-02	4.298E-01	23.20	
lih VENB *0.9v	-40C	-0.1	0.1	uAMPS	6.416E-04	1.206E-03	27.46	
lih VENB *1.8v	-40C	-0.1	0.1	uAMPS	2.714E-03	2.310E-03	14.04	
iqq_gnd VIN 5.5v *10mA loa	-40C	-220	218	uAMPS	-1.863E+02	2.058E+00	5.46	
iqq_gnd VIN 5.5v *100mA lo	-40C	-220	218	uAMPS	-1.862E+02	2.009E+00	5.60	
iqq_gnd Delta 5.5 *10mA loa	-40C	-120	120	uAMPS	-4.213E+01	4.148E-01	62.57	
OUT ILimit *VIN 5.5v	-40C	285	600	mAMPS	3.938E+02	1.832E+01	1.98	

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

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