



Product Change Notification / GBNG-19OFUL850

Date:

24-Jun-2021

Product Category:

8-bit Microcontrollers

PCN Type:

Manufacturing Change

Notification Subject:

CCB 4409.001 Final Notice: Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for Atmel AT80C51RD2-RLTUM and AT80C51RD2-RLRUM catalog part numbers (CPN) available in 44L LQFP (10x10x1.4mm) package using 236x236 mils lead frame paddle size at ANAP assembly site.

Affected CPNs:

[GBNG-19OFUL850_Affected_CPN_06242021.pdf](#)

[GBNG-19OFUL850_Affected_CPN_06242021.csv](#)

Notification Text:

PCN Status:Final notification

PCN Type:Manufacturing Change

Microchip Parts Affected:Please open one of the files 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 Atmel AT80C51RD2-RLTUM and AT80C51RD2-RLRUM catalog part numbers (CPN) available in 44L LQFP (10x10x1.4mm) package using 236x236 mils lead frame paddle size at ANAP assembly site.

Pre Change:

Using palladium coated copper (PdCu) bond wire material and 177x177 mils lead frame paddle size.

Post Change:

Using palladium coated copper with gold flash (CuPdAu) bond wire and 236x236 mils lead frame 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)
Wire material		PdCu	CuPdAu
Die attach material		3230	3230
Molding compound material		G700Y	G700Y
Lead frame	Material	C194	C194
	Paddle size	177x177 mils	236x236 mils
	Design	Please see attached pre and post change comparison	

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.

Change Implementation Status:

In Progress

Estimated First Ship Date:

June 30, 2021 (date code: 2127)

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

Time Table Summary:

	November 2020					-->	June 2021				
	45	46	47	48	49		23	24	25	26	27
Initial PCN Issue Date				X							
Final PCN Issue Date										X	
Qual Report Availability										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:

November 23, 2020: Issued initial notification.

June 24, 2021: Issued final notification. Attached is the qualification report. Provided estimated first ship date to be on June 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_GBNG-19OFUL850_Pre_and_Post_Change_Summary.pdf](#)

[PCN_GBNG-19OFUL850__Qual_Report.pdf](#)

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

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GBNG-19OFUL850 - CCB 4409.001 Final Notice: Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for Atmel AT80C51RD2-RLTUM and AT80C51RD2-RLRUM catalog part numbers (CPN) available in 44L LQFP (10x10x1.4mm) package using 236x236 mils lead frame paddle size at ANAP assembly site.

Affected Catalog Part Numbers (CPN)

AT80C51RD2-RLTUM

AT80C51RD2-RLRUM

GBNG-190FUL850 - CCB 4409.001 Final Notice: Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for Atmel AT80CS1RD2-RLTUM and AT80CS1RD2-RLRUM catalog part numbers (CPN) available in 44L LQFP (10x10x1.4mm) package using 236x236 mils lead frame paddle size at ANAP assembly site.

Affected Catalog Part Numbers(CPN)

AT80CS1RD2-RLTUM
AT80CS1RD2-RLRUM

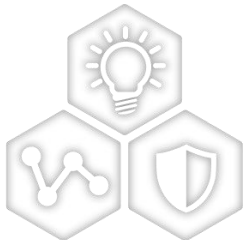
PRE AND POST CHANGE SUMMARY

CCB 4409.001

PCN #: GBNG-19OFUL850



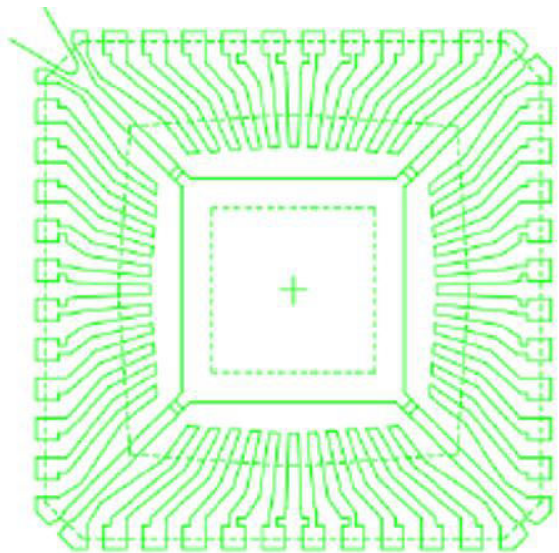
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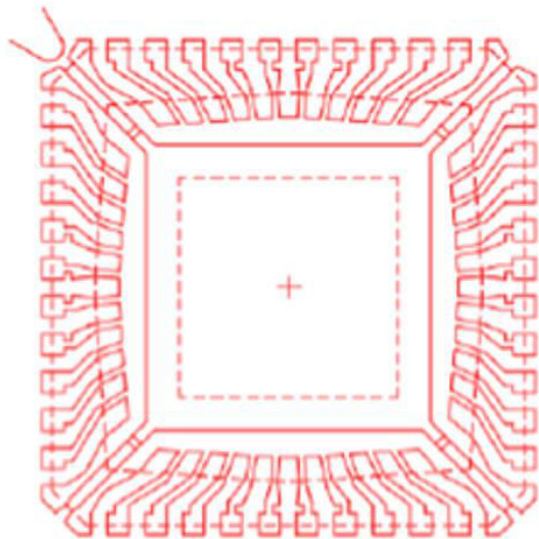
Lead Frame Comparison

Pre Change



Strip Density	HDLF High Density Lead frame
LF Paddle Sie	177x177 mils
DAP Surface Prep	Double Ring Ag
Backside Dimple	Yes

Post Change



Strip Density	VHDLF Very High Density Lead frame
LF Paddle Sie	236x236 mils
DAP Surface Prep	Double Ring Ag
Backside Dimple	Yes



QUALIFICATION REPORT SUMMARY

PCN# GBNG-19OFUL850

Date
June 11, 2021

Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for Atmel AT80C51RD2-RLTUM and AT80C51RD2-RLRUM catalog part numbers (CPN) available in 44L LQFP (10x10x1.4mm) package using 236x236 mils lead frame paddle size at ANAP assembly site. This is qualification by similarity (QBS).



MICROCHIP Package Qualification Report

Purpose: Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for Atmel AT80C51RD2-RLTUM and AT80C51RD2-RLRUM catalog part numbers (CPN) available in 44L LQFP (10x10x1.4mm) package using 236x236 mils lead frame paddle size at ANAP assembly site. This is qualification by similarity (QBS).

<u>Misc.</u>	Qual ID	QTP 4376 Rev A
	Assembly site	ATP
	BD Number	BDM-002737 Rev.A
	MP Code (MPC)	568TL72FBC06
	Part Number (CPN)	AT89C51CC03CA-RLTUM
	MSL information	MSL-3 @260C
	Assembly Shipping Media (T/R, Tube/Tray)	Tray
	Base Quantity Multiple (BQM)	160 units
	CCB Number	4409 and 4409.001
<u>Lead-Frame</u>	Paddle size	236x236 mils
	Material	C194
	DAP Surface Prep	Double Ring Ag
	Treatment	None
	Process	Stamped
	Lead-lock	No
	Part Number	101386832
	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	44
	PKG width/size	10x10x1.4mm



MICROCHIP

Package Qualification Report

Manufacturing Information

Lot #	Input Qty
ANAP214200178.000	1000
ANAP214200179.000	1000
ANAP214200180.000	1000

Result



Pass



Fail



VHDLF LF#101386832 and CuPdAu wire with 56.8K wafer tech. in 44L LQFP 10x10x1.4mm at ATP undergo 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. However, these delaminated units can pass reliability assessment.



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Package Qualification Report

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-020E	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	



MICROCHIP Package Qualification Report

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)			
	Electrical Test: +125°C		231(0)	0/231	Pass	
	Bond Strength: Wire Pull (Cpk> 1.67) Bond Shear (Cpk> 1.67)		15(0)	0/15	Pass	



MICROCHIP

Package Qualification Report

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/S S	Result	Remarks
UNBIASED-HAST	Stress Condition: (Standard) +130°C/85%RH, 96H System: HIRAYAMA HASTEST PC-422R8	JESD22-A118	231(0)			
	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	



MICROCHIP Package Qualification Report

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	
Physical Dimensions		JESD22- B100/B108	30(0)	0/30	Pass	
Bond Strength Data Assembly	Wire Pull	M2011.8 MIL-STD- 883	30(0) Wires	0/30	Pass	
Bond Strength Data Assembly	Bond Shear	M2011.8 MIL-STD- 883	30(0) bonds	0/30	Pass	