QUALIFICATION REPORT SUMMARY

RELIABILITY LABORATORY

PCN #: GBNG-09EAUN458

Date:
June 26, 2019

Qualification of ASE as a new assembly site for selected Micrel KSZ8061 device family available in 48L VQFN (7x7x0.9 mm) package using palladium coated copper with gold flash (CuPdAu) bond wire.

I. Summary:

The purpose of this report is to qualify STGA1 in VQFN 7x7x.09 mm 48 LD at ASE , Taiwan using CuPdAu Wire Bonding Process per CCB# 3473 and following guidelines established in Microchip specification QCI-39000, "Worldwide Quality Conformance Requirements".

II. Conclusion:

Based on the results, STGA1 in VQFN 7x7x.09 mm 48 LD at ASE, Taiwan complies with the reliability guidelines implemented in the qualification plan. Therefore, this part/package can be released to production.

III. Device Description:

Device	KSZ8061MNGW
Document Control Number	ML0620190070
Document Revision	A

IV. Qualification Material:

Test Lot	Lot 1	Lot 2	Lot 3
DEVICE	KSZ8061MNGW (STGA1QPVAA01)	KSZ8061MNGW (STGA1QPVAA01)	KSZ8061MNGW (STGA1QPVAA01)
WAFER LOT	TC14919086016.200/ PK8H42.00	TC14919086016.200/ PK8H42.00	TC14919086016.200/ PK8H42.00
ASSEMBLY LOT	ASE192400110.000	ASE192400111.000	ASE192400112.000
PACKAGE	48L-VQFN 7x7x0.9mm	48L-VQFN 7x7x0.9mm	48L-VQFN 7x7x 0.9mm
QUAL TESTS	PRECOND, HTSL, HAST, UHAST, TC	PRECOND, HAST, UHAST, TC	PRECOND, HAST, UHAST, TC

V. Bill of Materials:

Misc.	Assembly site	ASE
	BD Number	AAH@A257190004-0
	MP Code (MPC)	STGA19PVAA01
	Part Number (CPN)	KSZ8061MNGW
	CCB Number	3473
Lead-Frame	Paddle size	146 mil x146 mil
	Exposed Paddle size	138 mil x138 mil
	Material	C194
	Process	ETCH
	Lead-lock	N/A
	Part Number	A25719-0
	Plating	Ag (Double ring plating)
Bond Wire	Material	CuPdAu
Die Attach	Part Number	EN-4900
	Conductive	Y
MC	Part Number	G631
PKG	PKG Type	DOFU QFN
	Pin/Ball Count	48
	MSL	3
	Plating	Sn
	PKG width/size	7x7x0.9 mm
Die	Die Thickness	11mils
	Die Size	2.49 mm X 1.28 mm
	Fab Process (site)	65 nm / TSMC

VI. Qualification Data:

Package Preconditioning

Test Method/Condition	JEDEC J-STD-020D and JESD22-A113F, MSL Level 3 soak and 260°C peak Reflow Temperature
Lot #	Results (Fail/Pass)
Lot 1	0/260
Lot 2	0/255
Lot 3	0/255

Pre and Post testing was conducted at +25◦C

HAST (Highly Accelerated Temperature and Humidity Stress Test)

Test Method/Condition	JESD22-A110, Vin , Ta = +130°C/85%RH, 96 HRS & 192 HRS Min SS = 77 units
Lot #	Results (Fail/Pass)
Lot 1	0/82 @ 96 hrs 0/82 @ 192 hrs
Lot 2	0/82 @ 96 hrs 0/82 @ 192 hrs
Lot 3	0/82 @ 96 hrs 0/82 @ 192 hrs

HAST 96h: Pre and Post testing was conducted at +25◦C, +85◦C

HAST 192h: Post testing was conducted at +25◦C,

UNBIASED HAST

Test Method/Condition	JESD22-A118, Ta = +130°C/85%RH, 96HRS & 192 HRS Min SS = 77 units
Lot #	Results (Fail/Pass)
Lot 1	0/82 @ 96 hrs 0/82 @ 192 hrs
Lot 2	0/82 @ 96 hrs 0/82 @ 192 hrs
Lot 3	0/82 @ 96 hrs 0/82 @ 192 hrs

Pre and Post testing was conducted at +25◦C

Temperature Cycling

Test Method/Condition	JESD22-A104, Ta = -65°C/+150 °C, 500 CYC & 1000 CYC Min SS = 77 units
Lot #	Results (Fail/Pass)
Lot 1	0/87 @500 cyc, 0/82 @ 1000 cyc ; WPS after TCY: 0 fail/5
Lot 2	0/82 @500 cyc, 0/82 @ 1000 cyc
Lot 3	0/79 @500 cyc, 0/79 @ 1000 cyc

TC 500c: Pre and Post testing was conducted at +85◦C

TC 1000c: Post testing was conducted at 25’C

High Temperature Storage Life

Test Method/Condition	JESD22-A103, Ta = +150 °C, 1008 HRS & 2000 HRS Min SS = 45 units
Lot #	Results (Fail/Pass)
Lot 1	0/50 @ 1008 HRS and 0/50 @ 2000 hrs

HTSL 1008hrs: Pre and Post testing was conducted at +25◦C, +85◦C

HTSL 2000hrs: Post Test was conducted at +25◦C,

VII. Wire Pull/Ball Shear

Lot #1:

Test Item	Sample Size/ Unit	Comment
Wire Pull	30 wires	Pass
Ball Shear	30 balls	Pass
Solderability	22	Pass

Lot #2

Test Item	Sample Size/ Unit	Comment
Wire Pull	30 wires	Pass
Ball Shear	30 balls	Pass
Solderability	22	Pass

Lot #3

Test Item	Sample Size/ Unit	Comment
Wire Pull	30 wires	Pass
Ball Shear	30 balls	Pass
Solderability	22	Pass

VIII. Physical Dimension:

Test Method/Condition	Measure per JESD22 B100 and B108 Min SS = 10 units / lot
Lot #	Results (Fail/Pass)
Lot 1	0/10 Pass
Lot 2	0/10 Pass
Lot 3	0/10 Pass