PCN Number:	20140130001	PCN Date:	04/08/2014
Title:	Cu Wire conversion 64LC auto nfBGA C027 and Qualify Shiva and Freon with hybrid 0.8 mil Au/Cu.		

Customer Contact:	PCN_ww_admin_team@list.ti.com	Phone:	+1(214)480-6037	Dept:	Quality Services

Proposed 1st Ship Date:	10/08/2014	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 for Cu Wire conversion nfBGA C027 64LC auto only and Qualify Freon with hybrid 0.8 mil Au/Cu.

64LC	From	To
Die Attach	4073505	4205412
Bond Wire	Au	Cu

Freon	From	To
Bond Wire	Au	Au/Cu

Reason for Change:

Continuity of supply.

1) To align with world technology trends and use wiring with enhanced mechanical and electrical properties.
2) Maximize flexibility within our Assembly/Test production sites
3) Copper wire is easier to obtain and stock.

Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):

No anticipated impact.

Changes to product identification resulting from this PCN:

None

Product Affected:

C1309119 (64LC)	C1309119 (64LC)	C1307032 (Freon)
TMS320C6421ZWTQ5	TMS320DM6437ZWTQ5	AM1808BZWTQ3
TMS320C6421ZWTQ6	TMS320DM6437ZWTQ6	OMAPL138BZCEQ3
TMS320C6424ZWTQ5	TNETV2665FIBZWTA4	OMAPL138BZCEQ4
TMS320C6424ZWTQ6	TNETV2665FIBZWTA6	OMAPL138BZWTQ3
TMS320DM6431ZWTQ3	TNETV2665FIDZWTA6	OMAPL138BZWTQ4
TMS320DM6433ZWTQ5	TNETV2665VIDZWTA6	OMAPL138BZWTQ4R
TMS320DM6433ZWTQ6	TNETV2665ZWTA6	OMAPL138BZWTQ5
TMS320DM6435ZWTQ4	TNETV2666FIBZWTA	OMAPL138BZWTQ5R
TMS320DM6435ZWTQ5	TNETV2666FIDZWTA	TMS320C6748BZCEQ4
TMS320DM6435ZWTQ6	TNETV6435INZWTQ5	TMS320C6748BZWTQ3
TMS320DM6437ZWTQ4	TNETV6437INZWTQ5	TMS320C6748BZWTQ4
TMS320DM6437ZWTQ4C	VVCIS64335	
	VVCIS64336	

TI Information
Selective Disclosure

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

64LC nFBGA Auto Package Qualification For Cu Wire and Kinsus Substrate
Approved12/16/2013

Product Attributes

	Qual Device: TMS320DM6437ZWTQ6	Qual Device: TMS320DM6437ZWTQ6 (CONTROL)
Automotive Grade Level	Major Change	Major Change
Operating Temp Range	-	-
Die Attributes		
Wafer Fab Site	UMC-F12	-
Die Revision	B	-
Package Attributes		
Assembly Site	PHI (TIPI)	PHI (TIPI)
Package Type	NFBGA	NFBGA
Package Designator	ZWT	ZWT
Ball/Lead Count	361	361

- QBS: Qual By Similarity
- Qual Device TMS320DM6437ZWTQ6 is qualified at LEVEL3-260C
- Qual Device TMS320DM6437ZWTQ6 (CONTROL) is qualified at LEVEL3-260C

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

Type	#	Test Name / Condition	Duration	Qual Device: TMS320DM6437ZWTQ6	Qual Device: TMS320DM6437ZWTQ6 (CONTROL)
Test Group A - Accelerated Environment Stress Test					
PC	A1	PreCon Level 3	Preconditioning: SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, HTSL, and HTOL	Performed on ALL SMD devices prior to THB/HAST, AC/UHST, TC and PTC	
HAST	A2	Biased HAST, 110C/85%RH	264 Hours	3/231/0	3/69/0
UHAST	A3	Unbiased HAST 110C/85%RH	96 Hours	3/231/0	1/77/0
TC	A4	Temperature Cycle, -55/125C	1600 Cycles	3/231/0	1/77/0
HTSL	A6	High Temp Storage Bake 150C	1000 Hours	3/45/0	1/15/0
Test Group C - Package Assembly Integrity Tests					
WBS	C1	Wire Bond Shear (Ppk > 1.67 and Cpk > 1.33)	30 Bonds / 5 Parts Minimum	Pass	-
WBP	C2	Wire Bond Pull (Ppk > 1.67 and Cpk > 1.33)	30 Bonds / 5 Parts Mimum	Pass	-
SD	C3	Surface Mount Solderability >95% Lead Coverage	1/15/0 Minimum	Pass	-
PD	C4	Physical Dimensions (Cpk>1.33 Ppk>1.67)	1/10/0 Minimum	Pass	-
SBS	C5	Solder Ball Shear (Ppk > 1.67 and Cpk > 1.33)	5 Balls / 10 Parts Minimum	Pass	-
LI	C6	Lead Integrity	10 Leads / 5 Parts Minimum	Pass	-
Test Group E - Electrical Verification					
HBM	E2	ESD – HBM	+/- 2000V, 1500V, 1000V, 500V	QBS To Current BOM	
CDM	E3	ESD – CDM	+/- 500V Minimum on all pins 750V Minimum for corner pins	QBS To Current BOM. IPeak testing to verify baseline to current BOM	
LU	E4	Latchup	+/- 100mA	QBS to Current BOM	
ED	E5	Electrical Distribustion (Cpk > 1.67, Ppk > 1.67)	(Test across recommended operating temperature range)	QBS To Current BOM	

A1 (PC): Preconditioning:
Performed for THB, Biased HAST, AC, uHAST & TC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:
Grade 0 (or A): -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
Grade 4 (or C): -40°C to +70°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):
Room/Hot/Cold : HTOL
Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
Room : AC/uHAST

Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

TI Information Selective Disclosure

TI Qualification ID: 20130311-79707

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

FREON C021.M - PG2.3 and Hybrid Bond Wire Flow (Cu/Au) Approved 03/12/2014

Product Attributes

Attributes	Qual Device: AM1808BZCE4_PG2.3	Qual Device: OMAPL138BZWTQ3_PG2.3	Qual Device: TMS320C6748BZWTA3E_PG2.1
Operating Temp Range	-40C to 105C	-40C to 105C	-40C to 105C
Automotive Grade Level	Major Change	Major Change	Major Change
Wafer Fab Site	UMC FAB12I	UMC FAB12I	UMC FAB12I
Die Revision	E	E	C
Assembly Site	PHI	PHI	PHI
Package Type	BGA	BGA	BGA
Package Designator	ZCE	ZWT	ZWT
Ball/Lead Count	361	361	361

- QBS: Qual By Similarity
- Qual Device AM1808BZCE4_PG2.3 is qualified at LEVEL3-260C
- Qual Device OMAPL138BZWTQ3_PG2.3 is qualified at LEVEL3-260C
- Qual Device TMS320C6748BZWTA3E_PG2.1 is qualified at LEVEL3-260C

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

Type	#	Test Name / Condition	Duration	Qual Device: AM1808BZCE4_PG2.3	Qual Device: OMAPL138BZWTQ3_PG2.3	Qual Device: TMS320C6748BZWTA3E_PG2.1
Test Group A - Accelerated Environment Stress Test						
PC	A1	Preconditioning	Level3-260C	-	-	Performed on ALL SMD devices prior to THB/HAST, AC/UHST, TC and PTC
THB	A2	Biased Temperature and Humidity, 85C/85%RH	1000 hours	-	-	3/78/0
UHAST	A3	Unbiased HAST 110C/85%RH	264 hours	-	-	3/231/0
TC	A4	Temperature Cycle, -55/125C	1000 cycles	-	-	3/231/0
HTSL	A6	High Temp Storage Bake 150C	1000 hours	-	-	3/231/0
Test Group C - Package Assembly Integrity Tests						
WBS	C1	Wire Bond Shear (Ppk > 1.67 and Cpk > 1.33)	30 Bonds / 5 Parts Minimum	-	-	3 / Pass
WBP	C2	Wire Bond Pull (Ppk > 1.67 and Cpk > 1.33)	30 Bonds / 5 Parts Minimum	-	-	3 / Pass
Test Group E - Electrical Verification						
CDM	E3	ESD - CDM (JEDEC)	+/-250V	1/3/0	-	-
CDM	E3	ESD - CDM (JEDEC)	+/-500V	1/3/0	-	-
CDM	E3	ESD - CDM (JEDEC)	+/-750V	1/3/0	-	-
CDM	E3	ESD - CDM - Q100	+/-750V (corner BGA)	-	1/3/0	-
CDM	E3	ESD - CDM - Q100	+/-250V	-	1/3/0	-
CDM	E3	ESD - CDM - Q100	+/-500V	-	1/3/0	-
ED	E5	Electrical Characterization.	PLL frequency shift eval on ATE	1 / Pass	-	-
Additional Tests						
MQ		Manufacturability (Assembly)	(per mfg. Site specification)	1 / Pass	-	-
MQ		Manufacturability (Auto Assembly)	(per automotive requirements)	-	1 / Pass	-

A1 (PC): Preconditioning:
Performed for THB, Biased HAST, AC, uHAST & TC samples, as applicable.

Ambient Operating Temperature by Automotive Grade Level:
Grade 0 (or A): -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
Grade 4 (or C): -40°C to +70°C

E1 (TEST): Electrical test temperatures of Qual samples (High temperature according to Grade level):
Room/Hot/Cold : HTOL
Room/Hot : THB / HAST, TC / PTC, HTSL, ELFR, ESD & LU
Room : AC/uHAST

Green/Pb-free Status:
Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20130715-89949

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