



Product Change Notification / RMES-20UKIQ053

Date:

10-Sep-2021

Product Category:

8-bit Microcontrollers

PCN Type:

Manufacturing Change

Notification Subject:

CCB 4410 Final Notice: Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for selected products available in 64L LQFP (10x10x1.4mm) package using 236 x 236 mils lead frame paddle size at ANAP assembly site.

Affected CPNs:

[RMES-20UKIQ053_Affected_CPN_09102021.pdf](#)

[RMES-20UKIQ053_Affected_CPN_09102021.csv](#)

Notification Text:**PCN Status:**

Final notification

PCN Type:

Manufacturing Change

Microchip Parts Affected:

Please open one of the icons found in the Affected CPNs section.

NOTE: For your convenience Microchip includes identical files in two formats (.pdf and .xls)

Description of Change:

Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for selected products available in 64L LQFP (10x10x1.4mm) package using 236 x 236 mils lead frame paddle size at ANAP assembly site.

Pre Change:

Using palladium copper bond wire (CuPd) or palladium gold (AuPd) with 236 x 236 mils or 197 x 197 mils paddle size

Post Change:

Using palladium coated copper with gold flash (CuPdAu) bond wire with 236 x 236 mils paddle size

Pre and Post Change Summary:

		Pre Change	Post Change
Assembly Site		Amkor Technology Philippine (P1/P2), INC. (ANAP)	Amkor Technology Philippine (P1/P2), INC. (ANAP)
Bond wire material		CuPd or AuPd	CuPdAu
Die attach material		3230	3230
Mold compound material		G700	G700
Lead frame	Material	C194	C194
	Paddle size	236 x 236 mils or 197 x 197 mils	236 x 236 mils
	DAP Surface Prep	Double Ring Ag or Ring Ag	Double Ring Ag
	Design	Please see attached pre and post change summary	

Impacts to Data Sheet:

None

Change Impact:

None

Reason for Change:

To improve manufacturability by qualifying palladium coated copper with gold flash (CuPdAu) bond wire using 236 x 236 mils lead frame paddle size at ANAP assembly site.

Change Implementation Status:

In Progress

Estimated First Ship Date:

September 30, 2021 (date code: 2140)

NOTE: Please be advised that after the estimated first ship date customers may receive pre and post change parts.

Time Table Summary:

	October 2020					>	September 2021				
Workweek	40	41	42	43	44		36	37	38	39	40
Initial PCN Issue Date				X							
Qual Report Availability								X			
Final PCN Issue Date								X			
Estimated Implementation Date											X

Method to Identify Change:

Traceability code

Qualification Report:

Please open the attachments included with this PCN labeled as PCN_#_Qual Report.

Revision History:

October 21, 2020: Issued initial notification.

September 10, 2021: Issued final notification. Added the lead frame design and DAP Surface Prep. Attached the Qualification Report and Pre Post Change Summary. Provided estimated first ship date to be on September 30, 2021.

The change described in this PCN does not alter Microchip's current regulatory compliance regarding the material content of the applicable products.

Attachments:

[PCN_RMES-20UKIQ053_Qual_Report.pdf](#)

Please contact your local [Microchip sales office](#) with questions or concerns regarding this notification.

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RMES-20UKIQ053 - CCB 4410 Final Notice: Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for selected products available in 64L LQFP (10x10x1.4mm) package using 236 x 236 mils lead frame paddle size at ANAP assembly site.

Affected Catalog Part Numbers (CPN)

AT89C51ED2-RDTUM
AT89C51RD2-RDTUM
AT89C51ED2-RDRUM
AT89C51AC3-RDTUM
AT89C51CC03UA-RDTUM
AT89C51CC03CA-RDTUM
AT89C5130A-RDTUM
AT89C5131A-RDTUM
AT89C5130A-RDRUM
AT89C5131A-RDTUL



QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN #: RMES-20UKIQ053

Date
August 23, 2021

Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for selected products available in 64L LQFP (10x10x1.4mm) package using 236 x 236 mils lead frame paddle size at ANAP assembly site.



MICROCHIP

Package Qualification Report

Purpose: Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for selected products available in 64L LQFP (10x10x1.4mm) package using 236 x 236 mils lead frame paddle size at ANAP assembly site.

<u>Misc.</u>	Assembly site	ANAP
	BD Number	BDM-002746A
	MP Code (MPC)	568TL7V6XC06
	Part Number (CPN)	AT89C51CC03CA-RDTUM
	MSL information	MSL-3 @260C
	Assembly Shipping Media (T/R, Tube/Tray)	Tray
	Base Quantity Multiple (BQM)	160 units
	Qual ID	QTP4374 Rev. A
	CCB No.	4410
<u>Lead-Frame</u>	Paddle size	236x236 mil
	Material	C194
	DAP Surface Prep	Double Ring Ag
	Treatment	None
	Process	Stamped
	Lead-lock	No
	Part Number	101383991
	Lead Plating	Matte Tin
	Strip Density	VHDLF
<u>Bond Wire</u>	Material	CuPdAu
<u>Die Attach</u>	Part Number	3230
	Conductive	Yes
<u>MC</u>	Part Number	G700Y
<u>PKG</u>	PKG Type	LQFP
	Pin/Ball Count	64
	PKG width/size	10x10x1.4mm



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Manufacturing Information:

Assembly Lot No.

ANAP214300001.000
ANAP214200224.000
ANAP214200210.000

Result



Pass



Fail



VHDLF LF#101383991 and CuPdAu wire with 56.8K wafer tech. in 64L LQFP 10x10x1.4mm at ANAP is qualified the Moisture/ Reflow Sensitivity Classification Level 3 at 260°C reflow temperature per IPC/JEDEC J-STD-020E standard. Inverted signals were observed after MSL3, HAST and Thermal Cycles. All the units are electrically passing. After cross section, micro gap was observed on die paddle and mold area. HTSL is Passed with no delamination

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS	Result	Remarks
Precondition Prior Perform Reliability Tests MSL-3 @ 260C	Electrical Test : +25°C	JESD22-A113,	693(0)			Good Devices
	External Visual Inspection System: Luxo Lamp	JIP/ IPC/JEDEC J-STD-	693(0)	0/693	Pass	
	Bake 150°C, 24 hrs System: HERAEUS		693(0)			
	Moisture Soak 30°C/60%RH Moisture Soak 168hrs. System: Climats Excal 5423-HE		693(0)			
	Reflow 3x Convection-Reflow 260°C max System: Mancorp CR.5000F		693(0)	0/693		
	Electrical Test : +25°C		693(0)	0/693	Pass	
Temp Cycle	Stress Condition: (Standard) -65°C to +150°C, 500 Cycles System: VOTSCH VT 7012 S2	JESD22-A104	231(0)			Parts had been pre-conditioned at 260°C
	Electrical Test: +125°C		231(0)	0/231	Pass	
	Bond Strength: Wire Pull Bond Shear		15(0)	0/15	Pass	
	Stress Condition: (Standard) -65°C to +150°C, 1000 Cycles System: VOTSCH VT 7012 S2		213(0)		Pass	
	Electrical Test: +125°C		231(0)	0/231	Pass	
	Bond Strength: Wire Pull Bond Shear		15(0)	0/15	Pass	

Test Number (Reference)	Test Condition	Standard / Method	Qty. (Acc.)	Def/SS	Result	Remarks
UNBIASED-HAST	Stress Condition: (Standard) +130°C/85%RH, 96H System: HIRAYAMA HASTEST PC-422R8	JESD22-A118	231(0)			Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C		231(0)	0/231	Pass	
	Stress Condition: (Standard) +130°C/85%RH, 192H System: HIRAYAMA HASTEST PC-422R8		231(0)			
	Electrical Test: +25°C		231(0)	0/231	Pass	
BIASED-HAST	Stress Condition: (Standard) +130°C/85%RH, 96H System: HIRAYAMA HASTEST PC-422R8	JESD22-A110	231(0)			
	Electrical Test: +25°C, +125°C		231(0)	0/231	Pass	
	Bond Strength: Wire Pull Bond Shear		15(0)	0/15	Pass	
	Stress Condition: (Standard) +130°C/85%RH, 192H System: HIRAYAMA HASTEST PC-422R8		231(0)			
	Electrical Test: +25°C, +125°C		231(0)	0/231	Pass	
	Bond Strength: Wire Pull Bond Shear		15(0)	0/15	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
High Temperature Storage Life	Stress Condition: Bake 175°C, 500 hrs System: HERAEUS Electrical Test : +25°C +125°C	JESD22- A103	45 (0)			
			45 (0)	0/45	Pass	
Solderability Temp 245°C	Bake: Temp 155°C,4Hrs System:Oven Solder Bath: Temp.245°C	J-STD-002	22 (0)	0/22	Pass	Performed at MPHIL
Physical Dimensions	Physical Dimension, 10 units from 3 lot	JESD22- B100/B108	30(0)	0/30	Pass	
Bond Strength Data Assembly	Wire Pull 1 lot, 30 wires from 5 units min	M2011.8 MIL-STD- 883	30(0) Wires	0/30	Pass	
Bond Strength Data Assembly	Bond Shear 1 lot, 30 bonds from 5 units min	M2011.8 MIL-STD- 883	30(0) bonds	0/30	Pass	