

PCN Number:	20220727000.2A			PCN Date:	October 24, 2023						
Title:	Qualification of New Substrate Core Material for Select Devices										
Customer Contact:	Change Management team		Dept:	Quality Services							
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:											
Revision A is to remove select device in the Product Affected Section (in highlighted bold character with strike through). These devices were inadvertently added and not affected by this change. Texas Instruments is pleased to announce the qualification of a new substrate core material for Select Devices listed in the "Product Affected" Section. <table border="1"> <thead> <tr> <th>What</th> <th>Current</th> <th>New</th> </tr> </thead> <tbody> <tr> <td>Substrate Core material</td> <td>E679FGB/ E679FGB(M)</td> <td>HL832NX(A-HS)</td> </tr> </tbody> </table>						What	Current	New	Substrate Core material	E679FGB/ E679FGB(M)	HL832NX(A-HS)
What	Current	New									
Substrate Core material	E679FGB/ E679FGB(M)	HL832NX(A-HS)									
Reason for Change:											
Continuity of supply											
Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):											
None											
Impact on Environmental Ratings											
Checked boxes indicate the status of environmental ratings following implementation of this change. If below boxes are checked, there are no changes to the associated environmental ratings.											
RoHS		REACH		Green Status							
☒ No Change		☒ No Change		☒ No Change							
				IEC 62474							
				☒ No Change							
Changes to product identification resulting from this PCN:											
None											
Product Affected:											
DRA604BIZCZQ1	O9039A390IZW SRQ1	PO9039A371IZW SRQ1	PTPS659039PIZW SRQ1								
DRA604BIZCZRQ1	O9039A391IZW SRQ1	PO9039A372IZW SRQ1	S5LS10106ASZWTQQ1								
DRA605BIZCZQ1	O9039A392IZW SRQ1	PO9039A373TZW SRQ1	S5LS10116ASZWTQQ1								
DRA606BIZCZQ1	O9039A471IZW SRQ1	PO9039A374IZW SRQ1	S5LS10206ASZWTQQ1								
DRA607BIZCZQ1	O9039A479IZW SRQ1	PO9039A377IZW SRQ1	S5LS10216ASZWTQQ1								
DRA608BIZCZQ1	O9039A48DIZW SRQ1	PO9039A379IZW SRQ1	S5LS20206ASZWTQQ1								
DRA608BIZCZRQ1	OMAPL138EZCEQ4	PO9039A37CIZW SRQ1	S5LS20216ASZWTQQ1								
DRA615BIZCZQ1	OMAPL138EZCEQ4R	PO9039A37DIZW SRQ1	S5LS20216ASZWTQQ1R								
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F28384DZWTQR	PO9038A152IZW SRQ1	PO9039A385IZW STQ1	TMS320F28379SZWTQR								

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O9038A242IZW SRQ1	PO9038A342IZW SRQ1	PO9039A389IZW STQ1	TMS5701213BZW TQQ1R
O9038A342IZW SRQ1	PO9038A344IZW SRQ1	PO9039A38CIZW SRQ1	TMS5701213BZW TSQ1R
O9038A352IZW SRQ1	PO9038A352IZW SRQ1	PO9039A38DIZW SRQ1	TMS5701213CZW TQQ1
O9038A35FIZW SRQ1	PO9038A376IZW SRQ1	PO9039A38FIZW SRQ1	TMS5701213CZW TQQ1R
O9038A376IZW SRQ1	PO9038A386IZW SRQ1	PO9039A390IZW SRQ1	TMS5701213CZW TSQ1R
O9038A384IZW SRQ1	PO9038A395IZW SRQ1	PO9039A391IZW SRQ1	TMS5701224CZW TQQ1
O9038A386IZW SRQ1	PO9039A14BTZW SRQ1	PO9039A392IZW SRQ1	TMS5701227BZW TQQ1
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O9039A350IZW SRQ1	PO9039A24BTZW SRQ1	PSN1210052IZW SRQ1	TMS5702135CZW TSQ1R
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O9039A360IZW SRQ1	PO9039A250IZW SRQ1	PTPS6590371ZW SR	TMS5702135DZW TQQ1R
O9039A365IZW SRQ1	PO9039A253IZW SRDL	PTPS6590372ZW SR	TMS5702136CZW TSQ1
O9039A366IZW SRQ1	PO9039A257IZW SRQ1	PTPS6590373ZW SR	TMS5702136CZW TSQ1R
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O9039A36BIZW SRQ1	PO9039A25CIZW SRQ1	PTPS6590376ZW SR	TMS5703134DZW TQQ1
O9039A36DTZW SRQ1	PO9039A25DIZW SRQ1	PTPS6590377ZW SR	TMS5703135CZW TQQ1
O9039A36EIZW SRQ1	PO9039A25EIZW SRQ1	PTPS659037A383ZW SR	TMS5703135CZW TQQ1R
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O9039A373TZW SRQ1	PO9039A348IZW SRQ1	PTPS659038CIZW SRQ1	TMS5703137CZW TQQ1
O9039A374IZW SRQ1	PO9039A349IZW SRQ1	PTPS659038DIZW SRQ1	TMS5703137CZW TQQ1R
O9039A375IZW SRDL	PO9039A34BTZW SRQ1	PTPS659038EIZW SRQ1	TMS5703137DZW TQQ1
O9039A379IZW SRQ1	PO9039A358IZW SRQ1	PTPS659038FIZW SRQ1	TMS5704343BZW TQQ1
O9039A37AIZW SRQ1	PO9039A359IZW SRQ1	PTPS659039AIZW SRQ1	TMS5704343BZW TSQ1
O9039A382IZW SRQ1	PO9039A35DIZW SRQ1	PTPS659039BIZW SRQ1	TMS5704355AZW TQQ1
O9039A384IZW SRQ1	PO9039A360IZW SRQ1	PTPS659039CIZW SRQ1	TMS5704355AZW TQQ1R
O9039A385IZW SRQ1	PO9039A362IZW SRQ1	PTPS659039DIZW SRQ1	TMS5704355BZW TSQ1
O9039A385IZW STQ1	PO9039A363IZW SRDL	PTPS659039EIZW SRQ1	TMS5704355BZW TSQ1R
O9039A386IZW SRQ1	PO9039A364IZW SRQ1	PTPS659039FIZW SRQ1	TMS5704357BZW TQQ1
O9039A387IZW SRQ1	PO9039A365IZW SRQ1	PTPS659039GIZW SRQ1	TPS658629IZW SRQ1
O9039A387IZW STQ1	PO9039A366IZW SRQ1	PTPS659039HIZW SRQ1	TPS6590371ZW SR
O9039A389IZW SRQ1	PO9039A368IZW SRQ1	PTPS659039IIZW SRQ1	TPS6590372ZW SR
O9039A389IZW STQ1	PO9039A369IZW SRQ1	PTPS659039JIZW SRQ1	TPS6590373ZW SR
O9039A38DIZW SRQ1	PO9039A36AIZW SRQ1	PTPS659039KIZW SRQ1	TPS6590374ZW SR
O9039A38EIZW SRQ1	PO9039A36CIZW SRQ1	PTPS659039LIZW SRQ1	TPS6590374ZW ST
O9039A38ETZW SRQ1	PO9039A36DTZW SQ1	PTPS659039MIZW SRQ1	TPS6590375ZW SR
O9039A38FIZW SRQ1	PO9039A36EIZW SRQ1	PTPS659039NIZW SRQ1	TPS6590375ZW ST
O9039A390IZW SRDL	PO9039A370IZW SRDL	PTPS659039OIZW SRQ1	

Qualification Report

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

Approve Date 10-Jan-2019

Product Attributes

Attributes	Qual Device: CODMIOAZWCR	Process QBS: TPS2543QRTERQ1
Automotive Grade Level	Grade 1	Grade 1
Operating Temp Range	-40 to +125 C	-40 to +125 C
Product Function	ASIC	Power Management
Die Revision	C1	A
Assembly Site	TIPI	Clark
Package Type	BGA	QFN
Package Designator	ZWC	RTE
Ball/Lead Count	255	16

- QBS: Qual By Similarity

- Qual Device is qualified at LEVEL3-260C

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: CODMIOAZWCR	Process QBS: TPS2543QRTERQ1
Test Group A – Accelerated Environment Stress Tests								
PC	A 1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 2-260C	Passed	Passed
HAST	A 2	JEDEC JESD22-A110	3	77	Biased HAST, 130C/85%RH	96 Hours	-	3/231/0
AC	A 3	JEDEC JESD22-A102	3	77	Autoclave 121C	96 Hours	1/77/0	3/231/0
TC	A 4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -65/150C	500 Cycles	1/77/0	3/231/0
TC-BP	A 4	MIL-STD883 Method 2011	1	5	Post Temp Cycle Bond Pull	Wires	Passed	Passed
PTC	A 5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	-	1/45/0
HTSL	A 6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	1/77/0	3/231/0
Test Group B – Accelerated Lifetime Simulation Tests								
HTOL	B 1	JEDEC JESD22-A108	3	77	Life Test 125C	1000 Hours	1/77/0	3/231/0
ELFR	B 2	AEC Q100-008	3	800	Early Life Failure Rate, 125C	24 Hours	-	3/2400/0
EDR	B 3	AEC Q100-005	3	77	NVM Endurance,	1000 Hours	-	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: CODMIOAZWCR	Process QBS: TPS2543QRTERQ1
					Data Retention, and Operational Life			
Test Group C – Package Assembly Integrity Tests								
WBS	C 1	AEC Q100-001	1	30	Wire Bond Shear Cpk>1.67	Wires	1/30/0	1/30/0
WBP	C 2	MIL-STD883 Method 2011	1	30	Wire Bond Pull Cpk>1.67	Wires	1/30/0	1/30/0
SD	C 3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	-	-	1/15/0
PD	C 4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions (Cpk>1.67)	-	3/30/0	3/30/0
Test Group D – Die Fabrication Reliability Tests								
EM	D 1	JESD61	-	-	Electromigration	-	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
HCI	D 3	JESD60 & 28	-	-	Hot Injection Carrier	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
NBTI	D 4	-	-	-	Negative Bias Temperature Instability	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
SM	D 5	-	-	-	Stress Migration	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
Test Group E – Electrical Verification Tests								
HBM	E 2	AEC Q100-002	1	3	ESD – HBM	1500 V	1/3/0	-
						2000 V	-	1/3/0
CDM	E 3	AEC Q100-011	1	3	ESD – CDM	500 V (all pins) 750V (corner pins only)	1/3/0	1/3/0
LU	E 4	AEC Q100-004	1	6	Latch-up (125C)	Per AEC Q100-004	1/6/0	1/6/0
ED	E 5	AEC Q100-009	3	30	Electrical Distributions (-40, 25C, 125C)	Cpk>1.67	3/90/0	3/90/0

A1 (PC): Preconditioning:

Performed for THB, Biased HAST, AC, uHAST & TC 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

Qualification Report

Automotive New Product Qualification Summary

(As per AEC-Q100 and JEDEC Guidelines)

Approve Date 16-Dec-2013

Product Attributes

Attributes	Qual Device: TMS320DM6437ZWTQ6
Automotive Grade Level	Grade 1
Operating Temp Range	-40 to +125 C
Product Function	Microprocessor
Die Revision	B
Assembly Site	PHI
Package Type	NFBGA
Package Designator	ZWT
Ball/Lead Count	361

- QBS: Qual By Similarity

- Qual Device TMS320DM6437ZWTQ6 is qualified at LEVEL3-260CG

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: TMS320DM6437ZWTQ6
Test Group A – Accelerated Environment Stress Tests							
PC	A1	JEDEC J-STD-020 JESD22-A113	3	77	Preconditioning	Level 3-260C	No Fails
HAST	A2	JEDEC JESD22-A110	3	77	Biased HAST, 110C/85%RH	264 Hours	3/231/0
UHAST	A3	JEDEC JESD22-A102	3	77	Unbiased HAST 110C/85%RH	96 Hours	3/231/0
TC	A4	JEDEC JESD22-A104 and Appendix 3	3	77	Temperature Cycle, -55/125C	1000 Cycles	3/231/0
TC-WBP	A4	MIL-STD883 Method 2011	1	60	Post Temp Cycle Bond Pull	Wires	-
PTC	A5	JEDEC JESD22-A105	1	45	Power Temperature Cycle	1000 Cycles	N/A
HTSL	A6	JEDEC JESD22-A103	1	45	High Temp Storage Bake 150C	1000 Hours	3/231/0
Test Group B – Accelerated Lifetime Simulation Tests							
HTOL	B1	JEDEC JESD22-A108	3	77	Life Test, 125C	1000 Hours	-
ELFR	B2	AEC Q100-008	3	800	Auto Early Life Failure Rate Grade 1	150C(24 Hrs)	-
EDR	B3	AEC Q100-005	3	77	NVM Endurance, Data Retention, and Operational Life	-	N/A
Test Group C – Package Assembly Integrity Tests							
WBS	C1	AEC Q100-001	1	30	Wire Bond Shear, Cpk>1.67	Wires	3/90/0

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>TMS320DM6437ZWTQ6</u>
	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	Pb Free Solder	-
	SD	C3	JEDEC JESD22-B102	1	15	Surface Mount Solderability	Pb Solder	-
	PD	C4	JEDEC JESD22-B100 and B108	3	10	Physical Dimensions	Cpk>1.67	3/30/0
	SBS	C5	AEC Q100-010	3	50	Solder Ball Shear (Cpk>1.67)	Solder Balls	3/96/0
	LI	C6	JEDEC JESD22-B105	1	50	Lead Fatigue	Leads	N/A
	LI	C6	JEDEC JESD22-B105	1	50	Lead Pull to Destruction	Leads	N/A
Test Group D – Die Fabrication Reliability Tests								
	EM	D1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements
	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
Test Group E – Electrical Verification Tests								
	HBM	E2	AEC Q100-002	1	3	Auto ESD HBM	2000V	-
	CDM	E3	AEC Q100-011	1	3	Auto ESD CDM	250V	3/9/0
	LU	E4	AEC Q100-004	1	6	Auto Latch-up	25C, 125C	-
	ED	E5	AEC Q100-009	3	30	Auto Electrical Distributions	Cpk>1.67 Room, hot, and cold test	-

A1 (PC): Preconditioning:

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

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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

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

Location	E-Mail
WW PCN Team	PCN_ww_admin_team@list.ti.com

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