

Cypress Semiconductor Package Qualification Report

**QTP# 061703 VERSION 1.0
November 2006**

**144-Ball Fine Pitch Ball Grid Array (FBGA)
(10 x 10 x 1.4mm)
MSL3, 260C Solder Reflow
SPIL-Taiwan**

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
061703	144-Ball FBGA (10 x 10 x 1.4mm), SnAgCu, MSL3, 260C Reflow assembled at SPIL-Taiwan	Sep 06

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BB144
Package Outline, Type, or Name:	144-Ball Fine Pitch Ball Grid Array (FBGA)
Mold Compound Name/Manufacturer:	Sumitomo G770
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	N/A
Substrate Material:	AUS5/HL832
Lead Finish, Composition / Thickness:	SnAgCu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Sawing
Die Attach Supplier:	Ablebond
Die Attach Material:	2000
Die Attach Method:	Epoxy
Bond Diagram Designation:	001-07437
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0 mil
Thermal Resistance Theta JA °C/W:	28.70 °C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-00216
Name/Location of Assembly (prime) facility:	SPIL-Taiwan
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	SPIL-Taiwan

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy Test	Cypress Spec. 25-00104	P
Bond Pull	Cypress Spec. 24-00002	P
Constructional Analysis	Cypress Spec. 25-20035	P
Coplanarity	Cypress Spec. 25-00129	P
Dye Penetration	Cypress Spec. 25-00046	P
External Visual	Cypress Spec 25-00038	P
High Accelerated Saturation	130°C, 3.47V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C +0, -5°C	P
High Temperature Storage	150C, no bias	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	JEDEC22, 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
X-Ray	Cypress Spec 12-00292	P
X-Section	Cypress Spec 12-00292	P

Reliability Test Data

QTP #: 061703

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	COMP	20	0	
CAAIC2050 (SCAIC0021B)	9531535	340600001	TAIWAN-SP	COMP	20	0	
CAAIC2050 (SCAIC0021B)	9531535	340600002	TAIWAN-SP	COMP	20	0	
STRESS: BOND PULL							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	COMP	10	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	COMP	1 0		
STRESS: COPLANARITY							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	COMP	15	0	
STRESS: DYE PENETRATION							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	COMP	15	0	
CAAIC2050 (SCAIC0021B)	9531535	340600001	TAIWAN-SP	COMP	15	0	
CAAIC2050 (SCAIC0021B)	9531535	340600002	TAIWAN-SP	COMP	15	0	
STRESS: EXTERNAL VISUAL							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.47V), PRE COND 192 HR 30C/60%RH, MSL3							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	128	47	0	
CAAIC2050 (SCAIC0021B)	9531535	340600002	TAIWAN-SP	128	45	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CAAIC2050 (SCAIC0021B)	9531535	340600001	TAIWAN-SP	500	50	0	
CAAIC2050 (SCAIC0021B)	9531535	340600001	TAIWAN-SP	1000	49	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	168	50	0	
STRESS: X-RAY							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	COMP	15	0	
CAAIC2050 (SCAIC0021B)	9531535	340600001	TAIWAN-SP	COMP	15	0	
STRESS: X-SECTION							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	COMP	5	0	
CAAIC2050 (SCAIC0021B)	9531535	340600001	TAIWAN-SP	COMP	5	0	

Reliability Test Data

QTP #: 061703

<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: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3							
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	300	50	0	
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	500	50	0	
CAAIC2050 (SCAIC0021B)	9531535	340600003	TAIWAN-SP	1000	50	0	
CAAIC2050 (SCAIC0021B)	9531535	340600001	TAIWAN-SP	300	50	0	
CAAIC2050 (SCAIC0021B)	9531535	340600001	TAIWAN-SP	500	50	0	
CAAIC2050 (SCAIC0021B)	9531535	340600001	TAIWAN-SP	1000	50	0	
CAAIC2050 (SCAIC0021B)	9531535	340600002	TAIWAN-SP	300	50	0	
CAAIC2050 (SCAIC0021B)	9531535	340600002	TAIWAN-SP	500	49	0	
CAAIC2050 (SCAIC0021B)	9531535	340600002	TAIWAN-SP	1000	49	0	