Title: Qualification of new Underfill Material for select devices Customer Contact: PCN Manager Dept: Quality Services Proposed 1** Ship Date: Aug 9, 2018 Estimated Sample Date Provided at Sample Change Type:	PCN Number: 20180207001								PCN Date:	Feb 9, 2018	
Customer Contact: PCN Manager Dept: Quality Services Proposed 1** Ship Date: Aug 9, 2018 Estimated Sample Availability: Date Provided at Sample request Change Type:							,				
Proposed 1* Ship Date: Aug 9, 2018 Estimated Sample Availability: Date Provided at Sample request Change Type: Design Wafer Bump Site Assembly Process Data Sheet Wafer Bump Site Assembly Naterials Data Sheet Wafer Bump Process Machanical Specification Part number change Wafer Fab Materials Packing/Shipping/Labeling Test Site Wafer Fab Materials Packing/Shipping/Labeling Test Site Wafer Fab Materials Packing/Shipping/Labeling Test Site Wafer Fab Process PCN Details PCN Details Description of Change: Current Proposed 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 1 Secontinuation of LOCTITE ECCOBOND 4202191 underfill material due to raw material discontinuation. Secon for Change: Continuity of supply. Discontinuation of LOCTITE ECCOBOND 4202191 underfill material due to raw material discontinuation. Material Declaration No me Material Declaration or Product Ontent reports are driven from producti	Custome										
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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

Туре	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
	Electrical	Per					
ED	Characterization (SEE NOTE)	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	-	-
тс	Temperature Cycle, -40/125C	1000 Cycles	-	2/78/0	-	-	-
тс	Temperature Cycle, -55/125C	700 Cycles	1/90/0	2/78/0	-	-	-
ТНВ	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	РВО
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

Туре	Test Name / Condition	Duration	Qual Device: KELVIN2
PC	PreCon Level 4	Moisture Soak/96hrs at 30C/60%RH	3/399/0
тс	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.

Location	E-Mail
USA	PCNAmericasContact@list.ti.com
Europe	PCNEuropeContact@list.ti.com
Asia Pacific	PCNAsiaContact@list.ti.com
Japan	PCNJapanContact@list.ti.com