

Cypress Semiconductor Package Qualification Report

**QTP# 030102 VERSION 2.0
November, 2003**

48-ball Fine Pitch Ball Grid Array (FBGA)

8 x 9.5 x 1.0m, MSL3, 260°C Reflow

ASE Taiwan (TAIWN-G)

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
030102	48-ball (8 x 9.5 x 1.0m) Fine Pitch Ball Grid Array (FBGA) ASE Taiwan (G) Assembly	July 03
033105	Qualify by extension 8 x 9.5 x 1.0mm and 6 x 8 x 1.0mm 48-ball FBGA assembled ASE-Taiwan (G) using Toshiba G1270MC, Ablestik 2025D D/A Epoxy and SnAg(4%), Cu(0.5%) Pb-Free Solder Balls at 260C Reflow	Sep 03

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BV48
Package Outline, Type, or Name:	48-ball FBGA (8 x 9.5 x 1.0m) Fine Pitch Ball Grid Array
Mold Compound Name/Manufacturer:	G1270/G2270
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:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	Ablestik 2025D
Die Attach Method:	Epoxy
Bond Diagram Designation:	10-05014
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0um
Thermal Resistance Theta JA °C/W:	35.85°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-41027
Name/Location of Assembly (prime) facility:	ASE Taiwan (Taiwan-G)

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	Cypress Philippines (CML-R)
Fault Coverage:	100%

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 = 2.4V, 125°C	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max = 2.4V, 150°C	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V MIL-STD-883, Method 3015.7	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V Cypress Spec. 25-00020	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+5, -0°C	P
High Accelerated Saturation	130°C/3.6V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°C+5, -0°C	P
Pressure Cooker	121C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 260°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	125C, -55C Cypress Spec 25-00014	P
X-Ray	Cypress Spec 12-00292	P
Acoustic Microscopy Test MSL3	Cypress Spec 25-000104	P

Reliability Test Data

QTP #: 030102

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Ass Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3							
CY62167DV30L (7C62167D)	4309094	610316588	TAIWN -G	COMP	15	0	
CY62167DV30L (7C62167D)	4309094	610316809	TAIWN -G	COMP	15	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 2.4V, Vcc Max							
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	96	741	0	
CY62167DV30L (7C62167D)	4306633	610311763	TAIWN -G	96	1568	0	
CY62167DV30L (7C62167D)	4309094	610316958N	TAIWN -G	96	741	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 2.4V, Vcc Max							
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	80	410	0	
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	500	410	0	
CY62167DV30L (7C62167D)	4309094	610316958N	TAIWN -G	80	410	0	
CY62167DV30L (7C62167D)	4309094	610316958N	TAIWN -G	500	410	0	
CY62167DV30L (7C62167D)	4306633	610311763	TAIWN -G	80	409	0	
CY62167DV30L (7C62167D)	4306633	610311763	TAIWN -G	500	408	0	
CY62167DV30L (7C62167D)	4306633	610311763N	TAIWN -G	80	409	0	
CY62167DV30L (7C62167D)	4306633	610311763N	TAIWN -G	500	408	0	
STRESS: BALL SHEAR							
CY62167DV30L (7C62167D)	4310393	610320742	TAIWN -G	COMP	24	0	
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	COMP	10	0	
STRESS: DIE SHEAR							
CY62167DV30L (7C62167D)	4310393	610320742	TAIWN -G	COMP	5	0	
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	COMP	15	0	
STRESS: PHYSICAL DIMENSIONS							
CY62167DV30L (7C62167D)	4310393	610320742	TAIWN -G	COMP	5	0	
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	COMP	5	0	
STRESS: INTERNAL VISUAL							
CY62167DV30L (7C62167D)	4310393	610320742	TAIWN -G	COMP	15	0	
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	COMP	5	0	

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Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	COMP	9	0	
CY62167DV30L (7C62167D)	4306633	610311763	TAIWN -G	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2200V							
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	COMP	9	0	
CY62167DV30L (7C62167D)	4306633	610311763	TAIWN -G	COMP	9	0	
STRESS: BOND PULL							
CY62167DV30L (7C62167D)	4310393	610320742	TAIWN -G	COMP	24	0	
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	COMP	10	0	
STRESS: EXTERNAL VISUAL							
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	COMP	15	0	
CY62167DV30L (7C62167D)	4310393	610320742	TAIWN -G	COMP	315	0	
STRESS: X-RAY							
CY62167DV30L (7C62167D)	4310393	610320742	TAIWN -G	COMP	76	0	
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	COMP	15	0	
CY62167DV30L (7C62167D)	4309094	610316588	TAIWN -G	COMP	15	0	
STRESS: HIGH TEMPERATURE STORAGE, PLASTIC, 150C							
CY62167DV30L (7C62167D)	4309094	610316588	TAIWN -G	500	45	0	
CY62167DV30L (7C62167D)	4309094	610316588	TAIWN -G	1000	45	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192 HR 30C/60%RH, MSL3							
CY62167DV30L (7C62167D)	4309094	610316588	TAIWN -G	168	40	0	
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	168	43	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 3.6V), PRE COND 192 HR 30C/60%RH, MSL3							
CY62167DV30L (7C62167D)	4309094	610316588	TAIWN -G	128	44	0	
CY62167DV30L (7C62167D)	4309094	610316809	TAIWN -G	128	43	0	
STRESS: THERMAL SHOCK, 125c / -55C							
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	100	45	0	
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	200	45	0	

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STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	300	45	0	
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	500	45	0	
CY62167DV30L (7C62167D)	4310393	610318262	TAIWN -G	1000	45	0	
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	300	45	0	
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	500	45	0	
CY62167DV30L (7C62167D)	4309094	610316958	TAIWN -G	1000	43	0	
CY62167DV30L (7C62167D)	4309094	610316809	TAIWN -G	300	44	0	
CY62167DV30L (7C62167D)	4309094	610316809	TAIWN -G	500	44	0	
CY62167DV30L (7C62167D)	4309094	610316809	TAIWN -G	1000	44	0	