

Cypress Semiconductor Package Qualification Report

**QTP# 033902 VERSION 1.0
November, 2003**

48-ball Fine Pitch Ball Grid Array (FBGA)

(7 x 8.5 x 1.2mm) MSL3, 240°C Reflow

GAPT- China

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date Comp
033902	48-ball Fine Pitch Ball Grid Array (FBGA), (7 x 8.5 x 1.2mm) MLS3, 240C Solder Relfow, GAPT-China (GK) Assembly	Oct 03

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	BA48
Package Outline, Type, or Name:	48-ball Fine Pitch Ball Grid Array (FBGA)
Mold Compound Name/Manufacturer:	SMT-B1LAS-Plascon
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:	Grinding
Die Separation Method:	Sawing
Die Attach Supplier:	CRM
Die Attach Material:	1580A
Die Attach Method:	Epoxy
Bond Diagram Designation:	10-04879
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au, 1.0Mil
Thermal Resistance Theta JA °C/W:	96°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-07099
Name/Location of Assembly (prime) facility:	GAPT-China (GK)

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 Latent Failure Rate	Dynamic Operating Condition, Vcc Max = 2.07V, 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, 240°C+5, -0°C	P
High Accelerated Saturation	130°C/1.98V, 85%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 240°C+5, -0°C	P
Pressure Cooker	121C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL3 192 Hrs., 30°C/60%RH+3IR-Reflow, 240°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 #: 033902

<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							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	15	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	COMP	15	0	
CY62147CV18ALL (7C623472C)	4239420	610309534	CHINA-GK	COMP	15	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 2.07V, Vc c Max							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	80	120	0	
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	500	120	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	80	120	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	500	120	0	
CY62147CV18ALL (7C623472C)	4239420	610309534	CHINA-GK	80	120	0	
CY62147CV18ALL (7C623472C)	4239420	610309534	CHINA-GK	500	120	0	
STRESS: BALL SHEAR							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	10	0	
STRESS: DIE SHEAR							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	5	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	COMP	5	0	
CY62147CV18ALL (7C623472C)	4239420	610309534	CHINA-GK	COMP	5	0	
STRESS: PHYSICAL DIMENSIONS							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	5	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	COMP	5	0	
CY62147CV18ALL (7C623472C)	4239420	610309534	CHINA-GK	COMP	5	0	
STRESS: INTERNAL VISUAL							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	5	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	COMP	5	0	
CY62147CV18ALL (7C623472C)	4239420	610309534	CHINA-GK	COMP	5	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2200V							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	9	0	

Reliability Test Data

QTP #: 033902

<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: BOND PULL							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	10	0	
STRESS: EXTERNAL VISUAL							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	15	0	
STRESS: X-RAY							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	COMP	15	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	COMP	15	0	
CY62147CV18ALL (7C623472C)	4239420	610309534	CHINA-GK	COMP	15	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), PRE COND 192 HR 30C/60%RH, MSL3							
CY62147CV18ALL (7C623472C)	4240453	610301866	CHINA-GK	168	50	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 1.98V), PRE COND 192 HR 30C/60%RH, MSL3							
CY62147CV18ALL (7C623472C)	4240453	610301866	CHINA-GK	128	48	0	
STRESS: THERMAL SHOCK, 125c / -55C							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	100	48	0	
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	200	48	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	300	49	0	
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	500	49	0	
CY62147CV18ALL (7C623472C)	4239420	610309532	CHINA-GK	1000	48	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	300	50	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	500	50	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	1000	47	0	
CY62147CV18ALL (7C623472C)	4239420	610309533	CHINA-GK	300	50	0	
CY62147CV18ALL (7C623472C)	4239420	610309534	CHINA-GK	500	50	0	
CY62147CV18ALL (7C623472C)	4239420	610309534	CHINA-GK	1000	48	0	