

PCN Number:	20230516004.2		PCN Date:	May 17, 2023						
Title:	Backgrind Thickness change for select devices									
Customer Contact:	PCN Manager		Dept:	Quality Services						
Proposed 1st Ship Date:	Nov 16, 2023		Sample Requests accepted until:	Jun 16, 2023*						
*Sample requests received after June 16, 2023 will not be supported.										
Change Type:										
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>						
<input type="checkbox"/>	Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>						
<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>						
<input type="checkbox"/>	Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>						
<input type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Wafer Fab Materials	<input checked="" type="checkbox"/>						
		<input type="checkbox"/>	Part number change							
PCN Details										
Description of Change:										
This PCN is to inform of an increase in the die thickness (controller die) for the devices listed in the product affected section below as follows:										
<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>What</th> <th>Current</th> <th>New</th> </tr> </thead> <tbody> <tr> <td>Die thickness</td> <td>6 mils</td> <td>8 mils</td> </tr> </tbody> </table>					What	Current	New	Die thickness	6 mils	8 mils
What	Current	New								
Die thickness	6 mils	8 mils								
Qual details are provided in the Qual Data Section.										
Reason for Change:										
Continuity of supply										
Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):										
None										
Changes to product identification resulting from this PCN:										
None										
Product Affected:										
SN2HA08CQPWPRQ1	TPS1HB04BQPWPRBC	TPS1HB35AQPWPRQ1	TPS2HB16BQPWPRQ1							
SN2HA08FQPWPRQ1	TPS1HB04BQPWPRQ1	TPS1HB35BQPWPRQ1	TPS2HB16FQPWPRQ1							
TPS1HA08AQPWPRQ1	TPS1HB08AQPWPRQ1	TPS1HB35CQPWPRQ1	TPS2HB35AQPWPRQ1							
TPS1HA08BQPWPRQ1	TPS1HB08BQPWPRQ1	TPS1HB35FQPWPRQ1	TPS2HB35BQPWPRQ1							
TPS1HA08CQPWPRQ1	TPS1HB08FQPWPRQ1	TPS1HB50AQPWPRQ1	TPS2HB35CQPWPRQ1							
TPS1HA08DQPWPRQ1	TPS1HB16AQPWPRQ1	TPS1HB50BQPWPRQ1	TPS2HB50AQPWPRQ1							
TPS1HA08EQWPRQ1	TPS1HB16BQPWPRQ1	TPS27SA08CQPWPRQ1	TPS2HB50BQPWPRQ1							
TPS1HA08ZQPWPRQ1	TPS1HB16FQPWPRQ1	TPS2HB16AQPWPRQ1								

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

Change: Increase Controller BG thickness from 6mils to 8mils
Approve Date 07-February-2023

Product Attributes

Attributes	Qual Device: TPS1HB08BQPWPRQ1	Qual Device: TPS2HB16BQPWPRQ1	QBS Reference: TPS2HB08FQPWPRQ1	QBS Reference: TPS2HB08FQPWPRQ1	QBS Reference: TPS2HB16BQPWPRQ1
Automotive Grade Level	Grade 1	Grade 1	Grade 1	Grade 1	Grade 1
Operating Temp Range (C)	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125
Product Function	Power Management	Power Management	Power Management	Power Management	Power Management
Wafer Fab Supplier	RFAB, CFAB	CFAB, RFAB	RFAB, CFAB	RFAB, CFAB	CFAB, RFAB
Assembly Site	TAI	TAI	TAI	TAI	TAI
Package Group	TSSOP	TSSOP	TSSOP	TSSOP	TSSOP
Package Designator	PWP	PWP	PWP	PWP	PWP
Pin Count	16	16	24	24	16

- QBS: Qual By Similarity
- Qual Device TPS1HB08BQPWPRQ1 is qualified at MSL3 260C
- Qual Device TPS2HB16BQPWPRQ1 is qualified at MSL3 260C

Qualification Results

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

Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device: TPS1HB08BQPWPRQ1	Qual Device: TPS2HB16BQPWPRQ1	QBS Reference: TPS2HB08FQPWPRQ1	QBS Reference: TPS2HB08FQPWPRQ1	QBS Reference: TPS2HB16BQPWPRQ1
Test Group A - Accelerated Environment Stress Tests												
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	MSL3 260C	1 Step	-	-	No Fails	No Fails	No Fails
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST	130C/85%RH	96 Hours	-	-	-	3/231/0	1/77/0
ACU/HAST	A3	JEDEC JESD22-A102/JEDEC JESD22-A118	3	77	Autoclave	121C/15psig	96 Hours	-	-	-	3/231/0	1/77/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle	-65C/150C	500 Cycles	-	-	-	3/231/0	1/77/0
PTC	A5	JEDEC JESD22-A105	1	45	PTC	-40/125C	1000 Cycles	-	-	1/45/0	-	1/45/0
HTSL	A6	JEDEC JESD22-A103	1	45	High Temperature Storage Life	150C	1000 Hours	-	-	3/135/0	-	1/45/0
Test Group B - Accelerated Lifetime Simulation Tests												
HTOL	B1	JEDEC JESD22-A108	1	77	Life Test	150C	408 Hours	-	-	3/231/0	1/77/0	1/77/0
ELFR	B2	AEC Q100-008	1	77	Early Life Failure Rate	125C	48 Hours	-	-	3/2400/0	-	-
Test Group C - Package Assembly Integrity Tests												
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	1/30/0	1/30/0	-	3/90/0	-
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull	Minimum of 5 devices, 30 wires Cpk>1.67	Wires	1/30/0	1/30/0	-	3/90/0	-
SD	C3	JEDEC J-STD-002	1	15	PB Solderability	>95% Lead Coverage	-	-	-	1/15/0	1/15/0	-
SD	C3	JEDEC J-STD-002	1	15	PB-Free Solderability	>95% Lead Coverage	-	-	-	1/15/0	1/15/0	-
PD	C4	JEDEC JESD22-B100 and B108	1	10	Physical Dimensions	Cpk>1.67	-	-	-	-	3/30/0	-
Test Group D - Die Fabrication Reliability Tests												
EM	D1	JESD61	-	-	Electromigration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDD	D2	JESD35	-	-	Time Dependent Dielectric Breakdown	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements

HCI	D3	JESD60 & 28	-	-	Hot Carrier Injection	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
NBTI	D4	-	-	-	Negative Bias Temperature Instability	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
SM	D5	-	-	-	Stress Migration	-	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
Test Group E - Electrical Verification Tests												
ESD	E2	AEC Q100-002	1	3	ESD HBM	-	2000 Volts	-	-	3/9/0	1/3/0	1/3/0
ESD	E3	AEC Q100-011	1	3	ESD CDM	-	500 Volts	-	-	3/9/0	1/3/0	1/3/0
LU	E4	AEC Q100-004	1	6	Latch-Up	Per AEC Q100-004	-	-	-	3/18/0	1/6/0	1/6/0
ED	E5	AEC Q100-009	3	30	Electrical Distributions	Cpk>1.67 Room, hot, and cold	-	-	-	-	3/9/0	3/9/0
Additional Tests												
Type	#	Test Spec	Min Lot Qty	SS / Lot	Test Name	Condition	Duration	Qual Device	Qual Device	QBS Reference	QBS Reference	QBS Reference

- 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

Ambient Operating Temperature by Automotive Grade Level:

- Grade 0 (or E): -40C to +150C
- Grade 1 (or Q): -40C to +125C
- Grade 2 (or T): -40C to +105C
- Grade 3 (or I): -40C to +85C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):

- Room/Hot/Cold : HTOL, ED
- Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
- Room : ACuHAST

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

Affected ZVEI IDs: SEM-PW-03, SEM-BD-01

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

Location	E-Mail
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