

<b>PCN Number:</b>	20181211000.2		<b>PCN Date:</b>	Dec 13, 2018	
<b>Title:</b>	Qualify New Assembly Material set for Select Device(s)				
<b>Customer Contact:</b>	<a href="#">PCN Manager</a>		<b>Dept:</b>	Quality Services	
<b>Proposed 1<sup>st</sup> Ship Date:</b>	June 13, 2019		<b>Estimated Sample Availability:</b>	Date provided at sample request	
<b>Change Type:</b>					
<input type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Design	<input type="checkbox"/>	Wafer Bump Site
<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Data Sheet	<input type="checkbox"/>	Wafer Bump Material
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Part number change	<input type="checkbox"/>	Wafer Bump Process
<input type="checkbox"/>	Mechanical Specification	<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Wafer Fab Site
<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process	<input type="checkbox"/>	Wafer Fab Materials
		<input type="checkbox"/>		<input type="checkbox"/>	Wafer Fab Process
<b>PCN Details</b>					
<b>Description of Change:</b>					
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:					
		<b>Current</b>		<b>Proposed</b>	
	Mount compound	00101335950		101339368	
	Mold Compound	101323397		101376660	
	Lead frame finish	NiPdAu		NiPdAu (Single side roughened)	
<b>Reason for Change:</b>					
Continuity of Supply					
<b>Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):</b>					
None					
<b>Anticipated impact on Material Declaration</b>					
<input type="checkbox"/>	No Impact to the Material Declaration	<input checked="" type="checkbox"/>	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 from the <a href="#">TI Eco-Info website</a> . There is no impact to the material meeting current regulatory compliance requirements with this PCN change.		
<b>Changes to product identification resulting from this PCN:</b>					
None					
<b>Product Affected:</b>					
HBCD412ATDKDRHB	TAS5414ATDKDQ1	TAS5414BTDKDRQ1	TAS5424ATDKDRQ1		
HBCD412ATDKDRHBG4	TAS5414ATDKDQ1G4	TAS5424ATDKDMQ1	TAS5424ATDKDRQ1G4		
HBCD412CTDKDRHB	TAS5414ATDKDRMQ1	TAS5424ATDKDQ1	TAS5424BTDKDRQ1		
TAS5414ATDKDMQ1	TAS5414ATDKDRQ1	TAS5424ATDKDRMQ1	TAS5514BTDKDRQ1		

# Qualification Report

Approve Date 26-Nov-2018

## 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	QBS Device: TAS5424B TDKERQ1	QBS Device: TAS5424B TDKDRQ1	QBS Device: CODPHD P2DKAR	QBS Device: CODC2PS A2DKPR
<b>TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS</b>										
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Auto Preconditioning	See Notes	3/385/0	3/963/0	3/492/0	3/231/0
THB/HAST	A2	JEDEC JESD22-A101 or A110	3	77	Temperature-Humidity-Bias or Biased HAST, 130C	96 Hours	3/231/0	3/231/0	3/231/0	-
AC/UHAST	A3	JEDEC JESD22-A102 or A118 or A101	3	77	Autoclave or Unbiased HAST Or Temperature-Humidity, 121C	96 Hours	3/231/0	3/231/0	-	-
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	3/231/0	3/231/0	3/231/0	3/231/0
TC-BP	A4	MIL-STD883 Method 2011	1	60	Post Temp. Cycle, Bond Pull	Wires	3/180/0	1/60/0	3/180/0	3/180/0
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle, -40C/105C	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	3/135/0	-	-
<b>TEST GROUP B – ACCELERATED LIFETIME SIMULATION TESTS</b>										
HTOL	B1	JEDEC JESD22-A108	3	800	High Temperature Operating Life, 125C	1000 Hours	3/231/0	-	1/77/0	2/254/0
ELFR	B2	AEC Q100-008	3	77	Early Life Failure Rate, 150C	24 Hours	3/2400/0	-	3/2400/0	-
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	--	-	-	-	-
<b>TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS</b>										
WBS	C1	AEC Q100-001	1	30	Bond Shear (Cpk>1.67)	Wires	3/90/0	-	-	-
WBP	C2	MIL-STD883 Method 2011	1	30	Bond Pull (Cpk>1.67)	Wires	3/90/0	-	-	-
SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability >95% Lead Coverage	8 Hours Steam Age	1/15/0	-	-	-
PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	--	3/30/0	-	-	-
LI	C6	JEDEC JESD22-B105	1	50	Lead Integrity	Leads	-	-	-	-
<b>TEST GROUP D – DIE FABRICATION RELIABILITY TESTS</b>										
EM	D1	JESD61	-	-	Electromigration	Completed Per Process Technology Requireme	-	-	-	-

						nts				
TDDB	D2	JESD35	-	-	Time Dependant Dielectric Breakdown	Completed Per Process Technology Requirements	-	-	-	-
HCI	D3	JESD60 & 28	-	-	Hot Injection Carrier	Completed Per Process Technology Requirements	-	-	-	-
NBTI	D4	-	-	-	Negative Bias Temperature Instability	Completed Per Process Technology Requirements	-	-	-	-
SM	D5	-	-	-	Stress Migration	Completed Per Process Technology Requirements	-	-	-	-
<b>TEST GROUP E – ELECTRIOCAL VERIFICATION TESTS</b>										
TEST	E1		-	-	Pre- and Post-Stress Functional/Parameter		-	-	-	-
HBM	E2	AEC Q100-002	-	-	Electrostatic Discharge Human Body Model		-	-	1/3/0	1/3/0
CDM	E3	AEC Q100-011	-	-	Electrostatic Discharge Charged Device Model		-	1/3/0	1/3/0	1/3/0
LU	E4	AEC Q100-004	-	-	Latch-Up		-	-	1/6/0	1/6/0
ED	E5	AEC Q100-00 AEC Q003	-	-	Electrical Distributions		-	-	3/90/0	3/90/0
FG	E6	AEC Q100-007	-	-	Fault Grading		-	-	-	-
CHAR	E7	AEC Q003	-	-	Characterization		-	-	-	-
EMC	E9	SAE J1752/3	-	-	Electromagnetic Compatibility		-	-	-	-
SC	E10	AEC Q100-012	-	-	Short Circuit Characterization		-	-	-	-
LF	E12	AEC Q005	-	-	Lead (Pb) Free		-	-	-	-
<b>ADDITIONAL TESTS</b>										
MQ				-	Manufacturability (Auto Assembly)	per automotive requirements	PASS	PASS	PASS	PASS
TIS					Thermal Integrity Sequence	L3-245C	3/36/0	-	-	-
Q006				-	Cu Wire – Q006		PASS	-	PASS	PASS

Notes: - QBS Device TAS5424BTDKERQ1 is qualified at LEVEL3-245CG  
- QBS Device TAS5424BTDKDRQ1 is qualified at LEVEL3-245CG  
- QBS Device CODPHDP2DKAR is qualified at LEVEL3-260CG  
- QBS Device CODC2PSA2DKPR is 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

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