

PCN Number:	20220727000.1B			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:													
<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								
PCN Details													
Description of Change:													
<p>Revision B is to remove select device in the Product Affected Section (in bold character with strikethrough). These devices were inadvertently added and not affected by this change.</p> <p>Texas Instruments is pleased to announce the qualification of a new substrate core material for Select Devices listed in the "Product Affected" Section.</p> <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>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													
<p>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.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <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:													
DAC34H84IZAYR	TMS320C28341ZAYT	TMS320C2834FZAY	TMS320C2834UZAY										
SN74AVC32T245NMJR	TMS320C28343ZAYT	TMS320C2834HZAY	TMS320VC5510AZAV2										
SN74LVCH32373ANMJR	TMS320C28345ZAYT	TMS320C2834MZAY	TNETV2505ZAV										

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
UHA ST	Unbiased HAST 110C/85%RH	264 Hours	3/230/0	-
TC	Temperature Cycle, -55/125C	1000 Cycles	3/231/0	-
CDM	ESD - CDM	250 V	1/3/0	-

- 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
UHA ST	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 (Cpk>1.67)	Solder Balls	3/96/0	
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

Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: CODMIOAZWCR	Process QBS: TPS2543QRTERQ1
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: TMS320DM6437ZWT Q6
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

	Type	#	Test Spec	Min Lot Qty	SS/Lot	Test Name / Condition	Duration	Qual Device: <u>TMS320DM6437ZWTQ6</u>
	UHA ST	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
	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	-
	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 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

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

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disdaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI's products are provided subject to TI's Terms of Sale (www.ti.com/legal/termsofsale.html) or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI's provision of these resources does not expand or otherwise alter TI's applicable warranties or warranty disclaimers for TI products.