

Cypress Semiconductor Package Qualification Report

QTP# 045101 VERSION 1.0

January 2006

48-Ball FBGA (Stacked Die)

(8 x 9.5 x 1.2mm)

Pb-Free, MSL3, 260C Reflow

ASE-Taiwan

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

Mira Ben-Tzur
Principal Reliability Engineer
(408) 943-2675

Sabbas Daniel
VP Quality Engineering
(408) 943-2685

PACKAGE QUALIFICATION HISTORY

QUAL REPORT	DESCRIPTION OF QUALIFICATION PURPOSE	DATE COMP.
045101	48-Ball FBGA (Stacked Die) (8 x 9.5 x 1.2mm), Pb-Free, MSL3, 260C Reflow assembled at ASE-Taiwan	Dec 05

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BA48
Package Outline, Type, or Name:	48-Ball FBGA Stacked Die
Mold Compound Name/Manufacturer:	KE-G-2270/Kyocera
Mold Compound Flammability Rating:	UL-94
Oxygen Rating Index:	None
Substrate Material:	BT Resin
Lead Finish, Composition / Thickness:	SnAgCu
Die Backside Preparation Method/Metallization:	Grinding
Die Separation Method:	Blade Sawing, Single Pass
Die Attach Supplier:	Ablestik
Die Attach Material:	Die Attach 1 & 3: Ablestik 2025D Die Attach 2: QMI536
Die Attach Method:	Epoxy
Bond Diagram Designation	10-06832
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au. 1.0 mil
Thermal Resistance Theta JA □C/W:	35.85 °C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-41024
Name/Location of Assembly (prime) facility:	ASE-Taiwan (G)

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
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
Pressure Cooker Test	121°C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
High Accelerated Saturation Test (HAST)	130°C, 3.63V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs 30°C/60%RH+3IR-Reflow, 260°C+0, -5°C	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2,200V JESD22, Method A114-B	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
Acoustics Microscopy	Cypress Spec. 25-00104	P
Thermal Shock	125C, -55C Cypress Spec. 25-00014	P
High Temperature Storage	150C, No Bias	P
Internal Visual	Cypress Spec. 12-00292	P
X-ray	Cypress Spec. 12-00292	P
Die Shear	Cypress Spec. 12-00292	P
Ball Shear	Cypress Spec. 24-00018	P
External Visual	Cypress Spec. 12-00292/25-00103	P
Bond Pull	Cypress Spec. 12-00292	P
Physical Dimension	Cypress Spec. 25-00031	P

Reliability Test Data

QTP #: 045101

<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							
CY62177DV30L (7C62172D)	4447832	610503960	TAIWAN-G	COMP	15	0	
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	COMP	15	0	
CY62177DV30L (7C62172D)	4447832	610504720	TAIWAN-G	COMP	15	0	
STRESS: BALL SHEAR							
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	COMP	15	0	
STRESS: BOND PULL							
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	COMP	10	0	
STRESS: DIE SHEAR							
CY62177DV30L (7C62172D)	4504324	610517374	TAIWAN-G	COMP	15	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY62177DV30L (7C62172D)	4447832	610503960	TAIWAN-G	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-B, 2,200V							
CY62177DV30L (7C62172D)	4447832	610503960	TAIWAN-G	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2,200V							
CY62177DV30L (7C62172D)	4447832	610503960	TAIWAN-G	COMP	3	0	
STRESS: EXTERNAL VISUAL							
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 3.63V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	128	45	0	
STRESS: HIGH TEMPERATURE STORAGE							
CY62177DV30L (7C62172D)	4447832	610503960	TAIWAN-G	500	45	0	
CY62177DV30L (7C62172D)	4447832	610503960	TAIWAN-G	1000	45	0	
STRESS: INTERNAL VISUAL							
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	COMP	5	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192H 30C/60%RH, MSL3							
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	168	45	0	
STRESS: PHYSICAL DIMENSION							
CY62177DV30L (7C62172D)	4504324	610517374	TAIWAN-G	COMP	5	0	

Reliability Test Data

QTP #: 045101

<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 HR 30C/60%RH, MSL3							
CY62177DV30L (7C62172D)	4447832	610503960	TAIWAN-G	300	45	0	
CY62177DV30L (7C62172D)	4447832	610503960	TAIWAN-G	500	45	0	
CY62177DV30L (7C62172D)	4447832	610503960	TAIWAN-G	500	43	0	
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	300	44	0	
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	500	43	0	
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	1000	42	0	
CY62177DV30L (7C62172D)	4447832	610504720	TAIWAN-G	300	45	0	
CY62177DV30L (7C62172D)	4447832	610504720	TAIWAN-G	500	44	0	
CY62177DV30L (7C62172D)	4447832	610504720	TAIWAN-G	1000	44	0	
STRESS: THERMAL SHOCK COND. B - 55C TO 125C							
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	100	45	0	
CY62177DV30L (7C62172D)	4447832	610504454	TAIWAN-G	200	45	0	
STRESS: X-RAY							
CY62177DV30L (7C62172D)	4504324	610517374	TAIWAN-G	COMP	15	0	