

Cypress Semiconductor Package Qualification Report

**QTP# 071405 VERSION 1.0
January 2009**

**All VFPGA packages
SnAgCu, MSL3, 260°C Reflow
ASE-Taiwan**

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

QUAL REPORT	DESCRIPTION OF QUALIFICATION PURPOSE	DATE COMP.
054006	Qualify ASE-Taiwan using Sn (98%)/Ag (1.0%)/Cu (0.5%) Solder Ball Alloy (0.3mm Ball Diameter) for Compal Products and Buildkit Only	Dec 05
071405	Qualify ASE Taiwan for R95 16Meg VFBGA packages using G2270 Mold Compound, Tape film Hitachi FH900 Die attach and SnAgCu Solder ball composition	May 07

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION

Package Designation:	BZ48
Package Outline, Type, or Name:	48-Balls Very Fine Pitch Ball Grid Array (VFBGA)
Mold Compound Name/Manufacturer:	Kyocera G2270
Mold Compound Flammability Rating:	UL-94 V0
Mold Compound Alpha Emission Rate:	0.001 C/cm2.h
Oxygen Rating Index:	>28%
Substrate Material:	BT resin
Solder Ball Composition / Thickness:	Sn (98.5%) Ag (1.0%) Cu (0.5%)
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	100% Saw
Die Attach Supplier:	Hitachi
Die Attach Material:	FH900
Die Attach Method:	Epoxy
Bond Diagram Designation:	001-08355
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au/1.0mil
Thermal Resistance Theta JA °C/W :	28.71C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-15417
Name/Location of Assembly (prime) facility:	ASE-Taiwan
MSL Level:	3
Reflow Profile:	260C

ELECTRICAL TEST / FINISH DESCRIPTION

Test Location:	CML-R
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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=1.85V, 125°C	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max=1.85V, 150°C	P
High Accelerated Saturation Test (HAST)	130°C, 3.6V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C /60%RH + 3IR-Reflow, 260°C+0, -5°C	P
Pressure Cooker	121°C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30°C /60%RH + 3IR-Reflow, 260°C+0, -5°C	P
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
Acoustic Microscopy	Cypress Spec 25-00104	P
Constructional Analysis	Cypress Spec 25-20035	P
Cross Section	Cypress Spec 25-00007	P
Die Shear	Cypress Spec 12-00292	P
Drop Test	JESD22-B111	P
Dye Penetrant Test	Cypress Spec 25-00046	P
External Visual	Cypress Spec 25-00038	P
Electrical Characterization	JESD47	P
Internal Visual	Cypress Spec 12-00292	P
X-Ray	MIL-STD-883-2012	P

Reliability Test Data

QTP #: 054006

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: DROP TEST							
CY62167DV30L (7C62167D)	4309094	610316588	TAIWN -G	COMP	15	0	
STRESS: EXTERNAL VISUAL							
CY62167DV30L (7C62167D)	4309094	610316588	TAIWN -G	COMP	15	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	
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	

Reliability Test Data

QTP #: 071405

<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							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	COMP	15	0	
CY62167EV30 (7C62167FC)	4632963	610702733	TAIWAN-G	COMP	15	0	
CY62167EV30 (7C62167FC)	4632963	610702735	TAIWAN-G	COMP	15	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY62167EV30 (7C62167FC)	4632963	610702733	TAIWAN-G	COMP	5	0	
STRESS: DIE SHEAR							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	COMP	15	0	
CY62167EV30 (7C62167FC)	4632963	610702733	TAIWAN-G	COMP	15	0	
CY62167EV30 (7C62167FC)	4632963	610702735	TAIWAN-G	COMP	15	0	
STRESS: DYE PENETRANT TEST							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	COMP	15	0	
CY62167EV30 (7C62167FC)	4632963	610702733	TAIWAN-G	COMP	15	0	
CY62167EV30 (7C62167FC)	4632963	610702735	TAIWAN-G	COMP	15	0	
STRESS: ELECTRICAL CHARACTERIZATION							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	COMP	30	0	
STRESS: HI-ACCEL SATURATION TEST, (130C, 3.6V), 85%RH, PRE COND 192 HR 30C/60%RH, MSL3							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	128	44	0	
CY62167EV30 (7C62167FC)	4632963	610702735	TAIWAN-G	128	38	0	
CY62167EV30 (7C62167FC)	4632963	610702735A	TAIWAN-G	128	38	1	EOS- FA# 062207 -2AA1
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 1.85V, Vcc Max)							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	96	1909	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 1.85V, Vcc Max)							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	80	400	0	
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	500	400	0	
STRESS: INTERNAL VISUAL							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	COMP	5	0	
CY62167EV30 (7C62167FC)	4632963	610702733	TAIWAN-G	COMP	5	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192HRS 30C/60%RH, MSL3							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	168	50	0	
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	288	50	0	
CY62167EV30 (7C62167FC)	4632963	610702735	TAIWAN-G	168	75	0	

Reliability Test Data

QTP #: 071405

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TC COND. -65C TO 150 C, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	300	50	0	
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	500	50	0	
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	1000	50	0	
CY62167EV30 (7C62167FC)	4632963	610702733	TAIWAN-G	300	50	0	
CY62167EV30 (7C62167FC)	4632963	610702733	TAIWAN-G	500	50	0	
CY62167EV30 (7C62167FC)	4632963	610702733	TAIWAN-G	1000	49	0	
CY62167EV30 (7C62167FC)	4632963	610702735	TAIWAN-G	300	50	0	
CY62167EV30 (7C62167FC)	4632963	610702735	TAIWAN-G	500	35	0	
CY62167EV30 (7C62167FC)	4632963	610702735	TAIWAN-G	1000	50	0	
STRESS: X-RAY							
CY62167EV30 (7C62167FC)	4631509	610672951	TAIWAN-G	COMP	15	0	
CY62167EV30 (7C62167FC)	4632963	610702733	TAIWAN-G	COMP	15	0	