Cypress Semiconductor
Package Qualification Report

000212 VERSION 1.0
March, 2002

256-ball (17x17mm), 484-bal (23x23mm), 676-ball (27x27mm)

Thin Ball Grid Array (FBGA)

ASE Taiwan (TAIWN-G) Assembly

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
000212	256-ball (17x17mm), 484-bal (23x23mm), 676-ball (27x27mm) Thin Ball Grid Array (FBGA), Die size 306.5 x 361.7mils, MSL3 assembled at ASE Taiwan	July 01

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BB256
Package Outline, Type, or Name:	256-ball Thin Ball Grid Array (FBGA)
Mold Compound Name/Manufacturer:	PLASKON SMT-B-1
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	>28%
Substrate Material:	BT Resin
Lead Finish, Composition / Thickness:	Solder Ball, 63%Sn, 37%Pb
Die Backside Preparation Method/Metallization:	N/A
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	Ablestik 8355F
Die Attach Method:	Epoxy
Bond Diagram Designation:	10-03815
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0um
Thermal Resistance Theta JA °C/W:	29.9°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-41010
Name/Location of Assembly (prime) facility:	ASE Taiwan

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	ASE Taiwan
Fault Coverage:	100%

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BB484
Package Outline, Type, or Name:	484-ball Fine Pitch Ball Grid Array (FBGA)
Mold Compound Name/Manufacturer:	PLASKON SMT-B-1
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	>28%
Substrate Material:	BT Resin
Lead Finish, Composition / Thickness:	Solder Ball, 63%Sn, 37%Pb
Die Backside Preparation Method/Metallization:	N/A
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	Ablestik 8355F
Die Attach Method:	Epoxy
Bond Diagram Designation:	10-03820
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0um
Thermal Resistance Theta JA °C/W:	17.6°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-41010
Name/Location of Assembly (prime) facility:	ASE Taiwan

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	ASE Taiwan
Fault Coverage:	100%

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BB676
Package Outline, Type, or Name:	676-ball Fine Pitch Ball Grid Array (FBGA)
Mold Compound Name/Manufacturer:	PLASKON SMT-B-1
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	>28%
Substrate Material:	BT Resin
Lead Finish, Composition / Thickness:	Solder Ball, 63%Sn, 37%Pb
Die Backside Preparation Method/Metallization:	N/A
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	Ablestik 8355F
Die Attach Method:	Epoxy
Bond Diagram Designation:	10-03821
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0um
Thermal Resistance Theta JA °C/W:	16.8°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-41010
Name/Location of Assembly (prime) facility:	ASE Taiwan

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	ASE Taiwan
Fault Coverage:	100%

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V Cypress Spec. 25-00020	P
Temperature Cycle	JEDEC22, Condition B, -55°C to 125°C Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+5, -0°C	P
High Accelerated Saturation	130°C/1.98V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+5, -0°C	P
Pressure Cooker	121C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 220°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 12-00292	P
Bond Pull	Cypress Spec 12-00292	P
Thermal Shock	125C-55C Cypress Spec 25-00014	P
X-Ray	MIL-STD-883C, Method 2012 Cypress Spec 12-00292	P
Acoustic Microscopy MSL 3	Cypress Spec 25-000104	P

Reliability Test Data
QTP #: 000212

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: THERMAL SHOCK, 125C / -55C							
CY39100V676 (7C39488A)	9050314	*340000432*	TAIWN-G	100	48	0	
CY39100V676 (7C39488A)	9050314	*340000432*	TAIWN-G	200	48	0	
STRESS: BALL SHEAR							
CY39100V256 (7C39481A)	9101432	610104239	TAIWN-G	COMP	15	0	
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	COMP	15	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	COMP	15	0	
STRESS: DIE SHEAR							
CY39100V256 (7C39481A)	9101432	610104239	TAIWN-G	COMP	15	0	
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	COMP	15	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	COMP	15	0	
STRESS: BOND PULL							
CY39100V256 (7C39481A)	9101432	610104239	TAIWN-G	COMP	15	0	
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	COMP	15	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	COMP	15	0	
STRESS: PHYSICAL DIMENSIONS							
CY39100V256 (7C39481A)	9101432	610104239	TAIWN-G	COMP	5	0	
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	COMP	5	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	COMP	5	0	
STRESS: EXTERNAL VISUAL							
CY39100V256 (7C39481A)	9101432	610104239	TAIWN-G	COMP	15	0	
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	COMP	15	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	COMP	15	0	
STRESS: INTERNAL VISUAL							
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	COMP	15	0	
STRESS: X-RAY							
CY39100V256 (7C39481A)	9101432	610104239	TAIWN-G	COMP	15	0	
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	COMP	15	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	COMP	15	0	
STRESS: ACOUSTIC, MSL 3							
CY39100V256 (7C39481A)	9101432	610104239	TAIWN-G	COMP	15	0	
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	COMP	15	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	COMP	15	0	
CY39100V676 (7C39488A)	9050314	610103343	TAIWN -G	COMP	15	0	
CY39100V676 (7C39488A)	9050314	610101708	TAIWN -G	COMP	15	0	

Reliability Test Data
QTP #: 000212

Device	*Fab Lot #*	*Assy Lot #*	*Ass Loc*	*Duration*	*Samp*	*Rej*	*Failure Mechanism*
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY39100V256 (7C39481A)	9101432	610104239	TAIWN -G	COMP	9	0	
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	COMP	9	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	COMP	9	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 1.98V, PRE COND 192 HR 30C/60%RH							
CY39100V676 (7C39488A)	9101432	610106766	TAIWN -G	256	46	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192HRS 30C/60%RH							
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	168	48	0	
STRESS: TC COND. B -55C TO 125C, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	500	48	0	
CY39100V484 (7C39482A)	9101432	610104241	TAIWN -G	1000	48	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	500	48	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	1000	48	0	
CY39100V676 (7C39488A)	9050314	610101708	TAIWN -G	500	48	0	
CY39100V676 (7C39488A)	9050314	610101708	TAIWN -G	1000	48	0	
CY39100V676 (7C39488A)	9050314	610103343	TAIWN -G	500	48	0	
CY39100V676 (7C39488A)	9050314	610103343	TAIWN -G	1000	48	0	
CY39100V256 (7C39481A)	9050314	340000430	TAIWN -G	500	48	0	
CY39100V256 (7C39481A)	9050314	340000430	TAIWN -G	1000	48	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	500	48	0	
CY39100V676 (7C39488A)	9050314	340000432	TAIWN -G	1000	48	0	