Product / Process Change Notification

N° 2013-021-A

Dear Customer,

Please find attached our INFINEON Technologies PCN:

Introduction of copper wire bonding for product families TC1167 & TC1767 in package PG-LQFP-176-5

Important information for your attention:

- Please respond to this PCN by indicating your decision on the approval form, sign it and return to your sales partner before **19. June 2013**.
- Infineon aligns with the widely-recognized JEDEC STANDARD "JESD46", which stipulates: "Lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change."
- This PCN includes a **Product Discontinuation Notice** (JEDEC STANDARD "JESD48") **on** page 4/4

Your prompt reply will help Infineon Technologies to assure a smooth and well executed transition. If Infineon does not hear from your side by the due date, we will assume your full acceptance to this proposed change and its implementation.

Your attention and response to this matter is greatly appreciated.

Disclaimer:
If we do not receive any response by the date in the PCN above we consider this as the acceptance of the PCN. After the last order date as stated herein, purchase orders related to the unchanged product(s) cannot be accepted.
In case the customer rejects this PCN this PCN shall be considered a product discontinuation notice (PD).

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N° 2013-021-A

SUBJECT OF CHANGE:

Introduction of copper wire bonding for product families TC1167 & TC1767 in package PG-LQFP-176-5.

PRODUCTS AFFECTED:

Salesname:	SP-Number:
SAF-TC1167-128F133HL AD	SP000674708
SAF-TC1167-128F133HL AD	SP000823830
SAK-TC1767-256F80HL AD	SP000442086
SAK-TC1767-256F133HL AD	SP000717042
SAK-TC1767-256F133HL AD	SP000895252
SAK-TC1767-256F133HL AD	SP000458056

REASON OF CHANGE:

In alignment with Infineon's overall package bond wire strategy, Au bond wire will be replaced by Cu bond wire.

DESCRIPTION OF CHANGE:	OLD	NEW
■ **Package name:**	PG-LQFP-176-**5**	PG-LQFP-176-**9**
■ **Bond wire material:**	Au wire	Cu wire
■ **Leadframe:**	Standard Cu with Ag plated	Rough upgraded uppF
■ **Order code:**	For details please refer to page 4	
■ **Package marking:**	SAF-TC1167-128F133H**L** AD SAK-TC1767-256F80H**L** AD SAK-TC1767-256F133H**L** AD	SAK-TC1767-256F133H**R** AD SAK-TC1767-256F133H**R** AD SAK-TC1767-256F133H**R** AD

PRODUCT IDENTIFICATION:

Marking on package will change.

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TIME SCHEDULE:

- Final qualification report: Available (please refer to 2_cip13021_a attached)
- First samples available: **SAK-TC1767-256F133HR**: samples are available
- Start of delivery: 01-October2013
- Last order date of unchanged product: 31-October-2013 See page 4/4
- Last delivery date of unchanged product: 30-April-2014 See page 4/4

ASSESSMENT:

No impact to be expected on parameters and reliability. This has been proven via technology and product qualification.

DOCUMENTATION:

2_cip13021_a: Qualification report

PRODUCT DISCONTINUATION

referring to PCN N° 2013-021-A

Last order date of unchanged product:	2013-10-31
Last delivery date of unchanged product	2014-04-30

DISCONTINUED				NEW (REPLACEMENT)		
Device	**SP N°**	**OPN**	**Package**	**Device**	**SP N°**	**Package**
SAF-TC1167-128F133HL AD	SP000674708	TC1167128F133HLADFXUMA1	PG-LQFP-176-5	SAK-TC1767-256F133HR AD	SP001007278	PG-LQFP-176-9
SAF-TC1167-128F133HL AD	SP000823830	TC1167128F133HLADFXQMA1	PG-LQFP-176-5	SAK-TC1767-256F133HR AD	SP000855112	PG-LQFP-176-9
SAK-TC1767-256F133HL AD	SP000717042	TC1767256F133HLADKXQMA1	PG-LQFP-176-5	SAK-TC1767-256F133HR AD	SP000855112	PG-LQFP-176-9
SAK-TC1767-256F133HL AD	SP000895252	TC1767256F133HLADKXQMA2	PG-LQFP-176-5	SAK-TC1767-256F133HR AD	SP001007278	PG-LQFP-176-9
SAK-TC1767-256F133HL AD	SP000458056	TC1767256F133HLADKXUMA1	PG-LQFP-176-5	SAK-TC1767-256F133HR AD	SP001007278	PG-LQFP-176-9
SAK-TC1767-256F80HL AD	SP000442086	TC1767256F80HLADKXUMA1	PG-LQFP-176-5	SAK-TC1767-256F133HR AD	SP001007278	PG-LQFP-176-9

If you have any questions, please do not hesitate to contact your local Sales office.

Qualification Report

Infineon Technologies AG, Munich

Business Group: ATV

Product Line: MC

TC1767 Family

Salescodes:

SAK-TC1767-256F133HR

Revision	Date	Item/Section	Essential Changes
01	2012-05-22		

Release:

Function	Name	Department	Location	Phone
Author/Owner	Jacob, Stefan	ATV QM MC	MUC	089 234 26176
Approver/ Releaser	Gaymann, Andreas	ATV QM MC	MUC	089 234 83997

Qualification Report

Changes	Date	Name
V1.0: Creation	2012-05-24	Jacob

Qualification Test Plan (QTP)

Infineon Technologies AG	Component Qualification Test Plan for Packaged Integrated Circuits according to AEC Q100 Rev.F	ATV QM MC

Project	Audo Future	Date:	16.05.2012
Part for family qualification	SAK-TC1767-256F133HR	Department:	ATV QM MC
Chip for family qualification	M1867	Provided by:	S.Jacob
Device family	Audo Future		
Qualification no.	1	Reviewed by:	A.Gaymann

Part Operating Temperature Grade **1; -40°C to 125°C**

Family qualification (generic data) with structual similar (representative) types

	Part	Chip	Chip size	Wafer diameter	Wafer fab	Wafer technology	Package	Assembly line
Part to be Qualified:	**TC1767HR**	**M1867**	**7,18 x 7,65mm**	**200mm**	**IFX DD**	**C11FLA**	**PG-LQFP-176-9**	**IFX Mal**
1. Mechanical / electrical representative (generic family part A):	**TC1167-Cu**	**M1867**	**7,18 x 7,65mm**	**200mm**	**IFX DD**	**C11FLA**	**PG-LQFP-176**	**IFX Mal**
1. Mechanical / electrical representative (generic family part A):	**TC1767HL**	**M1867**	**7,18 x 7,65mm**	**200mm**	**IFX DD**	**C11FLA**	**PG-LQFP-176-5**	**IFX Mal**
2. Mechanical / electrical representative (generic family part B):	**TC1796**	**M1796**	**8.62 mm x 8.218 mm**	**200mm**	**IFX DD**	**C11FLA**	**PG-BGA-416-4**	**Amkor Korea**

Explanation:

Mechanical representative type:
- Same or bigger chip size, Differences max. 1,5x and 1,5y
- Same package
- Same die bond method (glue or solder die bond)
- Same wire bond method (Au nail head or Al wedge)
- Same chip passivation (Nitride, Imide, ...)

Electrical representative type:
- Same wafer technology / wafer process
- Same wafer fab
- Same wafer diameter

Infineon Technologies AG | **Component Qualification Test Plan for Packaged Integrated Circuits according to AEC Q100 Rev.F** | **ATV QM MC**

Project	Audo Future	Date:	16.05.2012
Device no. for family qualification	SAK-TC1767-256F133HR	Department:	ATV QM MC
Chip no. for family qualification	M1867	Provided by:	S.Jacob
Device family	Audo Future		
Qualification no.	1	Reviewed by:	A.Gaymann

TEST #	STRESS TEST according AEC Q100 Rev.F	Test conditions	# LOTS	Sample Size	Part to be Qualified	Generic Family part A	Generic Family part A	Generic Family part B	.....	Remarks
					TC1767HR	TC1167-Cu	TC1767HL	TC1796		
A1	Preconditioning	MSL: 3 peak temp.: 260°C	3	700	pass		pass			soldering method: reflow
A2	Temperature Humidity Bias or HAST	85°C/85%RH/1000h	3	77	pass		pass			
A3	Autoclave or Unbiased HAST	121oC/15psig/96h	3	77	pass		pass			
A4	Temperature Cycling	-65/150°C; 500x	3	77	pass		pass			
A5	Power Temperature Cycling		1	45	n.a.		n.a.			required if device is rated > 1W
A6	High Temperature Storage Life	150°C, 1000h	1	77	pass		pass			
B1	High Temperature Operating Life	125°C; 1000h	3	77			pass			
B2	Early Life Failure Rate	125°C	>3	>10000				pass		
B3	NVM Endurance, Data Retention, & Operational Life	Endurance: 1k PF; 30k DF	3	77			pass			only for µC flash products
C1	Wire Bond Shear	AEC Q100-001	1	5	pass		pass			
C2	Wire Bond Pull	MIL-STD-883 - 2011	1	5	pass		pass			
C3	Solderability	JESD22-B102	1	15	pass		pass			
C4	Physical Dimensions	JESD22-B100/B108	3	10			pass			
C5	Solder Ball Shear		3	10	n.a.		n.a.			n.a. - Leadframe package
C6	Lead Integrity		1	5	n.a.		n.a.			not required for SMD
D1	Electromigration						pass			see process qualification report
D2	Time Dependent Dielectric Breakdown						pass			see process qualification report
D3	Hot Carrier Injection						pass			see process qualification report

Infineon Technologies AG | **Component Qualification Test Plan for Packaged Integrated Circuits according to AEC Q100 Rev.F** | **ATV QM MC**

Project	Audo Future	Date:	16.05.2012
Device no. for family qualification	SAK-TC1767-256F133HR	Department:	ATV QM MC
Chip no. for family qualification	M1867	Provided by:	S.Jacob
Device family	Audo Future		
Qualification no.	1	Reviewed by:	A.Gaymann

TEST #	STRESS TEST according AEC Q100 Rev.F	Test conditions	# LOTS	Sample Size	Part to be Qualified	Generic Family part A	Generic Family part A	Generic Family part B	…..	Remarks
					TC1767HR	TC1167-Cu	TC1767HL	TC1796		
E1	Pre- and Post-Stress Function Parameter	Test to spec	3	all			pass			
E2	Electrostatic Discharge Human Body Model or Machine Model	AEC Q100-002/3	1	3/voltage		pass				ESD HBM classification H2: 2kV
E3	Electrostatic Discharge Charged Device Model	AEC Q100-011	1	See Test Method		pass				ESD classification C2: 500V, 750V corner pins
E4	Latch-Up	AEC Q100-004	1	6			pass			
E5	Electrical Distributions	AEC Q100-009	3	30	pass		pass			
E6	Fault Grading	AEC-Q100-007					pass			IDDQ implemented; stuck at coverage > 95%
E7	Characterization	AEC Q003		split lot			pass			
E8	Electrothermally Induced Gate Leakage	AEC Q100-006	1	6			pass			
E9	Electromagnetic Compatibility	SAE J1752/3	1	1			pass			
F1	Process Average Testing	AEC Q001					available			
F2	Statistical Bin/Yield Analysis	AEC Q002					available			
G1	Mechanical Shock		3	39			n.a.			for hermetic packages only
G2	Variable Frequency Vibration		3	39			n.a.			for hermetic packages only
G3	Constant Acceleration		3	39			n.a.			for hermetic packages only
G4	Gross/Fine Leak		3	39			n.a.			for hermetic packages only
G5	Package Drop		1	5			n.a.			for hermetic packages only
G6	Lid Torque		1	5			n.a.			for hermetic packages only
G7	Die Shear Strength		1	5			n.a.			for hermetic packages only
G8	Internal Water Vapor		1	3			n.a.			for hermetic packages only

Approved by: | Supplier: | (User Engineer)

Product / Process Change Notification

CUSTOMER APPROVAL FORM

N° 2013-021-A

Introduction of copper wire bonding for product families TC1167 & TC1767 in package PG-LQFP-176-5

Please list product(s) affected in your application(s):

Please check the appropriate box below:

☐ **We agree with this proposed change and its schedule.**

☐ **We have objections:**

☐ **We need more information:**

☐ **We need samples:**

Sender

Company:	Name:
Address/Location :	E-Mail:
Telefon:	Fax:
Signature	Date:

Please return to : your Sales partner

Company: Infineon	Name:
Address/Location :	E-mail:
Telefon:	Fax: