

PCN Number:	20220727000.2		PCN Date:	July 28, 2022								
Title:	Qualification of New Substrate Core Material for Select Devices											
Customer Contact:	PCN Manager	Dept:	Quality Services									
Proposed 1st Ship Date:	Jan 28, 2023	Sample requests accepted until:	Aug 28, 2022*									
*Sample requests received after (Aug 28, 2022) will not be supported.												
Change Type:												
<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"/>	Wafer Fab Process							
PCN Details												
Description of 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.												
<table border="1"> <thead> <tr> <th>RoHS</th> <th>REACH</th> <th>Green Status</th> <th>IEC 62474</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> No Change</td> <td><input checked="" type="checkbox"/> No Change</td> <td><input checked="" type="checkbox"/> No Change</td> <td><input checked="" type="checkbox"/> No Change</td> </tr> </tbody> </table>					RoHS	REACH	Green Status	IEC 62474	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change
RoHS	REACH	Green Status	IEC 62474									
<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change	<input checked="" type="checkbox"/> No Change									
Changes to product identification resulting from this PCN:												
None												
Product Affected:												
AM3358BGCZA80EP	OMAPL138BGWTMEP	TMS5703137CGWTQEP	V62/13629-02XE									
M430F5438AMGCARET	S5LS20216ASGWTMEP	TMS5704357BGWTQEP	V62/15602-01XF									
M430F5438AMZCARET	SM320C6748EGWTS3	V62/12605-01XE	V62/18601-01XF									
M430F5438AQGCARET	TMS320F28377DGWTQEP	V62/12622-02YE	V62/18606-01XF									
M430F5438AQZCARET	TMS5703137CGWTMEP	V62/13629-01XE										

Qualification Report

Approve Date 17-May-2017

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: F761516ZAV	QBS Device: D771586ZKB
THB	Temperature Humidity Bias, 85C/85%RH	1000 Hours	QBS Device	3 / 231 / 0
UHAST	Unbiased HAST 110C/85%RH	264 Hours	3 / 230 / 0	N / A
TC	Temperature Cycle, -55/125C	1000 Cycles	3 / 231 / 0	N / A
CDM	ESD - CDM	250 V	1 / 3 / 0	N / A

- QBS: Qualification By Similarity

- Qual Device F761516ZAV and QBS Device D771586ZKB are qualified at LEVEL3-260C

- 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

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

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

Qualification Report

Approve Date 08-June-2015

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: <u>TNETV1061ZWC</u>	QBS Package Reference: <u>TMS320C6748BZWT A3E</u>
HTOL	Life Test, 125C	1000 hours	3/231/0	-
HTSL	High Temp Storage Bake 150C	1000 hours	3/179/0	3/231/0
PD	Physical Dimensions	(per mechanical drawing)	1/10/0	-
TC	Temperature Cycle, -55/125C	1000 cycles	3/231/0	3/231/0
THB	Biased Temperature and Humidity, 85C/85%RH	1000 hours	QBS device	3/77/0
UHAST	Unbiased HAST 110C/85%RH	264 hours	3/231/0	3/231/0
WBP	Bond Strength	76 ball bonds, min. 3 units	3/228/0	3/228/0

- QBS: Qual By Similarity

- Qual Device TNETV1061ZWC is qualified at LEVEL4-260C

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

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

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 10-Jan-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: 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	No Fails	No Fails
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	1/5/0	1/5/0
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, Data Retention, and Operational Life	1000 Hours	-	-
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
SBS	C 5	AEC Q100-010	3	50	Solder Ball Shear	Solder Balls	3/96/0	

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: CODMIOAZWCR	Process QBS: TPS2543QRTERQ1
					(Cpk>1.67)			
Test Group D – Die Fabrication Reliability Tests								
EM	D 1	JESD61	-	-	Electromigration	-	Completed Per Process Technology Requirements	Completed Per Process Technology Requirements
TDDDB	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

- QBS: Qual By Similarity

- Qual Device is qualified at LEVEL3-260C

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

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	NA
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	-	NA
Test Group C – Package Assembly Integrity Tests							
WBS	C1	AEC Q100-001	1	30	Wire 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	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
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	-

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: TMS320DM6437ZWTQ6
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	-

- QBS: Qual By Similarity

- Qual Device TMS320DM6437ZWTQ6 is qualified at LEV EL3-260CG

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

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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