QUALIFICATION REPORT SUMMARY

RELIABILITY LABORATORY

PCN#: KSRA-16BWET454

Date
July 10, 2019

Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for selected products of the 0.18um TSMC wafer technology available in 44L QFN (8x8x0.9mm) package at NSEB assembly site. This is a Q006 grade 1 qualification.

MICROCHIP

PACKAGE QUALIFICATION REPORT

Purpose	**Qualification of palladium coated copper with gold flash (CuPdAu) bond wire for selected products of the 0.18um TSMC wafer technology available in 44L QFN (8x8x0.9mm) package at NSEB assembly site. This is a Q006 grade 1 qualification.**
CCB No.	3027
CN	ES289554
QUAL ID	Q19058 Rev. A
MP CODE	TLAK14T3XQDE
Part No.	DSPIC33EP256GM604-E/ML
Bonding No.	BDM-001440 Rev. A
Package	
Type	44L QFN
Package size	8x8x0.9 mm
Die thickness	11 mils
Die size	188.0 x 172.9 mils
Lead Frame	
Paddle size	272 x 272 mils
Material	C194
Process	Etched
Lead Lock	Yes
Part Number	FR1139
Material	
Epoxy	8600
Wire	CuPdAu wire
Mold Compound	G700LTD
Plating Composition	Matte Tin

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PACKAGE QUALIFICATION REPORT

Manufacturing Information

Assembly Lot No.	Wafer Lot No.	Date Code
NSEB195100006.000	TC11919364200.200	1912H0W
NSEB195100007.000	TC11919364200.200	1912H1U
NSEB195100008.000	TC11919364200.200	1912H28

Result [X] Pass [ ] Fail [ ] ____________________

44L QFN 8x8x0.9 mm assembled by NSEB pass reliability test per AEC-Q006 Standard. 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
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-020E)	IPC/JEDEC J-STD-020E	198	0/198	Pass	
Precondition Prior Perform Reliability Tests (At MSL Level 1)	**Electrical Test :**+25°C, 85°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			693		
	System: Vitronics Soltec MR1243					
	Electrical Test :+25°C, 85°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:** -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 and 125°C System: J750		231(0)	0/231	Pass	
	Bond Strength: Wire Pull (>2.5 grams) Bond Shear (>15.00 grams)		45 (0)	0/45	Pass	
	Stress Condition: -65°C to +150°C, 1000 Cycles System : TABAI ESPEC TSA-70H			231		
	Electrical Test: + 85°C and 125°C System: J750		231(0)	0/231	Pass	
	Bond Strength: Wire Pull (>2.5 grams) Bond Shear (>15.00 grams)		45 (0)	0/45	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard /Method	Qty. (Acc.)	Def/SS.	Result	Remarks
HAST	**Stress Condition:** +130°C/85%RH, 96 hrs. **Bias Volt:** 3.6 Volts,1.98 Volts System: HAST 6000X	JESD22-A110		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
	Bond Strength: Wire Pull (>2.5 grams) Bond Shear (>15.00 grams)		45 (0)	0/45	Pass	
	Stress Condition: +130°C/85%RH, 192 hrs. **Bias Volt:** 3.6 Volts,1.98 Volts System: HAST 6000X			231		
	Electrical Test: + 25°C,85°C and 125°C System: J750		231(0)	0/231	Pass	
	Bond Strength: Wire Pull (>2.5 grams) Bond Shear (>15.00 grams)		45 (0)	0/45	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
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	
High Temperature Storage Life	**Stress Condition:** Bake 175°C, 500 hrs System: SHEL LAB	JESD22-A103		135		45 units / lot
	Electrical Test: + 25°C,85°C and 125°C System: J750		135(0)	0/135	Pass	
	Stress Condition: Bake 175°C, 1000 hrs System: SHEL LAB			135		
	Electrical Test: + 25°C,85°C and 125°C System: J750		135(0)	0/135	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	J-STD-002	22 (0)	22 22 0/22	Pass	

PACKAGE QUALIFICATION REPORT

Test Number (Reference)	Test Condition	Standard/ Method	Qty. (Acc.)	Def/SS.	Result	Remarks
Physical Dimensions	Physical Dimension, 10 units from 1 lot	JESD22-B100/B108	30(0) Units	0/30	Pass	
Bond Strength Data Assembly	Wire Pull (> 2.5 grams)	M2011	30 (0) Wires	0/30	Pass	
	Bond Shear (>15.00 grams)	JESD22-B116	30 (0) bonds	0/30	Pass	