



QUALIFICATION REPORT SUMMARY

RELIABILITY LABORATORY

PCN #: CENO-23WIHI924

Date:
October 29, 2024

**Qualification of QMI519 as a new die attach material
AVR128DA64-E/MR, AVR128DA64-I/MR, AVR128DA64T-I/MR,
and AVR128DA64T-E/MR catalog part numbers (CPN) available
in 64L QFN (9x9x0.9mm) package at MTAI assembly site.**

**The qualification of palladium coated copper with gold flash
(CuPdAu) as a new bond wire material for selected PIC18F2xx,
PIC18F4xx, AVR128Dxx, PIC18F5xx, AVR32DAxx, AVR64DAxx,
AVR64DBxx, AVR64DDxx, AVR32DBxx, AVR64DUxx,
AVR16DDxx, AVR32DDxx, AVR32SDxx, AVR16DUxx,
AVR32DUxx, PIC32CMxx, PIC16F7xx and PIC16F1xx device
families available in various packages will qualify by similarity
(QBS).**



MICROCHIP

PACKAGE QUALIFICATION REPORT

Purpose

Qualification of QMI519 as a new die attach material AVR128DA64-E/MR, AVR128DA64-I/MR, AVR128DA64T-I/MR, and AVR128DA64T-E/MR catalog part numbers (CPN) available in 64L QFN (9x9x0.9mm) package at MTAI assembly site. The qualification of palladium coated copper with gold flash (CuPdAu) as a new bond wire material for selected PIC18F2xx, PIC18F4xx, AVR128Dxx, PIC18F5xx, AVR32DAxx, AVR64DAxx, AVR64DBxx, AVR64DDxx, AVR32DBxx, AVR64DUxx, AVR16DDxx, AVR32DDxx, AVR32SDxx, AVR16DUxx, AVR32DUxx, PIC32CMxx, PIC16F7xx and PIC16F1xx device families available in various packages will qualify by similarity (QBS).

CN	E000243155
QUAL ID	R2401151 Rev. A
MP CODE	KV0014R4XA01
Part No.	AVR128DA64-E/MR
Bonding No.	BD-002590 Rev. 01
CCB No.	7137 and 8106

Package

Type	64L QFN
Package size	9 x 9 x 0.9 mm

Lead Frame

Paddle size	264 x 264 mils
Material	C194
Treatment	BOT
Surface	Bare Cu
Process	Etched
Lead Lock	No
Part Number	10106409

Material

Epoxy	QMI519
Wire	CuPdAu
Mold Compound	G700LTD
Plating Composition	Matte Sn



MICROCHIP

PACKAGE QUALIFICATION REPORT

Manufacturing Information

Assembly Lot No.	Wafer Lot No.	Date Code
MTAI252300197.000	GRSM425022616.100	24364H3
MTAI252300566.000	GRSM425022616.100	243694M
MTAI252300579.000	GRSM425022616.100	2436997

Result

☒

Pass

☐

Fail

☐

64L QFN (9x9x0.9mm.) assembled by MTAI pass reliability test per QCI-39000. This package was qualified the Moisture/Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020E standard.

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS	Result	Remarks
Precondition Prior Perform Reliability Tests (At MSL Level 1)	Electrical Test: +25°C, 85°C and 125°C System: J750	JESD22- A113	693(0)	0/693		Good Devices
	Bake 150°C, 24 hrs. System: CHINEE	JIP/ IPC/JEDEC J-STD-020E		693		
	85°C/85%RH Moisture Soak 168 hrs. System: TABAI ESPEC Model PR-3SPH			693		
	3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243			693		
	Electrical Test: +25°C, 85°C and 125°C System: J750		693(0)	0/693	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
Temp Cycle	Stress Condition: -65°C to +150°C, 500 Cycles System: TABAI ESPEC TSA-70H	JESD22-A104		0/231		Parts had been pre-conditioned at 260°C
	Electrical Test: +85°C and 125°C System: J750		231(0)	0/231	Pass	77 units / lot
	Bond Strength: Wire Pull (>3.00 grams)		15(0)	0/15	Pass	
UNBIASED-HAST	Stress Condition: +130°C/85%RH, 96 hrs. System: HAST 6000X	JESD22-A118		0/231		Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C System: J750		231(0)	0/231	Pass	77 units / lot
HAST	Stress Condition: +130°C/85%RH, 96 hrs. Bias Volt: 5.5 Volts System: HAST 6000X	JESD22-A110		0/231		Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C, 85°C and 125°C System: J750		231(0)	0/231	Pass	77 units / lot

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, 504 hrs. System: TPS Bake Oven	JESD22- A103		0/135		45 units / lot
	Electrical Test: +25°C, 85°C and 125°C System: J750		135(0)	0/135	Pass	
Bond Strength Data Assembly	Wire Pull (>3.00 grams)	Mil. Std. 883-2011	30(0) Wires	0/30	Pass	
	Bond Shear (>15.00 grams)	CDF-AEC- Q100-001	30(0) bonds	0/30	Pass	



QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN #: CENO-23WIHI924

Date:
March 30, 2020

Qualification of palladium coated copper with gold flash (CuPdAu) as a new bond wire material for selected PIC18F2xx, PIC18F5xx, AVR64DDxx, AVR64DUxx, AVR16DDxx, AVR32DDxx, AVR16DUxx, AVR32DUxx, PIC32CMxx, PIC16F7xx, PIC16F1xx, AVR128DA48S, AVR32DA48S and AVR64DA48S device families, together with qualification of MTAI as an additional assembly site for PIC18F4xx, PIC18F5xx, AVR64DBxx, AVR32DBxx, AVR32SDxx, PIC32CMxx, PIC16F1xx, PIC18F2xx, AVR128DA48, AVR32DA48 and AVR64DA48 device families available in various packages. This is a Q100 Grade 0 qualification and will qualify by similarity (QBS).



MICROCHIP PACKAGE QUALIFICATION REPORT

Purpose

Qualification of palladium coated copper with gold flash (CuPdAu) as a new bond wire material for selected PIC18F2xx, PIC18F5xx, AVR64DDxx, AVR64DUxx, AVR16DDxx, AVR32DDxx, AVR16DUxx, AVR32DUxx, PIC32CMxx, PIC16F7xx, PIC16F1xx, AVR128DA48S, AVR32DA48S and AVR64DA48S device families, together with qualification of MTAI as an additional assembly site for PIC18F4xx, PIC18F5xx, AVR64DBxx, AVR32DBxx, AVR32SDxx, PIC32CMxx, PIC16F1xx, PIC18F2xx, AVR128DA48, AVR32DA48 and AVR64DA48 device families available in various packages.

This is a Q100 Grade 0 qualification and will qualify by similarity (QBS).

CN	ES328238
QUAL ID	Q20001 Rev. A
MP CODE	MVAV146MXFX8
Part No.	PIC18F57K42-E/6MX
Bonding No.	BDE-005731 Rev. 02
CCB No.	3978 and 8106

Package

Type	48L VQFN-WFS
Package size	6 x 6 x 0.9 mm

Lead Frame

Paddle size	177 x 177 mils
Material	C194
Surface	Bare copper on DAP
Process	Etched
Lead Lock	No
Part Number	10104812

Material

Epoxy	3280
Wire	Au
Mold Compound	G700LTD
Plating Composition	Matte Tin



MICROCHIP **PACKAGE QUALIFICATION REPORT**

Manufacturing Information

Assembly Lot No.	Wafer Lot No.	Date Code
MMT-203501985.000	TMPE220214643.110	19482JB
MMT-203601146.000	TMPE220214643.111	19492J6
MMT-203601147.000	TMPE220214643.112	19492J9

Result

☒ Pass ☐ Fail ☐ _____

48L VQFN (6x6x0.9 mm) assembled by MMT pass reliability test per QCI-39000. This package was qualified the Moisture/Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020E standard.

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS	Result	Remarks
<u>Precondition</u> <u>Prior Perform</u> <u>Reliability Tests</u> (At MSL Level 1)	Electrical Test :+25°C, 85°C, 125°C and 150°C System: J750	JESD22-A113 JIP/ IPC/JEDEC J-STD-020E	693(0)	693		Good Devices
	Bake 150°C, 24 hrs System: CHINEE			693		
	85°C/85%RH Moisture Soak 168 hrs. System: TABAI ESPEC Model PR-3SPH			693		
	3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243			693		
	Electrical Test :+25°C, 85°C, 125°C and 150°C System: J750			0/693	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
Temp Cycle	Stress Condition: -55°C to +150°C, 2000 Cycles System: TABAI ESPEC TSA-70H	JESD22-A104		231		Parts had been pre-conditioned at 260°C
	Electrical Test :+85°C, 125°C and 150°C System: J750		231(0)	0/231	Pass	77 units / lot
	Bond Strength: Wire Pull (> 2.5 grams)		15 (0)	0/15	Pass	
	Bond Shear (>15.00 grams)		15 (0)	0/15	Pass	
UNBIASED-HAST	Stress Condition: +130°C/85%RH, 96 hrs. System: HAST 6000X	JESD22-A118		231		Parts had been pre-conditioned at 260°C
	Electrical Test :+25°C System: J750		231(0)	0/231	Pass	77 units / lot
HAST	Stress Condition: +130°C/85%RH, 96 hrs. Bias Volt: 5.5 Volts System: HAST 6000X	JESD22-A110		231		Parts had been pre-conditioned at 260°C
	Electrical Test :+25°C, 85°C, 125°C and 150°C System: J750		231(0)	0/231	Pass	77 units / lot

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, 1000 hrs System: SHEL LAB Electrical Test :+25°C, 85°C, 125°C and 150°C System: J750	JESD22-A103	45(0)	45 0/45	Pass	45 units
Solderability Temp 215°C	Steam Aging: Temp 93°C,8Hrs System: SAS-3000 Solder Dipping: Solder Temp.215°C Solder material: SnPb Sn63,Pb37 System: ERS A RA 2200D Visual Inspection: External Visual Inspection	J-STD-002	22 (0)	22 22 0/22	Pass	
Solderability Temp 245°C	Steam Aging: Temp 93°C,8Hrs System: SAS-3000 Solder Dipping:Solder Temp.245°C Solder material:Pb Free Sn 95.5Ag3.9 Cu0.6 System: ERS A RA 2200D Visual Inspection: External Visual Inspection	J-STD-002	22 (0)	22 22 0/22	Pass	
Physical Dimensions	Physical Dimension, 10 units / lot from 3 lot	JESD22- B100/B108	30(0) Units	0/30	Pass	
Bond Strength Data Assembly	Wire Pull (> 2.5 grams) Bond Shear (>15.00 grams)	M2011 JESD22-B116	30 (0) Wires 30 (0) bonds	0/30 0/30	Pass Pass	



QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN #: CENO-23WIHI924

Date:
April 04, 2018

Qualification of MMT as an additional assembly site for selected products of 200K wafer technology available in 64L, 44L, 28L, 20L, and 16L QFN packages.

The qualification of palladium coated copper with gold flash (CuPdAu) as a new bond wire material for selected PIC18F2xx, PIC18F4xx, AVR128Dxx, PIC18F5xx, AVR32DAxx, AVR64DAxx, AVR64DBxx, AVR64DDxx, AVR32DBxx, AVR64DUxx, AVR16DDxx, AVR32DDxx, AVR32SDxx, AVR16DUxx, AVR32DUxx, PIC32CMxx, PIC16F7xx and PIC16F1xx device families available in various packages will qualify by similarity (QBS).



MICROCHIP

PACKAGE QUALIFICATION REPORT

Purpose	Qualification of MMT as an additional assembly site for selected products of 200K wafer technology available in 64L, 44L, 28L, 20L, and 16L QFN packages. The qualification of palladium coated copper with gold flash (CuPdAu) as a new bond wire material for selected PIC18F2xx, PIC18F4xx, AVR128Dxx, PIC18F5xx, AVR32DAxx, AVR64DAxx, AVR64DBxx, AVR64DDxx, AVR32DBxx, AVR64DUxx, AVR16DDxx, AVR32DDxx, AVR32SDxx, AVR16DUxx, AVR32DUxx, PIC32CMxx, PIC16F7xx and PIC16F1xx device families available in various packages will qualify by similarity (QBS).
CN	ES165007-24262
QUAL ID	Q18025 Rev. A
MP CODE	LEAU1TR4XBXF
Part No.	PIC18F67K22T-I/MR
Bonding No.	BDM-001585 Rev. A
CCB No.	3220 and 8106
<u>Package</u>	
Type	64L QFN
Package size	9x9x0.9 mm
<u>Lead Frame</u>	
Paddle size	291 x 291 mils
Material	C194
Surface	Bare Cu
Process	Stamped
Lead Lock	No
Part Number	10106410
Treatment	BOT
<u>Material</u>	
Epoxy	3280
Wire	CuPdAu
Mold Compound	G700LTD
Plating Composition	Matte Tin



MICROCHIP

PACKAGE QUALIFICATION REPORT

Manufacturing Information

Assembly Lot No.	Wafer Lot No.	Date Code
MMT-184500398.000	GRSM418302563.110	1805S41
MMT-184500399.000	GRSM 418302563.112	1805S42
MMT-184500400.000	GRSM 418302563.111	1805S43

Result

☒ Pass ☐ Fail ☐ _____

64L QFN (9x9x0.9 mm) assembled by MMT pass reliability test per QCI-39000.
This package was qualified the Moisture/Reflow Sensitivity Classification Level 1 at 260°C
reflow temperature per IPC/JEDEC J-STD-020D standard.

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS	Result	Remarks
Moisture/Reflow Sensitivity Classification Test (At MSL Level 1)	85°C/ 85%RH Moisture Soak 168 hrs. System: TABAI ESPEC Model PR-3SPH 3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243 (IPC/JEDEC J-STD-020D)	IPC/JEDEC J-STD-020D	135	0/135	Pass	

<u>Precondition Prior Perform Reliability Tests (At MSL Level 1)</u>	Electrical Test :+25°C and 85°C System: J750	JESD22-A113	693(0)	693		Good Devices
	Bake 150°C, 24 hrs System: CHINEE			693		
	85°C/85%RH Moisture Soak 168 hrs. System: TABAI ESPEC Model PR-3SPH			693		
	3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243			693		
	Electrical Test :+25°C and 85°C System: J750			0/693	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
Temp Cycle	Stress Condition: -65°C to +150°C, 500 Cycles System: TABAI ESPEC TSA-70H	JESD22-A104		231		Parts had been pre-conditioned at 260°C
	Electrical Test: + 85°C System: J750		231(0)	0/231	Pass	77 units / lot
	Stress Condition: -65°C to +150°C, 1000 Cycles System: TABAI ESPEC TSA-70H			231		
	Electrical Test: +85°C System: J750		231(0)	0/231	Pass	
	Bond Strength: Wire Pull (> 2.50 grams) Bond Shear (>15.00 grams)		15 (0) 15 (0)	0/15 0/15	Pass Pass	
UNBIASED-HAST	Stress Condition: +130°C/85%RH, 96 hrs. System: HAST 6000X	JESD22-A118		231		Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C System: J750		231(0)	0/231	Pass	77 units / lot
	Stress Condition: +130°C/85%RH, 192 hrs. System: HAST 6000X			231		
	Electrical Test: + 25°C System J750		231(0)	0/231	Pass	
HAST	Stress Condition: +130°C/85%RH, 96 hrs. Bias Volt: 5.0Volts System: HAST 6000X	JESD22-A110		231		Parts had been pre-conditioned at 260°C
	Electrical Test: +25°C and +85°C System: J750		231(0)	0/231	Pass	77 units / lot
	Stress Condition: +130°C/85%RH,192 hrs. Bias Volt: 5.0 Volts System: HAST 6000X			231		
	Electrical Test: +25°C System: J750		231(0)	0/231	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, 504 hrs System: SHEL LAB Electrical Test : +25°C and 85°C System: J750	JESD22-A103	45(0)	45 0/45	Pass	45 units
Solderability Temp 215°C	Steam Aging: Temp 93°C,8Hrs System: SAS-3000 Solder Dipping: Solder Temp.215°C Solder material: SnPb Sn63,Pb37 System: ERSA RA 2200D Visual Inspection: External Visual Inspection	JESD22B-102E	22 (0)	22 22 0/22	Pass	
Solderability Temp 245°C	Steam Aging: Temp 93°C,8Hrs System: SAS-3000 Solder Dipping:Solder Temp.245°C Solder material:Pb Free Sn 95.5Ag3.9 Cu0.6 System: ERSA RA 2200D Visual Inspection: External Visual Inspection	JESD22B-102E	22 (0)	22 22 0/22	Pass	
Physical Dimensions	Physical Dimension, 10 units/1 lot	JESD22-B100/B108	30(0) Units	0/30	Pass	
Bond Strength Data Assembly	Wire Pull (> 2.50 grams) Bond Shear (>15.00 grams)	M2011 JESD22-B116	30 (0) Wires 30 (0) bonds	0/30 0/30	Pass Pass	