

# **Cypress Semiconductor Product Qualification Report**

**QTP# 065001 VERSION 1.0  
April 2007**

| <b>USB5CR Product Family<br/>S4AD-5 Technology, GSMC</b> |                                                           |
|----------------------------------------------------------|-----------------------------------------------------------|
| <b>CY7C602xx</b>                                         | <b>Wireless enCoRe™ II<br/>Microcontroller</b>            |
| <b>CY7C63310<br/>CY7C638xx</b>                           | <b>enCoRe™ II Low-Speed USB<br/>Peripheral Controller</b> |

## **CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:**

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### PRODUCT QUALIFICATION HISTORY

| <b>Qual<br/>Report</b> | <b>Description of Qualification Purpose</b>                        | <b>Date<br/>Comp</b> |
|------------------------|--------------------------------------------------------------------|----------------------|
| 060605                 | Qualify GSMC using PSoC Device Product Family on S4AD-5 Technology | Aug 06               |
| 065001                 | USB5CR Product Family on S4AD-5 Technology transfer to GSMC        | Apr 07               |

| PRODUCT DESCRIPTION (for qualification)                                            |                                                                       |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Qualification Purpose: Transfer USB5CR Product Family on S4AD-5 Technology to GSMC |                                                                       |
| Marketing Part #:                                                                  | CY7C602xx, CY7C63310, CY7C638xx                                       |
| Device Description:                                                                | Low Speed USB Peripheral Controller                                   |
| Cypress Division:                                                                  | Cypress Semiconductor Corporation – Consumer and Computation Division |

| TECHNOLOGY/FAB PROCESS DESCRIPTION S4AD-5         |                                                     |                    |                                                                              |
|---------------------------------------------------|-----------------------------------------------------|--------------------|------------------------------------------------------------------------------|
| Number of Metal Layers:                           | 2                                                   | Metal Composition: | Metal 1: 250A TiN/5,800A Al/700A TiN<br>Metal 2: 500A TiN/8,000A Al/250A TiN |
| Passivation Type and Materials:                   | 7,000A TeOs / 6,000A Si <sub>3</sub> N <sub>4</sub> |                    |                                                                              |
| Generic Process Technology/Design Rule (μ-drawn): | Single Poly, Double Metal, 0.35 μm                  |                    |                                                                              |
| Gate Oxide Material/Thickness (MOS):              | SiO <sub>2</sub> / 100A                             |                    |                                                                              |
| Name/Location of Die Fab (prime) Facility:        | Grace Semiconductor Manufacturing / Shanghai, China |                    |                                                                              |
| Die Fab Line ID/Wafer Process ID:                 | Fab 5 / S4AD-5                                      |                    |                                                                              |

#### PACKAGE AVAILABILITY

| PACKAGE           | ASSEMBLY SITE FACILITY | TEST SITE FACILITY     |
|-------------------|------------------------|------------------------|
| 1618/24-Lead SOIC | CML-RA, PHIL-M, CML-R  | CML-R, CML-RA          |
| 16/18/24-Pin PDIP | INDNS-O                | INDNS-O                |
| 24-Lead QSOP      | CML-R                  | CML-R                  |
| 32-Lead QFN       | CML-RA, KOREA-L        | CMLR, CML-RA, TAIWN-KY |

**Note:** Package Qualification details upon request.

| MAJOR PACKAGE INFORMATION FOR THIS QUALIFICATION      |                                |
|-------------------------------------------------------|--------------------------------|
| <b>Package Designation:</b>                           | SP28                           |
| <b>Package Outline, Type, or Name:</b>                | 18-Dual In-line Package (PDIP) |
| <b>Mold Compound Name/Manufacturer:</b>               | MP-8500 / Nitto                |
| <b>Mold Compound Flammability Rating:</b>             | V-0 PER UL-94                  |
| <b>Oxygen Rating Index:</b>                           | >28%                           |
| <b>Lead Frame Material:</b>                           | Copper                         |
| <b>Lead Finish, Composition / Thickness:</b>          | Pure Sn                        |
| <b>Die Backside Preparation Method/Metallization:</b> | Backgrind                      |
| <b>Die Separation Method:</b>                         | 100% Saw                       |
| <b>Die Attach Supplier:</b>                           | Dexter                         |
| <b>Die Attach Material:</b>                           | QMI509                         |
| <b>Die Attach Method:</b>                             | Epoxy                          |
| <b>Bond Diagram Designation:</b>                      | 10-06215                       |
| <b>Wire Bond Method:</b>                              | Thermosonic                    |
| <b>Wire Material/Size:</b>                            | Au. 1.0mil                     |
| <b>Thermal Resistance Theta JA °C/W:</b>              | 90.0°C/W                       |
| <b>Package Cross Section Yes/No:</b>                  | N/A                            |
| <b>Assembly Process Flow:</b>                         | 001-03750                      |
| <b>Name/Location of Assembly (prime) facility:</b>    | INDNS-O                        |
| <b>MSL Level</b>                                      | 1                              |
| <b>Reflow Profile</b>                                 | 260C                           |

# RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

| Stress/Test                                              | Test Condition<br>(Temp/Bias)                                                                                                                                       | Result<br>P/F |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| High Temperature Operating Life<br>Early Failure Rate    | Dynamic Operating Condition, Vcc Max=5.5V, 125°C                                                                                                                    | P             |
| High Temperature Operating Life<br>Latent Failure Rate   | Dynamic Operating Condition, Vcc Max=5.5V, 125°C                                                                                                                    | P             |
| High Temperature Steady State life                       | 125°C, 5.5V, Vcc Max                                                                                                                                                | P             |
| Low Temperature Operating Life                           | -30°C, 5.5V                                                                                                                                                         | P             |
| High Accelerated Saturation Test<br>(HAST)               | 130°C, 5.25V, 85%RH<br>Precondition: JESD22 Moisture Sensitivity Level 1<br>168 Hrs, 85C/85%RH+3IR-Reflow, <b>260°C</b> +0, -5°C                                    | P             |
| Temperature Cycle                                        | MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C<br>Precondition: JESD22 Moisture Sensitivity Level 1<br>168 Hrs, 85C/85%RH+3IR-Reflow, <b>260°C</b> +0, -5°C | P             |
| Pressure Cooker                                          | 121°C, 100%RH, 15 Psig<br>Precondition: JESD22 Moisture Sensitivity Level 1<br>168 Hrs, 85C/85%RH+3IR-Reflow, <b>260°C</b> +0, -5°C                                 | P             |
| Acoustic Microscopy                                      | Cypress. Spec. 25-00104                                                                                                                                             | P             |
| Age Bond Strength                                        | 200C, 4hrs<br>MIL-STD-883, Method 883-2011                                                                                                                          | P             |
| Data Retention                                           | 150°C ± 5°C No Bias<br>Cypress Spec. 25-00060                                                                                                                       | P             |
| Dynamic Latch-up                                         | 125C, 8.5V                                                                                                                                                          | P             |
| Electrostatic Discharge<br>Human Body Model (ESD-HBM)    | 2,200V<br>JESD22, Method A114-B                                                                                                                                     | P             |
| Electrostatic Discharge<br>Human Body Model (ESD-HBM)    | 2,200V<br>MIL-STD-883, Method 3015.7                                                                                                                                | P             |
| Electrostatic Discharge<br>Charge Device Model (ESD-CDM) | 500V<br>Cypress Spec. 25-00020                                                                                                                                      | P             |
| Endurance Test                                           | MIL-STD-883, Method 883-1033                                                                                                                                        | P             |
| Static Latch-up                                          | 125C, ± 200mA<br>Cypress Spec. 01-00081                                                                                                                             | P             |

### RELIABILITY FAILURE RATE SUMMARY

| Stress/Test                                                              | Device Tested/<br>Device Hours | #<br>Fails | Activation<br>Energy | Thermal <sup>3</sup><br>A.F | Failure<br>Rate |
|--------------------------------------------------------------------------|--------------------------------|------------|----------------------|-----------------------------|-----------------|
| High Temperature Operating Life<br>Early Failure Rate <sup>1</sup>       | 3,057 Devices                  | 1          | N/A                  | N/A                         | 327 PPM         |
| High Temperature Operating Life <sup>1,2</sup><br>Long Term Failure Rate | 720,000DHRs                    | 0          | 0.7                  | 55                          | 23 FIT          |

<sup>1</sup> Assuming an ambient temperature of 55°C and a junction temperature rise of 15°C.

<sup>2</sup> Chi-squared 60% estimations used to calculate the failure rate.

<sup>3</sup> Thermal Acceleration Factor is calculated from the Arrhenius equation

$$AF = \exp \left[ \frac{E_A}{k} \left[ \frac{1}{T_2} - \frac{1}{T_1} \right] \right]$$

Where:

E<sub>A</sub> = The Activation Energy of the defect mechanism.

k = Boltzmann's constant = 8.62x10<sup>-5</sup> eV/Kelvin.

T<sub>1</sub> is the junction temperature of the device under stress and T<sub>2</sub> is the junction temperature of the device at use conditions.

## Reliability Test Data

QTP #: 060605

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|--------|-----------|------------|----------|----------|------|-----|-------------------|
|--------|-----------|------------|----------|----------|------|-----|-------------------|

### STRESS: ACOUSTIC, MSL1

|                      |         |           |        |      |    |   |  |
|----------------------|---------|-----------|--------|------|----|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | COMP | 15 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | COMP | 15 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | COMP | 15 | 0 |  |

### STRESS: AGE BOND STRENGTH

|                      |         |           |        |      |    |   |  |
|----------------------|---------|-----------|--------|------|----|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | COMP | 10 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | COMP | 10 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | COMP | 10 | 0 |  |

### STRESS: DATA RETENTION, PLASTIC, 150C

|                      |         |           |        |      |     |   |  |
|----------------------|---------|-----------|--------|------|-----|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 336  | 256 | 0 |  |
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 1000 | 256 | 0 |  |
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 1500 | 256 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | 336  | 256 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | 1000 | 256 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | 336  | 256 | 0 |  |

### STRESS: ENDURANCE

|                      |         |            |        |      |    |   |  |
|----------------------|---------|------------|--------|------|----|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687A | PHIL-M | COMP | 47 | 0 |  |
|----------------------|---------|------------|--------|------|----|---|--|

### STRESS: ESD-CHARGE DEVICE MODEL, (500V)

|                      |         |           |        |      |   |   |  |
|----------------------|---------|-----------|--------|------|---|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | COMP | 9 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | COMP | 9 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | COMP | 9 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635880 | PHIL-M | COMP | 9 | 0 |  |
| CY8C24494 (8C24795A) | 9623716 | 610639349 | SEOL-L | COMP | 9 | 0 |  |
| CY8C24494 (8C24995A) | 9623716 | 610639350 | SEOL-L | COMP | 9 | 0 |  |

### STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-B, (2,200V)

|                      |         |           |        |      |   |   |  |
|----------------------|---------|-----------|--------|------|---|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | COMP | 9 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | COMP | 9 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635880 | PHIL-M | COMP | 9 | 0 |  |
| CY8C24494 (8C24995A) | 9623716 | 610639350 | SEOL-L | COMP | 9 | 0 |  |

## Reliability Test Data

QTP #: 060605

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|--------|-----------|------------|----------|----------|------|-----|-------------------|
|--------|-----------|------------|----------|----------|------|-----|-------------------|

**STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, (2,200V)**

|                      |         |           |        |      |   |   |  |
|----------------------|---------|-----------|--------|------|---|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | COMP | 3 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | COMP | 3 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635880 | PHIL-M | COMP | 3 | 0 |  |
| CY8C24494 (8C24995A) | 9623716 | 610639350 | SEOL-L | COMP | 3 | 0 |  |

**STRESS: STATIC LATCH-UP TESTING (125C, 8.5V, +/-200mA)**

|                      |         |           |        |      |   |   |  |
|----------------------|---------|-----------|--------|------|---|---|--|
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | COMP | 3 | 0 |  |
| CY8C24494 (8C24994A) | 9621713 |           | C-USA  | COMP | 3 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610638054 | SEOL-L | COMP | 3 | 0 |  |
| CY8C24494 (8C24995A) | 9623716 | 610639350 | SEOL-L | COMP | 3 | 0 |  |

**STRESS: DYNAMIC LATCH-UP (125C, 8.5V)**

|                      |         |           |        |      |   |   |  |
|----------------------|---------|-----------|--------|------|---|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | COMP | 2 | 0 |  |
|----------------------|---------|-----------|--------|------|---|---|--|

**STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 5.5V, Vcc Max)**

|                      |         |           |        |    |      |   |                  |
|----------------------|---------|-----------|--------|----|------|---|------------------|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 96 | 1005 | 0 |                  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | 96 | 1144 | 0 |                  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | 96 | 908  | 1 | CAPACITOR DEFECT |

**STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 5.5V, Vcc Max)**

|                      |         |            |        |      |      |   |  |
|----------------------|---------|------------|--------|------|------|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687  | PHIL-M | 168  | 180  | 0 |  |
| CY8C24494 (8C24494A) | 9621713 | 610632687  | PHIL-M | 1000 | 1800 |   |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580  | PHIL-M | 168  | 180  | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580  | PHIL-M | 1000 | 180  | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767  | PHIL-M | 168  | 180  | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767  | PHIL-M | 1000 | 180  | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767A | PHIL-M | 1000 | 180  | 0 |  |

**STRESS: HIGH TEMP STEADY STATE LIFE TEST (125C, 5.5V)**

|                      |         |           |        |     |    |   |  |
|----------------------|---------|-----------|--------|-----|----|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 168 | 80 | 0 |  |
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 336 | 80 | 0 |  |

**STRESS: LOW TEMPERATURE DYNAMIC OPERATING LIFE, -30C, 5.5V**

|                      |         |           |        |     |    |   |  |
|----------------------|---------|-----------|--------|-----|----|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 500 | 45 | 0 |  |
|----------------------|---------|-----------|--------|-----|----|---|--|

## Reliability Test Data

**QTP #: 060605**

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|--------|-----------|------------|----------|----------|------|-----|-------------------|
|--------|-----------|------------|----------|----------|------|-----|-------------------|

**STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.25V), PRE COND 168 HR 85C/85%RH (MSL1)**

|                      |         |           |        |     |    |   |  |
|----------------------|---------|-----------|--------|-----|----|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 128 | 49 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | 128 | 49 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | 128 | 49 | 0 |  |

**STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 168 HR 85C/85%RH (MSL1)**

|                      |         |           |        |     |    |   |  |
|----------------------|---------|-----------|--------|-----|----|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 168 | 50 | 0 |  |
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 288 | 50 | 0 |  |
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 500 | 47 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | 168 | 50 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | 168 | 50 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | 288 | 50 | 0 |  |

**STRESS: TC COND. C -65C TO 150C, PRE COND 168 HRS 85C/85%RH (MSL1)**

|                      |         |           |        |      |    |   |  |
|----------------------|---------|-----------|--------|------|----|---|--|
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 300  | 50 | 0 |  |
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 500  | 50 | 0 |  |
| CY8C24494 (8C24494A) | 9621713 | 610632687 | PHIL-M | 1000 | 50 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | 300  | 50 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | 500  | 49 | 0 |  |
| CY8C24494 (8C24494A) | 9623715 | 610635580 | PHIL-M | 1000 | 49 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | 300  | 50 | 0 |  |
| CY8C24494 (8C24494A) | 9623716 | 610639767 | PHIL-M | 500  | 49 | 0 |  |

## Reliability Test Data

QTP #: 065001

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|--------|-----------|------------|----------|----------|------|-----|-------------------|
|--------|-----------|------------|----------|----------|------|-----|-------------------|

**STRESS: DATA RETENTION, PLASTIC, 150C**

|                       |         |           |         |      |    |   |  |
|-----------------------|---------|-----------|---------|------|----|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 500  | 77 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 1000 | 77 | 0 |  |

**STRESS: ENDURANCE (25C, 1000 Cycles, Bake 150C, 168hrs)**

|                       |         |           |         |     |    |   |  |
|-----------------------|---------|-----------|---------|-----|----|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 168 | 88 | 0 |  |
|-----------------------|---------|-----------|---------|-----|----|---|--|

**STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 5.5V, Vcc Max)**

|                       |         |           |         |    |     |   |  |
|-----------------------|---------|-----------|---------|----|-----|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 96 | 789 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 96 | 403 | 0 |  |

**STRESS: ESD-CHARGE DEVICE MODEL, (500V)**

|                       |         |           |         |      |   |   |  |
|-----------------------|---------|-----------|---------|------|---|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | COMP | 9 | 0 |  |
|-----------------------|---------|-----------|---------|------|---|---|--|

**STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114-B, (2,200V)**

|                       |         |           |         |      |   |   |  |
|-----------------------|---------|-----------|---------|------|---|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | COMP | 8 | 0 |  |
|-----------------------|---------|-----------|---------|------|---|---|--|

**STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.25V), PRE COND 40 Temp Cycles**

|                       |         |           |         |     |    |   |  |
|-----------------------|---------|-----------|---------|-----|----|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 128 | 46 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700276 | INDNS-O | 128 | 46 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700275 | INDNS-O | 128 | 46 | 0 |  |

**STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 5.5V, Vcc Max)**

|                       |         |           |         |     |     |   |  |
|-----------------------|---------|-----------|---------|-----|-----|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 168 | 196 | 0 |  |
|-----------------------|---------|-----------|---------|-----|-----|---|--|

**STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 40 Temp Cycles**

|                       |         |           |         |     |    |   |  |
|-----------------------|---------|-----------|---------|-----|----|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 168 | 46 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700276 | INDNS-O | 128 | 46 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700275 | INDNS-O | 128 | 45 | 0 |  |

**STRESS: STATIC LATCH-UP TESTING (125C, 8.5V, +/-200mA)**

|                       |         |           |         |      |   |   |  |
|-----------------------|---------|-----------|---------|------|---|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | COMP | 3 | 0 |  |
|-----------------------|---------|-----------|---------|------|---|---|--|

**STRESS: INTERNAL VISUAL**

|                       |         |           |         |      |   |   |  |
|-----------------------|---------|-----------|---------|------|---|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | COMP | 5 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700276 | INDNS-O | COMP | 5 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700275 | INDNS-O | COMP | 5 | 0 |  |

## **Reliability Test Data**

**QTP #: 065001**

| <b>Device</b> | <b>Fab Lot #</b> | <b>Assy Lot #</b> | <b>Assy Loc</b> | <b>Duration</b> | <b>Samp</b> | <b>Rej</b> | <b>Failure Mechanism</b> |
|---------------|------------------|-------------------|-----------------|-----------------|-------------|------------|--------------------------|
|---------------|------------------|-------------------|-----------------|-----------------|-------------|------------|--------------------------|

**STRESS: TC COND. C -65C TO 150C, PRE COND 40 Temp Cycles**

|                       |         |           |         |     |    |   |  |
|-----------------------|---------|-----------|---------|-----|----|---|--|
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 300 | 46 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700277 | INDNS-O | 500 | 43 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700276 | INDNS-O | 300 | 46 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700276 | INDNS-O | 500 | 46 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700275 | INDNS-O | 300 | 46 | 0 |  |
| CY7C63813 (7C63811BK) | 9651744 | 510700275 | INDNS-O | 500 | 46 | 0 |  |