PCN Number:	20180207001	**PCN Date:**	Feb 9, 2018
Title:	Qualification of new Underfill Material for select devices		
Customer Contact:	PCN Manager	**Dept:**	Quality Services
Proposed 1st Ship Date:	Aug 9, 2018	**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 Incorporated is announcing the qualification of new Underfill Material for select devices listed in the "Product Affected" Section.

Group 1 Devices:

	Current	Proposed
Underfill Material	4202191	**4209605**

Group 2 Devices:

	Current	Proposed
Underfill Material	4202191	**4221437**

Reason for Change:

Continuity of supply.

Discontinuation of LOCTITE ECCOBOND 4202191 underfill material due to raw material discontinuation.

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 from the TI Eco-Info website. There is no impact to the material meeting current regulatory compliance requirements with this PCN change.

Changes to product identification resulting from this PCN:

None

Product Affected: Group 1

SM320C6455BGTZEP	SM320C6455BGTZSEP	V62/07649-01XA	V62/07649-02XA

Product Affected: Group 2

SM32C6415EGLZ50AEP	SM32C6415EGLZ50SEP	V62/04609-05XA	V62/04609-08XA

Group 1: Qualification Report

Solder Bump FCBGA Underfill Conversion to Hitachi 4209605
Approve Date 02-Aug-2017

Product Attributes

Attributes	Qual Device: SM320C6455BGTZSEP	QBS Product/Package Reference: DCTCI6482BZTZ	QBS Process Reference: SN1103008IZLS	QBS Package Reference: KAILASH ZUT	QBS Package Reference: FERMI2 IBIDEN PRODUCTION DIE ZLZ
Assembly Site	PHI	PHI	CHIPPAC-K	PHI	PHI
Package Family	FCBGA	FCBGA	NFBGA - MCM	FCBGA	FCBGA
Flammability Rating	-	UL 94 V-0	-		-
Wafer Fab Supplier	DMOS5	UMC12A	DMOS6, RFAB	UMC12A	UMC12A
Wafer Process	1118C027.AZNBB	1118C027.AZNBB	C027, C05	1118C027.AZNBB	1133C027.A6

- QBS: Qual By Similarity
- Qual Device SM320C6455BGTZSEP is qualified at LEVEL4-220C

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: SM320C6455BGTZSEP	QBS Product/Package Reference: DCTCI6482BZTZ	QBS Process Reference: SN1103008IZLS	QBS Package Reference: KAILASH ZUT	QBS Package Reference: FERMI2 IBIDEN PRODUCTION DIE ZLZ
ED	Electrical Characterization (SEE NOTE)	Per Datasheet Parameters	-	-	1/5/0	-	-
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	1/77/0	-	-
HBM	ESD - HBM	2500 V	1/3/0	-	2/6/0	-	-
CDM	ESD - CDM	500V	1/3/0	-	-	-	-
HTOL	Life Test, 125C	1000 Hours	-	-	3/223/0	-	-
HTSL	High Temp. Storage Bake, 150C	1000 Hours	-	-	3/231/0	1/77/0	-
LU	Latch-up	(per JESD78)	3/18/0	-	3/18/0	-	-
TC	Temperature Cycle, -40/125C	1000 Cycles	-	2/78/0	-	-	-
TC	Temperature Cycle, -55/125C	700 Cycles	1/90/0	2/78/0	-	-	-
THB	Biased Temperature and Humidity, 85C/85%RH	600 Hours	-	-	-	1/31/0	3/78/0
TS	Thermal Shock -55/125C	500 Cycles	-	-	1/77/0	-	-

UHAST	Unbiased HAST, 110C/85%RH	264 Hours	1/90/0	2/78/0	-	-	3/78/0
UHAST	Unbiased HAST, 130C/85%RH	96 Hours	-	-	3/231/0	-	-

- 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

Group 2: Qualification Report

Solder Bump FCBGA Underfill Conversion to Namics 4221437 for Kelvin products

Approve Date 22-Mar-2017

Product Attributes

Attributes	Qual Device: KELVIN2
Die Attributes	-
Die Revision	2.0*
Wafer Process	1233C035.A (120nm)
Passivation	PBO
Package Attributes	-
Assembly Site	PHI (TIPI)
Package Family	FCBGA
Package Designator	ZLZ
Package Size (mils)	23mmx23mm
Pin Count	532
Solder Ball Composition	SnAgCu**
Green Status	RoHS

*Die Revision 1.0 is qualified by similarity.
**Sn/Pb solder ball product part numbers are qualified by similarity as solder ball material has no expected effect on bump-interconnect underfill-influenced failure mechanisms.

Qualification Results

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

Type	Test Name / Condition	Duration	Qual Device: KELVIN2
PC	PreCon Level 4	Moisture Soak/96hrs at 30C/60%RH	3/399/0
TC	Temperature Cycle, -55/125C, 700cyc	-55/125C, JEDEC Soak Mode 1, 700cyc	3/165/0
UHAST	Unbiased HAST 110C/85%RH	264 Hr/110C/85%RH	3/165/0

- Moisture Preconditioning was performed for Unbiased HAST and Temperature Cycle

- THB, HTSL, and HTOL are not required tests for this qualification but were completed for product qualification with previous underfill material (current production).

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

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

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USA	PCNAmericasContact@list.ti.com
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