


<b>PCN Number:</b>		20131016000		<b>PCN Date:</b>		11/13/2013	
<b>Title:</b>		TPS3803G15 die revision - CMS C1204020					
<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>			01/01/2014		<b>Estimated Sample Availability:</b>		Upon request
<b>Change Type:</b>							
<input type="checkbox"/>	Assembly Site		<input type="checkbox"/>	Assembly Process		<input type="checkbox"/>	Assembly Materials
<input checked="" type="checkbox"/>	Design		<input type="checkbox"/>	Electrical Specification		<input type="checkbox"/>	Design
<input type="checkbox"/>	Test Site		<input type="checkbox"/>	Packing/Shipping/Labeling		<input type="checkbox"/>	Test Site
<input type="checkbox"/>	Wafer Bump Site		<input type="checkbox"/>	Wafer Bump Material		<input type="checkbox"/>	Wafer Bump Site
<input type="checkbox"/>	Wafer Fab Site		<input type="checkbox"/>	Wafer Fab Materials		<input type="checkbox"/>	Wafer Fab Site
<input type="checkbox"/>			<input type="checkbox"/>	Part number change			
<b>PCN Details</b>							
<b>Description of Change:</b>							
<p>New metal1, via, and metal 2 to correct Vdd brown-out Vbg start-up issue. Die revision will change from A to B.</p> <p>Because of the improved quality, this change will be implemented with less than typical 180 days of notification.</p>							
<b>Reason for Change:</b>							
Correct Vdd brown-out.							
<b>Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):</b>							
Positive impact on quality.							
<b>Changes to product identification resulting from this PCN:</b>							
<p>The TPS3803G15QDCKRQ1 device box label revision field (2p) will change from A to B. The die revision field is circled in the sample label shown below:</p>							
 <p>The image shows a sample device box label for the TPS3803G15QDCKRQ1 device. It includes the Texas Instruments logo, 'MADE IN: Philippines', '2DC: 0514', 'MSL 1 /260C/UNLIM', 'SEAL DT 04/25/05', 'OPT: ITEM: 53,54', 'LBL: (L)T0:1750', a QR code, and a list of fields: (1P) TMS320DA150PGE160A, (Q) 480, (D) 0510, (31T) LOT: 5163045WCW, (4W) TKY (1T) 7366252SI4, (P), (2P) REV: C (circled in red), (V) 0033317, (20L) CS0: DM5, (21L) CCO: USA, (22L) AS0: PHI, (23L) ACO: PHL.</p>							
<b>Product Affected:</b>							
TPS3803G15QDCKRQ1							

## Qualification Data:

This qualification has been specifically developed for the validation of this change. The qualification data validates that the proposed change meets the applicable released technical specifications.

### Automotive New Product Qualification Plan/Summary (As per AEC-Q100 and JEDEC Guidelines)

<b>Supplier Name:</b>	Texas Instruments Inc.	<b>Wafer Fabrication Site / Process:</b>	Japan ( MIHO8 ) / 3370A12X3
<b>Supplier Code:</b>		<b>Supplier Die Rev:</b>	B
<b>Supplier Part Number:</b>	TPS3803G15QDCKRVO	<b>Supplier Assembly/Test Site:</b>	2542 Hana, Thailand
<b>Customer Name:</b>	Catalog	<b>Supplier Package/Pin:</b>	(SOT)DCK/5
<b>Customer Part Number:</b>	TPS3803G15QDCKRVO	<b>Pb Free Lead Frame (Y/N):</b>	Y
<b>Device Description:</b>	Single Voltage Detectors	<b>“Green” Mold Compound (Y/N):</b>	Y
<b>MSL Rating:</b>	Level-1	<b>Operating Temp Range:</b>	Ta= - 40C to 125C
<b>Peak Solder Reflow Temp:</b>	260C	<b>Automotive Grade Level (1):</b>	1
<b>Prepared by Signature:</b>	Thao Nguyen	<b>Date:</b>	8/9/2013

Test	#	Reference	Test Conditions	Min Lots (2)	SS / lot (2)	Min Total (2)	Results Lot/pass/fail	Generic Family Part / Comments	Exceptions to AEC - Q100 Testing
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#### TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS (3)

PC	A1	JESD22 A113 J-STD-020	Preconditioning; SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, HTSL, & HTOL	3	77	231	All/0	QBS to TPS71530QDCK RQ1  TPS71530QDCK RQ1  SN74LVC1T45T DCKRQ1	
HAST	A2	JESD22 A110	Highly Accelerated Stress Test: 130°C/85% 96 hours	3	77	231	3/231/0	QBS to TPS71530QDCK RQ1  TPS71530QDCK RQ1  SN74LVC1T45T DCKRQ1	
AC	A3	JESD22 A102	Autoclave: 121C / 96 hours	3	77	231	3/231/0	QBS to TPS71530QDCK RQ1  TPS71533QDCK RQ1  SN74LVC1T45T DCKRQ1	
TC	A4	JESD22 A104	Temperature Cycle: -65°C/+150°C/ 500 cycles  Bond Pull Post T/C	3	77	231	3/231/0	QBS to TPS71530QDCK RQ1  TPS71530QDCK RQ1  SN74LVC1T45T DCKRQ1	
PTC	A5	JESD22-A105	Power Temperature Cycle:	1	5	5	1/5/0		
				1	45	45	N/A	Power Dissipation	

			-40°C to +125°C for 1000 cycles					< 1Watt	
HTSL	A6	JESD22 A103	High Temperature Storage Life: 175°C/500 hours (3)	1	45	45	1/50/0	QBS to  TPS71530QDCK RQ1	

**TEST GROUP B – ACCELERATED LIFETIME SIMULATION TESTS (3)**

HTOL	B1	JESD22 A108	High Temp Operating Life: <b>150°C/408 hours</b> 125C/1000hrs	3	77	231	3/231/0	Commercial qualification and monitor data (QBS)	Tested @ Rm only
ELFR	B2	AEC-Q100-008	Early Life Failure Rate: 125°C/48 hours <b>150°C/24hours</b>	3	800	2400	3/2400/0	Commercial qualification and monitor data (QBS)	Tested @ Rm only

**TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS (3)**

WBS	C1	AEC-Q100-001	Wire Bond Shear Test: (Ppk > 1.67 and Cpk > 1.33)	30 bonds	5 parts Min.	30 bonds	30/0	Commercial qualification and monitor data (QBS)	
WBP	C2	Mil-Std-883 Method 2011	Wire Bond Pull: Each bonder used (Ppk > 1.67 and Cpk > 1.33)	30 bonds	5 parts Min.	30 bonds	30/0	Commercial qualification and monitor data (QBS)	
SD	C3	JESD22 B102	Solderability: (>95% coverage) 8 hr steam age	1	15	15	1/22/0	Commercial qualification and monitor data (QBS)	
PD	C4	JESD22 B100, JESD22 B108	Physical Dimensions: (Ppk > 1.67 and Cpk > 1.33)	3	10	30	3/30/0	Commercial qualification and monitor data (QBS)	
SBS	C5	AEC-Q100-010	Solder Ball Shear: (Ppk > 1.67 and Cpk > 1.33)	50 balls	3	50		N/A to non-solder ball surface mount devices	
LI	C6	JESD22 B105 Not Required for SMT parts	Lead Integrity: (No lead cracking or breaking)	50 leads	1	50		N/A to non-PDIP devices	

**TEST GROUP D – DIE FABRICATION RELIABILITY TESTS**

Test	#	Reference	Test Conditions	Min Lots (2)	S.S. Per Lot (2)	Min Total (2)	Results Lot/pass/fail	Generic Family Part / Comments	Exceptions to AEC - Q100 Testing
EM	D1	JESD61	Electromigration: (Only if de-rating required beyond design rules)	-	-	-		Data available	
TDDB	D2	JESD35	Time Dependant Dielectric Breakdown:	-	-	-		N/A	
HCI	D3	JESD60 & 28	Hot Injection Carrier	-	-	-		N/A	

**TEST GROUP E- ELECTRICAL VERIFICATION**

TEST	E1	User/Supplier Specification	Pre and Post Stress Electrical Test.	All	All	All		100% of qualification devices	
HBM	E2	AEC-Q100-002	Electrostatic Discharge, Human Body Model	1	3	3	500V 3/0 1000V 3/0 1500V 3/0 2000V 3/0	Classification Level: H2	
CDM	E3	AEC-Q100-002	Electrostatic Discharge, Charged Device Model; (750V corner leads, 500V for all other leads)	1	3	3	250V 3/0 500V 3/0 750V 3/0 1000V 3/0	Classification Level: C3B	
LU	E4	AEC-Q100-004	Latch-Up:	1	6	6	1/6/0	Performed by MSA	
ED	E5	AEC-Q100-009	Electrical Distributions: (Test across recommended operating temperature range) (Cpk > 1.67 , Ppk > 1.67)	1	30	30	1/30/0	1/30/0, -40C 1/30/0, 25C 1/30/0, 125C	

- (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.

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

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