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Cypress Semiconductor
Package Qualification Report

QTP# 113205 VERSION*A
March, 2015

48 - Ball FBGA (4-Die Stack)
(8X9.5X1.4mm)
SnAgCu, MSL3, 260C Reflow
ASE-Taiwan (G)

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
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PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date Comp
093904	48-Ball FBGA (4-Die Stack) (8 x 9.5 x 1.4mm), SnAgCu, MSL3, 260C Reflow assembled at ASETaiwan	Oct 2009
113205	Larger Die Qualification of 48-Ball FBGA (4-Die Stack) (8 x 9.5 x 1.4mm), SnAgCu, MSL3, 260C Reflow Assembled at ASE Taiwan Using C9 64M 4-die stack.	Dec 2011

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BK48D (8X9.5X1.4mm)
Package Outline, Type, or Name:	48-Ball FBGA in 4-Die Stack
Mold Compound Name/Manufacturer:	KE-G-2270
Mold Compound Flammability Rating:	UL-94
Mold Compound Alpha Emission Rate:	0.001c/cm2-h
Oxygen Rating Index:	>28%
Lead Finish, Composition / Thickness:	SAC405
Substrate Material:	A11760
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	100% Saw Through
Die Attach Supplier:	Bottom Spacer: Ablestik Film Over Wire: Nippon
Die Attach Material:	Bottom Spacer: ATB-125 Film Over Wire: NEX130E4X
Die Attach Method:	Tape Film
Bond Diagram Designation:	001-59067
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 0.8mil
Thermal Resistance Theta JA °C/W:	28.37°CW
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	001-56462
Name/Location of Assembly (prime) facility:	ASE-Taiwan (G)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Ball Shear	JESD22-B116	P
Bond Pull	MIL-STD-883 – Method 2011	P
Constructional Analysis	Criteria:Meet external and internal characteristics of Cypress package	P
Die Shear	MIL-STD-883, Method 2019 Per die size: • <3000 sq. mils = 1.2 kgf • 30001-5000 sq. mils = 1.2 kgf • >5001 sq. mils = 1.2 kgf	P
Dye Penetration Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
High Temp Storage	JESD22-A103:150°C No bias	P
Internal Visual	MIL-STD-883-2014	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 110°C, 85%RH, 3.3V / 3.65V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Pressure Cooker	JESD22-A102: 121°C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Thermal Shock	MIL-STD-883, Method 1011, Condition B, -55°C to 125°C and JESD22-A106, Condition C, -55°C to 125°C	P
X-ray	MIL-STD-883 2012	P

Reliability Test Data

QTP #: 092602

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	COMP	15	0	
CY14B108 (7C1408B8BC)	4839871	610900658	TAIWAN-G	COMP	15	0	
CY14B108 (7C1408B8BC)	4847673	610920547	TAIWAN-G	COMP	15	0	
STRESS: BALL SHEAR							
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	COMP	150	0	
STRESS: BOND PULL							
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	COMP	150	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY14B108 (7C1408B8BC)	4847673	610920547	TAIWAN-G	COMP	5	0	
STRESS: DYE PENETRATION TEST							
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	COMP	15	0	
CY14B108 (7C1408B8BC)	4839871	610900658	TAIWAN-G	COMP	15	0	
CY14B108 (7C1408B8BC)	4847673	610920547	TAIWAN-G	COMP	15	0	
STRESS: DIE SHEAR							
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	COMP	15	0	
STRESS: HIGH TEMP STORAGE							
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	500	80	0	
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	1000	80	0	
STRESS: HI-ACCEL SATURATION TEST (110C, 85%RH, 3.3V), PRE COND 192 HR 30C/60%RH, MSL3							
CY14B108 (7C1408B8BC)	4847673	610920547	TAIWAN-G	264	79	0	
STRESS: INTERNAL VISUAL							
CY14B108 (7C1408B8BC)	4847673	610920547	TAIWAN-G	COMP	5	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY14B108 (7C1408B8BC)	4847673	610920547	TAIWAN-G	168	80	0	

Reliability Test Data

QTP #: 092602

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TC COND. C -65C TO 150C, PRE COND192 HRS 30C/60%RH, MSL3							
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	500	75	0	
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	1000	73	0	
CY14B108 (7C1408B8BC)	4839871	610900658	TAIWAN-G	500	79	0	
CY14B108 (7C1408B8BC)	4839871	610900658	TAIWAN-G	1000	77	0	
CY14B108 (7C1408B8BC)	4847673	610920547	TAIWAN-G	500	78	0	
CY14B108 (7C1408B8BC)	4847673	610920547	TAIWAN-G	1000	78	0	
STRESS: THERMAL SHOCK							
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	200	77	0	
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	1000	77	0	
STRESS: X-RAY							
CY14B108 (7C1408B8BC)	4847673	610904886	TAIWAN-G	COMP	76	0	

Reliability Test Data

QTP #: 113205

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	COMP	15	0	
CY7C1081DV33 (7C1081NC)	4106700	611144761	TAIWAN-G	COMP	15	0	
CY7C1081DV33 (7C1081NC)	4106700	611144760	TAIWAN-G	COMP	15	0	
STRESS: BALL SHEAR							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	COMP	10	0	
CY7C1081DV33 (7C1081NC)	4106700	611144761	TAIWAN-G	COMP	10	0	
CY7C1081DV33 (7C1081NC)	4106700	611144760	TAIWAN-G	COMP	10	0	
STRESS: BOND PULL							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	COMP	12	0	
CY7C1081DV33 (7C1081NC)	4106700	611144761	TAIWAN-G	COMP	12	0	
CY7C1081DV33 (7C1081NC)	4106700	611144760	TAIWAN-G	COMP	12	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	COMP	5	0	
STRESS: CROSS SECTION							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	COMP	5	0	
CY7C1081DV33 (7C1081NC)	4106700	611144761	TAIWAN-G	COMP	5	0	
CY7C1081DV33 (7C1081NC)	4106700	611144760	TAIWAN-G	COMP	5	0	
STRESS: DYE PENETRANT TEST							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	COMP	15	0	
CY7C1081DV33 (7C1081NC)	4106700	611144761	TAIWAN-G	COMP	15	0	
CY7C1081DV33 (7C1081NC)	4106700	611144760	TAIWAN-G	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST, 110C, 85%RH, 3.65V, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	264	80	0	
STRESS: HIGH TEMPERATURE STORAGE							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	500	80	0	
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	1000	80	0	
STRESS: INTERNAL VISUAL							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	COMP	5	0	
CY7C1081DV33 (7C1081NC)	4106700	611144761	TAIWAN-G	COMP	5	0	
CY7C1081DV33 (7C1081NC)	4106700	611144760	TAIWAN-G	COMP	5	0	

Reliability Test Data

QTP #: 113205

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	168	80	0	
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	288	80	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	500	79	0	
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	1000	79	0	
CY7C1081DV33 (7C1081NC)	4106700	611144761	TAIWAN-G	500	77	0	
CY7C1081DV33 (7C1081NC)	4106700	611144761	TAIWAN-G	1000	77	0	
CY7C1081DV33 (7C1081NC)	4106700	611144760	TAIWAN-G	500	77	0	
CY7C1081DV33 (7C1081NC)	4106700	611144760	TAIWAN-G	1000	76	0	
STRESS: THERMAL SHOCK							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	200	77	0	
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	1000	77	0	
STRESS: X-RAY							
CY7C1081DV33 (7C1081NC)	4118838	611138971	TAIWAN-G	COMP	15	0	
CY7C1081DV33 (7C1081NC)	4106700	611144761	TAIWAN-G	COMP	15	0	
CY7C1081DV33 (7C1081NC)	4106700	611144760	TAIWAN-G	COMP	15	0	

Document History Page

Document Title: QTP 113205: 48 - BALL FBGA (4-DIE STACK) (8X9.5X1.4MM) SNAGCU, MSL3, 260C REFLOW ASE-TAIWAN (G)
Document Number: 001-76093

Rev.	ECN No.	Orig. of Change	Description of Change
**	3524983	NSR	Initial spec release
*A	4680708	JYF	Sunset review: Updated QTP title page and Reliability Tests Performed table (Acoustic, Ball Shear, Bond Pull, CA, Die Shear, DPT, IVI, HTS, HAST, PCT, TCT, Thermal Shock) for template alignment.

Distribution: WEB

Posting: None