

PCN Number:	20140205001		PCN Date:	04/09/2014	
Title:	Qualification of copper wire for TI Taiwan QFP BOAC devices with 4211649 mold compound and 4208458 die attach				
Customer Contact:	PCN Manager	Phone:	+1(214)480-6037	Dept:	Quality Services
Proposed 1st Ship Date:	10/09/2014		Estimated Sample Availability:	Date provided at sample request	
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:					
Texas Instruments Incorporated is announcing the change to use of copper wire for TAI QFP BOAC family of devices with 4211649 as mold compound 4208458 as die attach.					
<ul style="list-style-type: none"> 4208458 is current die attached and remains unchanged. 					
From To					
Die Attach	4208458	4208458			
Mold Compound	4205443	4211649			
Bond Wire	Au	CU			
Reason for Change:					
Continuity of supply.					
<ol style="list-style-type: none"> To align with world technology trends and use wiring with enhanced mechanical and electrical properties. Maximize flexibility within our Assembly/Test production sites Copper wire is easier to obtain and stock. 					
Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):					
Improved delamination performance with 4211649.					
Changes to product identification resulting from this PCN:					
None					
Product Affected:					
SM6SB306PAPRG4	SN0907058PFPR	TPIC7218QPFPRQ1			
SN0508068PHPR	SN709072C3PAPR	TPS43340QPHPRQ1			

Automotive Enterprise Qualification Data for TAI QFP Cu wire with 4211649, 4208458 on PCU09

Automotive New Product Qualification Plan/Summary

(As per AEC-Q100 and JEDEC Guidelines)

Supplier Name:	Texas Instruments Inc.	Supplier Wafer Fabrication Site:	DMOSS
Supplier Code:		Supplier Die Rev.	A0
Supplier Part Number:	S1105082F4PLPR	Supplier Assembly/Test Site:	TI Taiwan
Customer Name:		Supplier Package/Pin:	PLP/128
Customer Part Number:		Pb-Free Lead Frame (Y/N):	Y
Device Description:	PCU09ESC8-TF1	"Green" Mold Compound (Y/N):	Y
MSL Rating:	Level3-260C	Operating Temp Range:	-40 to +125C
Peak Solder Reflow Temp:	260C	Automotive Grade Level (1):	1
Prepared by:	Colin Martin	Date:	07/11/2012

Test	#	Reference	Test Conditions	Min Lots (2)	SS / lot (2)	Min Total (2)	Results Lot/pass/fail	Comments: (N/A =Not Applicable)	Exceptions to AEC - Q100
------	---	-----------	-----------------	--------------	--------------	---------------	-----------------------	---------------------------------	--------------------------

TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS (3)

PC	A1	JESD22-113 J-STD-020	Preconditioning: SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, HTSL, and HTOL	Performed on <u>ALL</u> SMD devices prior to THB/HAST, AC/UHST, TC and PTC					
THB or HAST	A2	JESD22-A101 JESD22-A110	Temperature Humidity Bias: 85°C/85%/1000 hours Highly Accelerated Stress Test: 130°C/85%/96 hours or 110°C/85%/264 hours	3	77	231	3/231/0		
AC or UHST	A3	JESD22-A102 JESD22-A118	Autoclave: 121°C/15 psig/96 hours Unbiased Highly Accelerated Stress Test: 130°C/85%/96 hours or 110°C/85%/264 hours	3	77	231	3/231/0		
TC	A4	JESD22-A104	Temperature Cycle: -65°C/+150°C/500 cycles	3	77	231	3/231/0		
PTC	A5	JESD22-A105	Power Temperature Cycling: -40°C/+125°C/1000 cycles	1	45	45	1/45/0		
HTSL	A6	JESD22-A103	High Temperature Storage Life: 150°C/1000 hours or 175°C/500 hours	1	45	45	1/45/0		

TEST GROUP B – ACCELERATED LIFETIME SIMULATION TESTS (3)

HTOL	B1	JESD22-A108	High Temp Operating Life: 125°C/1000 hours 150°C/408 hours	3	77	231	3/231/0		
ELFR	B2	AEC-Q100-008	Early Life Failure Rate:	3	800	2400	3/2400/0		

TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS (3)

WBS	C1	AEC-Q100-001	Wire Bond Shear Test: (Cpk > 1.67)	30 bonds	5 parts min.	30 bonds	Pass		
WBP	C2	Mil-Std-883 Method 2011	Wire Bond Pull: Each bonder used (Cpk > 1.67)	30 bonds	5 parts min.	30 bonds	Pass		
SD	C3	JESD22-B102	Solderability: (>95% coverage) 8 hr steam age (1 hour for Au-plated leads)	1	15	15	Pass		
PD	C4	JESD22-B100 JESD22-B108	Physical Dimensions: (Cpk > 1.67)	1	10	10	Pass		
SBS	C5	AEC-Q100-010	Solder Ball Shear: (Cpk > 1.67)	5 balls	10 parts min.	50	N/A		
LI	C6	JESD22-B105	Lead Integrity:	10 leads	5 parts min.	50	Pass		

TEST GROUP E- ELECTRICAL VERIFICATION

TEST	E1	User/Supplier Specification	Pre and Post Stress Electrical Test:	All	All	All	Pass		
HBM	E2	AEC-Q100-002	Electrostatic Discharge, Human Body Model: (2kV - H2 or better)	1	3	3	Pass		
MM	E2	AEC-Q100-003	Electrostatic Discharge, Machine Model: (200V – M3 or better)	1			N/A		
CDM	E3	AEC-Q100-101	Electrostatic Discharge, Charged Device Model: (750V corner leads, 500V for all other pins)	1	3	3	Pass		
LU	E4	AEC-Q100-004	Latch-Up:	1	6	6	Pass		
ED	E5	AEC-Q100-009	Electrical Distributions: (Cpk > 1.67)	3	30	90	Pass		

- (1) Grade 0 (or A): -40°C to +150°C ambient operating temperature range
 Grade 1 (or Q): -40°C to +125°C ambient operating temperature range
 Grade 2 (or T): -40°C to +105°C ambient operating temperature range
 Grade 3 (or I): -40°C to +85°C ambient operating temperature range
 Grade 4 (or C): -0°C to +150°C ambient operating temperature range
- (2) These are recommended minimum lot/sample sizes. Lot/sample size may be reduced depending on available data.
- (3) Generic data may be used.

Quality and Reliability Data Disclaimer

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customer should provide adequate design and operating safeguards. Quality and reliability data provided by Texas Instruments is intended to be an estimate of product performance based upon history only. It does not imply that any performance levels reflected in such data can be met if the product is operated outside the conditions expressly stated in the latest published data sheet or agreed-to customer specification for a device.

Reliability data shows characteristic failure mechanisms of the specific environmental stress as documented in the industry standards for each stress condition.

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