

Cypress Semiconductor Package Qualification Report

**035003 VERSION 1.0
March 2004**

**48-ball Fine Pitch Ball Grid Array (FBGA)
Level 3, 235C Reflow
Chipmos, Taiwan (TAIWN-GO)**

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

Rene Rodgers
Principal Reliability Engineer
(408) 943-2732

PACKAGE QALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
035003	48-ball FBGA (6 x 8 x 1.2mm) Assembly at Chipmos, Taiwan (MSL3, 235C Reflow) using K001MSCA, 16M Cascade 1T PSRAM	Feb 04

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BA48
Package Outline, Type, or Name:	48-ball Fine Pitch Ball Grid Array (FBGA) (6 x 8 x 1.2mm)
Mold Compound Name/Manufacturer:	KMC211AA
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	>28%
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	Solder Ball, 63%Sn, 37%Pb
Die Backside Preparation Method/Metallization:	Grinding
Die Separation Method:	Sawing 100%
Die Attach Supplier:	Ablestik
Die Attach Material:	Ablestik 6200
Die Attach Method:	Silver Epoxy
Bond Diagram Designation:	10-05384
Wire Bond Method:	Thermo sonic
Wire Material/Size:	Au, 1.0um
Thermal Resistance Theta JA °C/W:	73 JA°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-77003
Name/Location of Assembly (prime) facility:	Chipmos-Taiwan

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R
Fault Coverage:	100%

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Electrostatic Discharge Human Body Model (ESD-HBM)	2,000V MIL-STD-883, Method 3015.7	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JESD22, Method A114-B	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	1000V Cypress Spec. 25-00020	P
Temperature Cycle	JEDEC22, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 235°C+5, -0°C	P
High Accelerated Saturation	130°C/1.98V, 85%RH Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 235°C+5, -0°C	P
Pressure Cooker	121C, 100%RH Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 235°C+5, -0°C	P
High Temperature Storage	150C, no bias	P
Internal Visual	Cypress Spec 25-00017	P
External Visual	Cypress Spec 25-00038	P
Physical Dimension	Cypress Spec. 25-00031	P
Die Shear	Cypress Spec 12-00292	P
Ball Shear	Cypress Spec 24-00018	P
Bond Pull	Cypress Spec 24-00002	P
Thermal Shock	Cypress Spec 25-00014 (125C, -55C)	P
X-Ray	Cypress Spec 12-00292	P
Acoustic Microscopy Test, (C-SAM)	Cypress Spec 25-000104 Level 3	P

Reliability Test Data

QTP #: 035003

Device	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3						
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	COMP	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	COMP	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	COMP	45	0	
STRESS: BALL SHEAR						
CYK001M16SCCAU (K001M6SCA)	BZ3640110	TAIWN-GO	COMP	10	0	
CYK001M16SCCAU (K001M6SCA)	BZ3650110	TAIWN-GO	COMP	10	0	
CYK001M16SCCAU (K001M6SCA)	BZ3620110	TAIWN-GO	COMP	10	0	
STRESS: BOND PULL						
CYK001M16SCCAU (K001M6SCA)	BZ3640110	TAIWN-GO	COMP	10	0	
CYK001M16SCCAU (K001M6SCA)	BZ3650110	TAIWN-GO	COMP	10	0	
CYK001M16SCCAU (K001M6SCA)	BZ3620110	TAIWN-GO	COMP	10	0	
STRESS: DIE SHEAR						
CYK001M16SCCAU (K001M6SCA)	BZ3640110	TAIWN-GO	COMP	15	0	
CYK001M16SCCAU (K001M6SCA)	BZ3650110	TAIWN-GO	COMP	15	0	
CYK001M16SCCAU (K001M6SCA)	BZ3620110	TAIWN-GO	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, 1000V						
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-B, 2,200V						
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2,000V						
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	COMP	3	0	
STRESS: EXTERNAL VISUAL						
CYK001M16SCCAU (K001M6SCA)	BZ3640110	TAIWN-GO	COMP	15	0	
STRESS: INTERNAL VISUAL						
CYK001M16SCCAU (K001M6SCA)	BZ3640110	TAIWN-GO	COMP	5	0	
CYK001M16SCCAU (K001M6SCA)	BZ3650110	TAIWN-GO	COMP	5	0	
CYK001M16SCCAU (K001M6SCA)	BZ3620110	TAIWN-GO	COMP	5	0	
STRESS: X-RAY						
CYK001M16SCCAU (K001M6SCA)	BZ3640110	TAIWN-GO	COMP	15	0	

Reliability Test Data

QTP #: 035003

Device	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.6V), PRE COND 192 HR 30C/60%RH, MSL3						
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	96	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	168	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	96	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	168	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ364011A2	TAIWN-GO	96	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ364011A2	TAIWN-GO	128	45	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 4.0V, Vcc Max						
CYK001M16SCCAU (K001M6SCA)	BZ1280210	TAIWN-GO	168	116	0	
CYK001M16SCCAU (K001M6SCA)	BZ1280210	TAIWN-GO	500	116	0	
CYK001M16SCCAU (K001M6SCA)	BZ1280210	TAIWN-GO	1000	116	0	
CYK001M16SCCAU (K001M6SCA)	BZ2700110	TAIWN-GO	168	116	0	
CYK001M16SCCAU (K001M6SCA)	BZ2700110	TAIWN-GO	500	116	0	
CYK001M16SCCAU (K001M6SCA)	BZ2700110	TAIWN-GO	1000	116	0	
CYK001M16SCCAU (K001M6SCA)	BZ2690110	TAIWN-GO	168	117	0	
CYK001M16SCCAU (K001M6SCA)	BZ2690110	TAIWN-GO	500	117	0	
CYK001M16SCCAU (K001M6SCA)	BZ2690110	TAIWN-GO	1000	117	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C						
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	168	77	0	
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	500	77	0	
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	1000	77	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	168	77	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	500	77	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	1000	77	0	
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	168	77	0	
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	500	77	0	
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	1000	77	0	

Reliability Test Data

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Device	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PHYSICAL DIMENSIONS						
CYK001M16SCCAU (K001M6SCA)	BZ3640110	TAIWN-GO	COMP	5	0	
CYK001M16SCCAU (K001M6SCA)	BZ3650110	TAIWN-GO	COMP	5	0	
CYK001M16SCCAU (K001M6SCA)	BZ3620110	TAIWN-GO	COMP	5	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH, MSL3						
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	96	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	168	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ364011A2	TAIWN-GO	96	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ364011A2	TAIWN-GO	168	45	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH, MSL3						
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	100	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	200	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	500	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	100	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	200	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	500	45	0	
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	100	45	0	
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	200	45	0	
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	500	45	0	
STRESS: THERMAL SHOCK (125c / -55C)						
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	100	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0540710	TAIWN-GO	200	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	100	45	0	
CYK001M16SCCAU (K001M6SCA)	BZ0530110	TAIWN-GO	200	45	0	
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	100	45	0	
CYK001M16SCCAU (K001M6SCA)	BY9771110	TAIWN-GO	200	45	0	