

Cypress Semiconductor Package Qualification Report

**QTP# 063803 VERSION 1.0
December 2006**

56-Ball Very Fine Pitch Ball Grid Array (VFBGA)

SnAgCu

MSL3, 260°C Reflow

AIT-Indonesia (AT)

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
063803	Qualify AIT-Indonesia using Sn (98.5%)/Ag (1.0%)/Cu (0.5%) Solder Ball Composition on (5x5x1.0mm) 56 VFBGA	Dec 06

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BZ56
Package Outline, Type, or Name:	56-Ball FBGA (6 x 8 x 1.0mm) Fine Pitch Ball Grid Array
Mold Compound Name/Manufacturer:	Sumitomo EME-G760V
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	N/A
Substrate Material:	BT Resin
Lead Finish, Composition / Thickness:	Sn (98.5%), Ag (1%), Cu (0.5%)
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	2000B
Die Attach Method:	Epoxy
Bond Diagram Designation:	001-03977
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 0.8mil
Thermal Resistance Theta JA °C/W:	58.6°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-08480
Name/Location of Assembly (prime) facility:	AIT-Indonesia (AT)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

Note: Please contact a Cypress Representative for other packages availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max = 3.8V, 125°C	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max = 3.8V, 125°C	P
High Accelerated Saturation	130°C, 5.5V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Pressure Cooker	121C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Acoustic Microscopy	Cypress Spec. 25-00104	P
Ball Shear	Cypress Spec. 12-00292	P
Bond Pull	Cypress Spec. 24-00002	P
Constructional Analysis	Cypress Spec 25-00035	P
Dye Penetration	Cypress Spec 25-00046	P
External Visual	Cypress Spec 12-00292	P
High Temperature Storage	150C, no bias	P
Internal Visual	Cypress Spec 25-00017	P
Physical Dimensions	Cypress Spec 25-00031	P
Solderability	Cypress Spec 25-00018	P
Thermal Shock	Cypress Spec 25-00014	P
X-ray	MIL-STD-883-2012	P

Reliability Test Data

QTP #: 063803

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	15	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	COMP	15	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	COMP	15	0	
STRESS: BALL SHEAR							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	3	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	COMP	3	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	COMP	3	0	
STRESS: BOND PULL							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	10	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	5	0	
CYK256K16SCBU (K256K6C9B)	8612038	610661828	AT-INDNS	COMP	1	0	
STRESS: DIE SHEAR							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	15	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	COMP	15	0	
STRESS: DYE PENETRATION							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	15	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	COMP	15	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	COMP	15	0	
STRESS: EXTERNAL VISUAL							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	5	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	COMP	5	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	COMP	5	0	
STRESS: HIGH TEMPERATURE STORAGE, 150C, no bias							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	500	45	0	
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	1000	44	0	

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Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 3.8V, Vcc Max							
CYK256K16SCBU (K256K6C9B)	8615067	610649515	AT-INDNS	96	1283	0	
CYK256K16SCBU (K256K6C9B)	8615067	610649513	AT-INDNS	96	902	0	
CYK256K16SCBU (K256K6C9B)	8615067	610649514	AT-INDNS	96	641	0	
CYK256K16SCBU (K256K6C9B)	8612038	610661828	AT-INDNS	96	300	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 3.8V, Vcc Max							
CYK256K16SCBU (K256K6C9B)	8615067	610649515	AT-INDNS	500	200	0	
CYK256K16SCBU (K256K6C9B)	8615067	610649513	AT-INDNS	500	200	0	
STRESS: HI-ACCEL SATURATION TEST. 130C, 5.5V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	128	45	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	128	43	0	
STRESS: PHYSICAL DIMENSIONS							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	5	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	COMP	5	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	168	45	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	168	50	0	
STRESS: THERMAL SHOCK							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	100	50	0	
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	200	49	0	
STRESS: SOLDERABILITY							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	3	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	COMP	3	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	COMP	3	0	
STRESS: X-RAY							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	COMP	15	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	COMP	15	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	COMP	15	0	

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STRESS: TC COND. C -65C TO 150C, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	300	45	0	
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	500	45	0	
CY7C68013A (7C682000B)	4610631	610640180	AT-INDNS	1000	44	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	300	45	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	500	45	0	
CY7C68013A (7C682000B)	4610631	610640182	AT-INDNS	1000	45	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	300	45	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	500	45	0	
CY7C68013A (7C682000B)	4610631	610640183	AT-INDNS	1000	45	0	