



MICROCHIP

QUALIFICATION REPORT
RELIABILITY LABORATORY

PCN #: JAON-12POCU264

Date
March 15, 2016

Qualification of palladium coated copper with gold flash (CuPdAu) bond wire in selected automotive products of the 150K and 160K wafer technologies available in 64L TQFP package at MTAI assembly site. The 44L TQFP package will qualify by similarity at MTAI assembly site.

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MICROCHIP

PACKAGE QUALIFICATION REPORT

Purpose	Qualification of palladium coated copper with gold flash (CuPdAu) bond wire in selected automotive products of the 150K and 160K wafer technologies available in 64L TQFP package at MTAI assembly site. The 44L TQFP package will qualify by similarity at MTAI assembly site.
CN	BC152499
QUAL ID	Q16008
MP CODE	DEDD14V2XVD1
Part No.	PIC18F6627, PIC18F6628, PIC18LF6627, PIC18LF6628
Bonding No.	BDM-000824/A
CCB No.	1662
<u>Package</u>	
Type	64L TQFP
Package size	10x10x1 mm
Die thickness	11 mils
Die size	223.3 x 198.9 mils
<u>Lead Frame</u>	
Paddle size	275 x 275 mils
Material	C7025
Surface	Bare copper on paddle
Process	Stamp
Lead Lock	No
Part Number	10106402
Treatment	Brown Oxide Treatment
<u>Die attach material</u>	
Epoxy	3280
Wire	CuPdAu wire
Mold Compound	G700HA
Plating Composition	Matte Tin



MICROCHIP PACKAGE QUALIFICATION REPORT

Manufacturing Information

Assembly Lot No.	Wafer Lot No.	Date Code
MTAI163903015.000	GRSM415481323.330	1552V20
MTAI163903016.000	GRSM415481323.300	1552V21
MTAI163903017.000	GRSM415481323.320	1552V22

Result

☒ Pass ☐ Fail ☐ _____

64L TQFP (10x10x1.0 mm) assembled by MTAI pass reliability test per AEC-Q100 standard. This package was qualified the Moisture/Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020D standard.

Prepared By: Thinnapol Date: March 15, 2016 (Sr. Reliability Engineer)

(Mr. Thinnapol Nakkasun)

Approved By: Som Date: March 15, 2016 (Reliability Manager)

(Mr. Somnuek Thongprasert)

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 C J-STD- 020D	198	0/198	Pass	

<u>Precondition Prior Perform Reliability Tests (At MSL Level 1)</u>	Electrical Test :+25°C and 125°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 125°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: (Standard) -65°C to +150°C, 500 Cycles System : TABAI ESPEC TSA-70H Electrical Test: + 125°C System: J750 C-SAM Inspection Focus on die surface, Lead finger, and paddle System: HITACHI (FS200) Decap Inspection (Information Only) Bond Strength: Wire Pull (>2.5 grams) Bond Shear (>15.00 grams) Cross section Stress Condition: (Extended) -65°C to +150°C, 1000 Cycles System : TABAI ESPEC TSA-70H Electrical Test: + 125°C System: J750 C-SAM Inspection Focus on die surface, Lead finger, and paddle System: HITACHI (FS200) Decap Inspection (Information Only) Bond Strength: Wire Pull (>2.5 grams) Bond Shear (>15.00 grams) Cross section	JESD22- A104		231		Parts had been pre-conditioned at 260°C
			231 (0)	0/231	Pass	
			66 (0)	0 /66	Pass	22 units / lot
			9 (0)	0/9	Pass	
			45 (0)	0/45	Pass	
			3(0) Wires	0/3	Pass	1 Wire/ lot
				231		
			231 (0)	0/231	Pass	
			66 (0)	0 /66	Pass	22 units / lot
			9 (0)	0/9	Pass	
			45 (0)	0/45	Pass	
			3(0) Wires	0/3	Pass	1 Wire/ lot

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
HAST	Stress Condition: (Standard) +130 °C/85%RH, 96 hrs. Bias Volt: 2.5 Volts System: HAST 6000X	JESD22-A110		231		Parts had been pre-conditioned at 260 °C
	Electrical Test: + 25 °C and 125 °C System: J750		231(0)	0/231	Pass	77 units / lot
	C-SAM Inspection Focus on die surface, Lead finger, and paddle System: HITACHI (FS200)		66 (0)	0 /66	Pass	22 units / lot
	Decap Inspection (Information Only)		9 (0)	0/9	Pass	
	Bond Strength: Wire Pull (>2.5 grams) Bond Shear (>15.00 grams)		45 (0)	0/45	Pass	
	Cross section		3(0) Wires	0/3	Pass	1Wire/ lot
	Stress Condition: (Extended) +130 °C/85%RH, 192 hrs. Bias Volt: 2.5 Volts System: HAST 6000X			231		
	Electrical Test: + 25 °C and 125 °C System: J750		231(0)	0/231	Pass	
	C-SAM Inspection Focus on die surface, Lead finger, and paddle System: HITACHI (FS200)		66 (0)	0 /66	Pass	22 units / lot
	Decap Inspection (Information Only)		9 (0)	0/9	Pass	
	Bond Strength: Wire Pull (>2.5 grams) Bond Shear (>15.00 grams)		45 (0)	0/45	Pass	
	Cross section		3(0) Wires	0/3	Pass	1 Wire/ lot

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
UNBIASED-HAST	Stress Condition: (Standard) +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
	C-SAM Inspection Focus on die surface, Lead finger, and paddle System: HITACHI (FS200)		66 (0)	0 /66	Pass	22 units / lot
	Decap Inspection (Information Only)		15(0) Units	0/15	Pass	5 units / lot
	Stress Condition: (Extended) +130 °C/85%RH, 192 hrs. System: HAST 6000X			231		
	Electrical Test: +25 °C System: J750		231(0)	0/231	Pass	
	C-SAM Inspection Focus on die surface, Lead finger, and paddle System: HITACHI (FS200)		66 (0)	0 /66	Pass	22 units / lot
	Decap Inspection (Information Only)		15(0) Units	0/15	Pass	5 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: SHEL LAB	JESD22-A103		135		45 units/ lot
	Electrical Test :+25°C and 125°C System: J750		135(0)	0/135	Pass	
	Cross section		3(0) Wires	0/3	Pass	1 Wire/ lot
	Stress Condition: Bake 175°C, 1000 hrs System: SHEL LAB	JESD22-A103		135		
	Electrical Test :+25°C and 125°C System: J750		135(0)	0/135	Pass	
	Cross section		3(0) Wires	0/3	Pass	1 Wire/ lot
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	JESD22-B-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	JESD22-B-102E	22 (0)	22 22 0/22	Pass	
Physical Dimensions	Physical Dimension, 30 units from 1 lot	JESD22 - B100/B 108	30(0) Units	0/30	Pass	
Bond Strength	Wire Pull (>2.5 grams)	M2011	30 (0) Wires	0/30	Pass	
Data Assembly	Bond Shear (>15.00 grams)	JESD22 -B116	30 (0) bonds	0/30	Pass	

JAON-12POCU264 - CCB 1662 and 1662.01 Final Notice: Qualification of CuPdAu bond wire in selected automotive products of the 150K and 160K wafer technologies available in 64L and 44L TQFP package at MTAI site

Affected Catalog Part Numbers (CPN)

PCN_JAON-12POCU264
CATALOG_PART_NBR
DSPIC30F4011-20E/PTVAO
DSPIC30F5011-30I/PTVAO
DSPIC30F5011T-30I/PTVAO
DSPIC30F5015-20E/PTVAO
PIC16F74T-E/PTVAO
PIC16F77-I/PTVAO
PIC16F877A-I/PTVAO
PIC16F884-E/PTVAO
PIC16F884T-E/PTVAO
PIC16F887-E/PTVAO
PIC16F887-I/PTVAO
PIC16F887T-I/PTVAO
PIC16F914-I/PTGVAO
PIC16F914-I/PTVAO
PIC16F914T-I/PTVAO
PIC16F917-I/PTVAO
PIC16F917T-I/PTVAO
PIC16F946-I/PTVAO
PIC16F946T-I/PTVAO
PIC18F448-E/PTGVAO
PIC18F452-I/PTVAO
PIC18F452T-I/PTVAO
PIC18F458T-E/PTVAO
PIC18F458T-I/PTVAO
PIC18F4680-E/PTVAO
PIC18F4680-I/PTVAO
PIC18F4680T-I/PTVAO
PIC18F4682-I/PTVAO
PIC18F4682T-I/PTVAO
PIC18F6585-I/PTVAO
PIC18F6620T-E/PTVAO
PIC18F6627-E/PTVAO
PIC18F6627-I/PTVAO
PIC18F6627T-E/PTVAO
PIC18F6627T-I/PTVAO
PIC18LF4620-I/PTVAO
PIC18LF4620T-I/PTVAO
PIC18LF6585-I/PTVAO
PIC18LF6585T-I/PTVAO