PCN Number:	20190926004.2	**PCN Date:**	Oct 31, 2019
Title:	Qualify New Assembly Material set for Selected Device(s)		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	May 1, 2020	**Estimated Sample Availability:**	Date provided at sample request

Change Type:

☐	Assembly Site	☐	Design	☐	Wafer Bump Site
☐	Assembly Process	☐	Data Sheet	☐	Wafer Bump Material
☒	Assembly Materials	☐	Part number change	☐	Wafer Bump Process
☐	Mechanical Specification	☐	Test Site	☐	Wafer Fab Site
☐	Packing/Shipping/Labeling	☐	Test Process	☐	Wafer Fab Materials
				☐	Wafer Fab Process

PCN Details

Description of Change:

Texas Instruments is pleased to announce the qualification of new assembly material for devices listed in "Product affected" section below. Devices will remain in current assembly facility and piece part changes as follows:

Material	Current	Proposed
Mount compound	4207768	4208458

Reason for Change:

Continuity of supply

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

None

Anticipated impact on Material Declaration

☐	No Impact to the Material Declaration	☒	Material Declarations or Product Content reports are driven from production data and will be available following the production release. Upon production release the revised reports can be obtained at the site link below http://www.ti.com/quality/docs/materialcontentsearch.tsp

Changes to product identification resulting from this PCN:

None

Product Affected:

S470MUF563PZQRCV	TMS5701203BPGEQQ1	TMS5700404BPZQQ1	TMS5702123DPGEQQ1
S470MUFA63PZQRCV	TMS5701203BPGEQQ1R	TMS5700404BPZQQ1R	TMS5702124DPGEQQ1
S4MUC563004PZQRCV	TMS5701203CPGEQQ1	TMS5700405APZQQ1	TMS5702125BPGEQQ1
S5LS10206AGPGEQQ1R	TMS5701203CPGEQQ1R	TMS5700405APZQQ1R	TMS5702125DPGEQQ1
S5LS10206ASPGEQQ1	TMS5701205BPGEQQ1R	TMS5700432APZQQ1R	TMS5702134DPGEQQ1
S5LS20206AGPGEQQ1R	TMS5701205CPGEQQ1	TMS5700432BPZQQ1	TMS5702135DPGEQQ1
S5LS20206ASPGEMEP	TMS5701205CPGEQQ1R	TMS5700432BPZQQ1R	TMS5703134CPGEQQ1
S5LS20216ASPGEMEP	TMS5701224BPGEQQ1R	TMS5700812BPGEQQ1	TMS5703134DPGEQQ1
TMS5700232BPZQQ1	TMS5701224CPGEQQ1	TMS5700812CPGEQQ1	TMS5703135DPGEQQ1
TMS5700332APZQQ1	TMS5701224CPGEQQ1R	TMS5700815CPGEQQ1	TMS5703137CPGEQQ1
TMS5700332APZQQ1R	TMS5701225CPGEQQ1	TMS5701112BPGEQQ1	TMS5703137DPGEQQ1
TMS5700332BPZQQ1	TMS5701227BPGEQQ1	TMS5701113BPGEQQ1R	V62/12622-01XE
TMS5701113CPGETQ1R	TMS5701227CPGEQQ1	TMS5701113BPGETQ1R	V62/12622-02XE
TMS5701114CPGEQQ1	TMS5700332BPZQQ1R	TMS5701113CPGETQ1	
TMS5701115BPGEQQ1	TMS5700404APZQQ1	TMS5702122BPGEQQ1	
TMS5701115CPGEQQ1	TMS5700404APZQQ1R	TMS5702123BPGEQQ1	

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

Approve Date 06-Sept-2019

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: 5700432APZQQ1R	Qual Device: LS10206AGPGEQR	Qual Device: S5703137CPGEQQ	QBS Device: LS10206AGPGEQR	QBS Package Reference: F280049PZQ
Test Group A – Accelerated Environment Stress Tests											
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 3-260C	-	-	-	3/693/0	1/190/0
THB	A2	JEDEC JESD22-A101	3	77	Biased Temperature and Humidity, 85C/85%RH	1000 Hours	-	-	-	3/231/0	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	-	-	-	-
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	-	-	-	3/231/0	1/77/0
UHAST	A3	JEDEC JESD22-A102	3	77	Unbiased HAST 130C/85%RH	96 Hours	-	-	-	-	
UHAST	A3	JEDEC JESD22-A102	3	77	Unbiased HAST 110C/85%RH	264 Hours	-	-	-	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	-	-	-	3/231/0	1/77/0
TC-WBP	A4	MIL-STD883 Method 2011	1	60	Bond Pull Post Temp Cycle	Wires	-	-	-	1/60/0	
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	N/A	N/A	N/A	N/A

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: 5700432APZQ Q1R	Qual Device: LS10206AGPG EQR	Qual Device: S5703137CPG EQQ	QBS Device: LS10206AGPG EQR	QBS Package Reference: F280049PZQ
HTSL	A 6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 hours	-	-	-	3/231/0	-
Test Group B – Accelerated Lifetime Simulation Tests											
HTOL	B 1	JEDEC JESD22-A108	3	77	HTOL 125C	1000 Hours	-	-	-	-	-
ELFR	B 2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	-	-	-
EDR	B 3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	N/A	N/A	N/A	N/A
Test Group C – Package Assembly Integrity Tests											
WBS	C 1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	Wires	3/90/0	3/90/0	3/90/0	1/30/0	1/30/0
WBP	C 2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	Wires	3/90/0	3/90/0	3/90/0	1/30/0	1/30/0
SD	C 3	JEDEC JESD22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	-	-	-	-	-	-
PD	C 4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	-	-	-	-	-
LI	C 6	JEDEC JESD22-B105	1	50	Lead Integrity	-	-	-	-	-	-
Test Group D – Die Fabrication Reliability Tests											
EM	D 1	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
TDDB	D 2	JESD35	-	-	Time Dependant 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	D	JESD6	-	-	Hot Injection	-	Completed	Completed Per	Completed Per	Completed Per	Completed Per

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: 5700432APZQQ1R	Qual Device: LS10206AGPGEQR	Qual Device: S5703137CPGEQQ	QBS Device: LS10206AGPGEQR	QBS Package Reference: F280049PZQ
	3	0 & 28			Carrier		Per Process Technology Requirements	Process Technology Requirements	Process Technology Requirements	Process Technology Requirements	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

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	QBS Package Reference: F280040PMQR	QBS Package Reference: 771538PTPACT	QBS Package Reference: TMS320F28377DPTPQ (DM6, UMC)
Test Group A – Accelerated Environment Stress Tests									
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 3-260C	3/1020/0	3/894/0	6/1386/0
THB	A2	JEDEC JESD22-A101	3	77	Biased Temperature and Humidity, 85C/85%RH	1000 Hours	3/231/0	-	-
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	-	6/462/0
AC	A3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	3/231/0	-	-
UHAST	A3	JEDEC JESD22-A102	3	77	Unbiased HAST 130C/85%RH	96 Hours		3/231/0	6/462/0
UHAST	A3	JEDEC JESD22-A102	3	77	Unbiased HAST 110C/85%RH	264 Hours		3/228/0	
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	6/462/0
TC-WBP	A4	MIL-STD883 Method 2011	1	60	Bond Pull Post Temp Cycle	Wires	1/60/0		
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A	N/A	N/A
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 hours	3/231/0	3/231/0	6/462/0
Test Group B – Accelerated Lifetime Simulation Tests									

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	QBS Package Reference: F280040PMQR	QBS Package Reference: 771538PTPACT	QBS Package Reference: TMS320F28377DPTPQ (DM6, UMC)
HTOL	B1	JEDEC JESD22-A108	3	77	HTOL 125C	1000 Hours	1/77/0	-	6/462/0
ELFR	B2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	48 Hours	-	-	6/4800/0
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A	N/A	6/462/0
Test Group C – Package Assembly Integrity Tests									
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear (Cpk>1.67)	Wires	1/30/0	1/30/0	1/30/0
WBP	C2	MIL-STD883 Method 2011	1	30	Wire Bond Pull (Cpk>1.67)	Wires	1/30/0	1/30/0	1/30/0
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	-	-	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	-	-	-
LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	-	-	-	-
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
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	-	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
SM	D5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements

- QBS: Qual By Similarity
- Qual Devices 5700432APZQQ1R, LS10206AGPGEQR and S5703137CPGEQQ are qualified at LEVEL3-260CG

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST, TC & PTC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:
Grade 0 (or E): -40°C to +150°C
Grade 1 (or Q): -40°C to +125°C
Grade 2 (or T): -40°C to +105°C
Grade 3 (or I) : -40°C to +85°C

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 : AC/uHAST

Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

Note: Generic data (QBS) is being used to convert the 8200TI Die attach devices to FS849 die attach devices. This die attach has been qualified and in production in LQFP/HLQFP Automotive devices for the same packages, die sizes and die technologies thus justify using QBS package data.

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