Product Change Notification / CENO-04MEBP803

Date:

11-Oct-2022

Product Category:

8-bit Microcontrollers

PCN Type:

Manufacturing Change

Notification Subject:

CCB 4352.002 Final Notice: Qualification of CuPdAu as an additional bond wire material for selected ATTINY16xx, ATTINY4xx, ATTINY2xx, ATTINY8xx, ATTINY3224 and PIC16F1xxxx device families available in 14L SOIC (.150in) package assembled at MTAI assembly site.

Affected CPNs:

CENO-04MEBP803_Affected_CPN_10112022.pdf
CENO-04MEBP803_Affected_CPN_10112022.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 CuPdAu as an additional bond wire material for selected ATTINY16xx, ATTINY4xx, ATTINY2xx, ATTINY8xx, ATTINY3224 and PIC16F1xxxx device families available in 14L SOIC (.150in) package assembled at MTAI assembly site.

Pre and Post Change Summary:

	Pre Change	Post Change	
Assembly Site	Microchip Technology Thailand (MTAI)	Microchip Technology Thailand (MTAI)	Microchip Technology Thailand (MTAI)
Wire Material	Au	Au	CuPdAu
Die Attach Material	8390A	8390A	8390A
Molding Compound Material	G600V	G600V	G600V
Lead-Frame Material	CDA194	CDA194	CDA194

Impacts to Data Sheet: None

Change Impact None

Reason for Change: To improve manufacturability by qualifying CuPdAu as an additional bond wire material.

Change Implementation Status: In Progress

Estimated First Ship Date: October 30, 2022 (date code: 2245)

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

Time Table Summary:

	October 2022				
Workweek	41	42	43	44	45
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 11, 2022: Issued final notification.

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

Attachments:

PCN_CENO-04MEBP803_Qualification Report.pdf

Please contact your local Microchip sales office with questions or concerns regarding this notification.

Terms and Conditions:

If you wish to receive Microchip PCNs via email please register for our PCN email service at our PCN home page select register then fill in the required fields. You will find instructions about registering for Microchips PCN email service in the PCN FAQ section.

If you wish to change your PCN profile, including opt out, please go to the PCN home page select login and sign into your myMicrochip account. Select a profile option from the left navigation bar and make the applicable selections.

Affected Catalog Part Numbers (CPN)

ATTINY1604-SSF
ATTINY804-SSF
ATTINY1604-SSN
ATTINY804-SSN
ATTINY804-SSNR
ATTINY1604-SSNR
ATTINY804-SSFR
ATTINY1604-SSFR
ATTINY1624-SSF
ATTINY1624-SSU
ATTINY1624-SSUR
ATTINY1624-SSFR
ATTINY3224-SSF
ATTINY3224-SSU
ATTINY424-SSF
ATTINY824-SSF
ATTINY424-SSU
ATTINY824-SSU
ATTINY424-SSUR
ATTINY824-SSUR
ATTINY424-SSFR
ATTINY824-SSFR
PIC16F17126-I/SL
PIC16F18126-I/SL
PIC16F17124-I/SL
PIC16F18124-I/SL
PIC16F17125-I/SL
PIC16F18125-I/SL
PIC16F15225-E/SL
PIC16F15225-I/SL
PIC16F15225T-I/SL
PIC16F15223-E/SL
PIC16F15224-E/SL
PIC16F15223-I/SL
PIC16F15224-I/SL
PIC16F15223T-I/SL
PIC16F15224T-I/SL
ATTINY204-SSF
ATTINY214-SSF
ATTINY404-SSF
ATTINY414-SSF
ATTINY204-SSN
ATTINY214-SSN
ATTINY404-SSN
ATTINY414-SSN
ATTINY214-SSNR

ATTINY414-SSNR
ATTINY404-SSNR
ATTINY204-SSNR
ATTINY414-SSFR
ATTINY404-SSFR
ATTINY214-SSFR
ATTINY204-SSFR
ATTINY1614-SSF
ATTINY1614-SSN
ATTINY1614-SSNR
ATTINY1614-SSFR
ATTINY814-SSF
ATTINY814-SSN
ATTINY814-SSNR
ATTINY814-SSNRA1
ATTINY814-SSFR
PIC16F18025-E/SL
PIC16F18025-I/SL
PIC16F18025T-I/SL
PIC16F18026-I/SL

QUALIFICATION REPORT SUMMARY

PCN #: CENO-04MEBP803

Date:

February 17, 2021

Qualification of CuPdAu as an additional bond wire material for selected ATTINY16xx, ATTINY4xx, ATTINY2xx, ATTINY8xx, ATTINY3224 and PIC16F1xxxx device families available in 14L SOIC (.150in) package assembled at MTAI assembly site.

Purpose: Qualification of CuPdAu as an additional bond wire material for selected ATTINY16xx, ATTINY4xx, ATTINY2xx, ATTINY8xx, ATTINY3224 and PIC16F1xxxx device families available in 14L SOIC (.150in) package assembled at MTAI assembly site.

CCB No. : 4352.002

I. Summary:

Three assembly lots of 59V01 product were assembled in the 14L 0.150" SOIC package to qualify this device to AUTO grade 1 standards. The 59V01 device is fabricated by UMC.

Package dimensions and Time Zero Bond Pull/ Ball Shear measurements met the product specifications and controls. Material from each lot was subjected to MSL1 Moisture Preconditioning at MCSO, passing all functional tests and showing good delamination performance.

Microchip CSO performed Temperature Cycling, unbiased HAST, biased HAST, and High Temperature Storage stresses. No parametric or functional failures were found at intermediate or final readpoints of any of the stresses.

II. Conclusion

Based on these results, TA100 / 59V01 product packaged by MTHAI in 14L SOIC form meets the reliability guidelines implemented in the qualification plan defined in CCB#4352. Therefore, this product/package can be released to production as Grade 1 Automotive.

III. Description of Package / Die selected for Qualification:

MP code:	59V014D3XVA1
Part No.:	TA100-Y110D3X01
BD No:	BDM-002657A

Package:

Type	14 lead SOIC
Width or Size	150 mils

Leadframe:

Material	CDA194
Plating	None ; Bare Cu paddle
Part Number	10101415
Surface treatment	BOT
Paddle size	98 x 235 mils
Process	Stamped

Solder Plating:

Material	Matte tin

Wire:

Material	CuPdAu

Die Attach Film:

Part Number	8390A
Conductive	Yes

Mold Compound:

Part Number	G600V

IV. Stress Results

Material selected for Qualification to Grade 1		
MTAI212202335.000 – Lot 4	2035QBD	HTSL, uHAST, TC, bHAST, WBP, BS, PFA
MTAI212202334.000 – Lot 5	2035QVC	HTSL, uHAST, TC, bHAST , WBP, BS, PFA
MTAI212203382.000 – Lot 6	2035WE3	HTSL, uHAST, TC, bHAST, WBP, BS, PFA

High Temperature Storage

Note: Devices were pre and post stress tested at 25°C and 125°C.

Test Method	JESD22-A103
Test Condition	+175C to 1008 Hours (2x Stress Conditions)
Required Sample Size	45 from each lot @ 1x Stress (500 hours) 44 from each lot @ 2x Stress (1000 hours)
Results	**Fail / Pass**
Lot 4	0 / 45 @ 500 hours, 0 / 44 @ 1113 hours
Lot 5	0 / 50 @ 500 hours, 0 / 49 @ 1213 hours
Lot 6	0 / 50 @ 500 hours, 0 / 49 @ 1213 hours

MSL 1 Precondition + Temperature Cycling

Note: Devices were pre and post stress tested at 25°C, 85°C, and 125°C.

Precondition Test Method	JESD22-A113
Test Condition	MSL-1 Performed at MCSO 168hr 85°C / 85% RH Humidity 3x Solder Reflow (265C Peak Temp)
Test Method	JESD22-A104
Test Condition	-65C / +150C Air to Air, 1x Stress 500 Cycles -65C / +150C Air to Air, 2x Stress 1000 Cycles
Required Sample Size	77 from each lot @ 1x Stress (500 cycles) 70 from each lot @ 2x Stress (1000 cycles)
Results	**Fail / Pass**
Lot 4	0 / 104 to 500 Cycles, 0 / 75 to 1000 cycles
Lot 5	0 / 104 to 500 Cycles, 0 / 75 to 1000 cycles
Lot 6	0 / 104 to 500 Cycles, 0 / 75 to 1000 cycles

MSL 1 Precondition + Unbiased HAST

Note: Devices were pre and post stress tested at 25°C

Precondition Test Method	JESD22-A113
Test Condition	MSL-1 Performed at MCSO 168hr 85°C / 85% RH Humidity 3x Solder Reflow (265C Peak Temp)
Test Method	JESD22-A118
Test Condition	+130C, 85% RH 96 hours
Required Sample Size	77 pieces defined in CCB#4352, Not Required by AEC
Results	Fail / Pass
Lot 4	0 / 82 @ 96 hr,
Lot 5	0 / 82 @ 96 hr
Lot 6	0 / 82 @ 96 hr,

MSL 1 Precondition + Biased HAST

Note: Devices were pre and post stress tested at 25°C, 85°C, and 125°C

Precondition Test Method	JESD22-A113
Test Condition	MSL-1 Performed at MCSO 168hr 85°C / 85% RH Humidity 3x Solder Reflow (265C Peak Temp)
Test Method	JESD22-A110
Test Condition	+130C, 85% RH 96 hours, 192hr Bias Vcc = 5.5 V
Required Sample Size	77 ea. Per lot through 1x Stress 70 ea. Per lot through 2x Stress
Results	Fail / Pass
Lot 4	0 / 104 @ 1x Stress, 0 / 75 @ 2x Stress
Lot 5	0 / 104 @ 1x Stress, 0 / 75 @ 2x Stress
Lot 6	0 / 104 @ 1x Stress, 0 / 75 @ 2x Stress

V. Physical Dimensions Summary

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result
Physical Dimensions	Physical Dimension, 30 units from 3 lot	JESD22-B100/B108	30(0) Units	0/30	Pass