

Cypress Semiconductor Package Qualification Report

**QTP# 031606 VERSION 1.0
December, 2003**

48-ball Fine Pitch Ball Grid Array (FBGA)

6 x 8 x 1.0mm, MSL3, 240°C IR Reflow

GAPT - China

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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(408) 943-2732

PACKAGE QUALIFICATION HISTORY

| QUAL REPORT | DESCRIPTION OF QUALIFICATION PURPOSE | DATE COMP. |
|--------------------|---|-------------------|
| 031606 | 48-ball (6 x 8 x 1.0mm) FBGA, MSL3, 240C IR Reflow Peak at GAPT using larger die. | Nov 03 |

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION | |
|---|--|
| Package Designation: | BV48 |
| Package Outline, Type, or Name: | Very Fine-Pitch Ball Grid Array VFBGA |
| Mold Compound Name/Manufacturer: | Plaskon SMT B-I LAS |
| Mold Compound Flammability Rating: | V-O per UL 94 |
| Oxygen Rating Index: | >28% |
| Substrate Material: | BT |
| Lead Finish, Composition / Thickness: | Solder Balls 63%Sn - 37% Pb |
| Die Backside Preparation Method/Metallization: | Grinding |
| Die Separation Method: | Sawing |
| Die Attach Supplier: | Samsung |
| Die Attach Material: | CRM 1580A |
| Bond Diagram Designation | 10-04776 |
| 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: | Global Advance Packaging Technology (GAPT) - China |

| ELECTRICAL TEST / FINISH DESCRIPTION | |
|---|-------|
| Test Location: | CML-R |
| Fault Coverage: | 100% |

Note: Please contact a Cypress Representative for other packages availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

| 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 MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 240°C+5, -0°C | P |
| High Accelerated Saturation Test | 130°C, 1.98V,85%RH MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 240°C+5, -0°C | P |
| Pressure Cooker Test | 121C, 100%RH MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 240°C+5, -0°C | P |
| Internal Visual | Cypress Specification 25-00017 | P |
| Bond Pull | Cypress Spec 24-00002 | P |
| Ball Shear | Cypress Specification 12-00292 | P |
| Die Shear | Cypress Specification 12-00292 | P |
| Electrostatic Discharge Charge Device Model (ESD-CDM) | 500V Cypress Spec. 25-00020 | P |
| Electrostatic Discharge Human Body Model (ESD-HBM) | 2,200V MIL-STD-883, Method 3015.7 | P |
| Thermal Shock | 125C, -55C Cypress Spec 25-00014 | P |
| X-Ray | MIL-STD-883-2012 | P |
| Acoustic Microscopy, MSL3 | Cypress Spec 25-00104 | P |

Reliability Test Data

QTP #: 031606

| <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 MICROSCOPE, MSL3 | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318455 | GAPT-GK | COMP | 15 | 0 | |
| CY62157DV20ALL | 4303001 | 610318455 | GAPT-GK | COMP | 15 | 0 | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | COMP | 15 | 0 | |
| STRESS: ESD-CHARGE DEVICE MODEL, 500V | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | COMP | 9 | 0 | |
| STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2,200V | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | COMP | 9 | 0 | |
| STRESS: THERMAL SHOCK, CONDITION B 125C, -55C | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | 100P | 50 | 0 | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | 100P | 49 | 0 | |
| STRESS: INTERNAL VISUAL | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | COMP | 5 | 0 | |
| STRESS: X-RAY | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | COMP | 15 | 0 | |
| STRESS: DIE SHEAR | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318455 | GAPT-GK | COMP | 5 | 0 | |
| CY62157DV20ALL | 4303001 | 610318456 | GAPT-GK | COMP | 5 | 0 | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | COMP | 5 | 0 | |
| STRESS: BOND PULL | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | COMP | 10 | 0 | |
| STRESS: BALL SHEAR | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | COMP | 10 | 0 | |
| STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 1.98V, PRE COND 192 Hrs., 30C/60%RH, MSL3 | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | 128 | 45 | 0 | |
| STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 Hrs., 30C/60%RH, MSL3 | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | 168 | 43 | 0 | |

Reliability Test Data

QTP #: 031606

| <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 CONDITION C, -65C TO 150C, PRE COND. 192 Hrs., 30C/60%RH, MSL3 | | | | | | | |
| CY62157DV20ALL | 4303001 | 610318455 | GAPT-GK | 300 | 50 | 0 | |
| CY62157DV20ALL | 4303001 | 610318455 | GAPT-GK | 500 | 50 | 0 | |
| CY62157DV20ALL | 4303001 | 610318455 | GAPT-GK | 1000 | 50 | 0 | |
| CY62157DV20ALL | 4303001 | 610318456 | GAPT-GK | 300 | 50 | 0 | |
| CY62157DV20ALL | 4303001 | 610318456 | GAPT-GK | 500 | 49 | 0 | |
| CY62157DV20ALL | 4303001 | 610318456 | GAPT-GK | 1000 | 49 | 0 | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | 300 | 50 | 0 | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | 500 | 50 | 0 | |
| CY62157DV20ALL | 4303001 | 610318457 | GAPT-GK | 1000 | 49 | 0 | |