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# Cypress Semiconductor
# Product Qualification Plan

**QTP# 113005**
**January 2013**

| 64K Serial Non-Volatile SRAM Product Family<br>S8 Technology, CMI (Fab 4) | |
|---|---|
| **CY14MB064Q2B**<br>**CY14MB064Q1B** | **3V, 64-KBIT (8 K X 8) SPI NVSRAM** |
| **CY14ME064Q2B**<br>**CY14ME064Q1B** | **5V, 64-KBIT (8 K X 8) SPI NVSRAM** |
| **CY14MB064J2A**<br>**CY14MB064J1A** | **3V, 64-KBIT (8 K X 8) SERIAL (I2C) NVSRAM** |
| **CY14ME064J2A**<br>**CY14ME064J1A** | **5V, 64-KBIT (8 K X 8) SERIAL (I2C) NVSRAM** |

**CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:**

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

## QUALIFICATION HISTORY

| Qual Report | | Description of Qualification Purpose | | Date Comp |
|---|---|---|---|---|
| 071304 | | To qualify S8 SONOS technology and 4M nvSRAM devices CY14B104L / CY14B104N (7C14104AC base die) using S8TNV-5R, fabricated at Cypress Minnesota CMI (Fab4) | | Nov 2008 |
| 102204 | | To qualify Indus 1M serial nvSRAM using S8 technology at CMI (Fab4) | | June 2010 |
| 122802 | | To qualify Indus 1M serial nvSRAM 5V device option | | Sep 2012 |
| 113005 | | To Qualify Manas, 64K Serial NVSRAM, in S8TNV-5R Technology, CMI Fab4 | | Nov 2012 |

| PRODUCT DESCRIPTION (for qualification) | |
|---|---|
| Purpose: Qualification of Manas, 64K Serial NVSRAM, in S8TNV-5R Technology, CMI Fab4 | |
| Marketing Part #: | CY14MB064Q2B, CY14MB064Q1B, CY14ME064Q2B, CY14ME064Q1B, CY14MB064J2A, CY14MB064J1A, CY14ME064J2A, CY14ME064J1A |
| Device Description: | 3V & 5V Commercial/Industrial, available in 8Lead SOIC |
| Cypress Division: | Cypress Semiconductor Corporation – MPD |

| TECHNOLOGY/FAB PROCESS DESCRIPTION – S8TNV-5R | | | |
|---|---|---|---|
| Number of Metal Layers: | 3 | Metal Composition: | Metal 1: 100A Ti / 3200A Al -0.5%Cu / 300A TiW<br>Metal 2: 100A Ti / 3200A Al -0.5%Cu / 300A TiW<br>Metal 3: 150A Ti / 7200A Al -0.5%Cu / 300A TiW |
| Passivation Type: | | 7000 +/- 2000A Nitride | |
| Generic Process Technology/Design Rule (drawn): | | S8TNV-5R/0.13µm | |
| Gate Oxide Material/Thickness (MOS): | | SiO2 /110A & SiO2/32A | |
| Name/Location of Die Fab (prime) Facility: | | Cypress Semiconductor -- Bloomington, MN | |
| Die Fab Line ID/Wafer Process ID: | | Fab4 / S8TNV-5 | |

## PACKAGE AVAILABILITY

| PACKAGE | ASSEMBLY FACILITY SITE |
|---|---|
| 8L-SOIC | CML-RA |

**Note:** Package Qualification details upon request

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION | |
|---|---|
| **Package Designation:** | SZ815 |
| **Package Outline, Type, or Name:** | 8-Lead SOIC |
| **Mold Compound Name/Manufacturer:** | MP8500/ Nitto |
| **Mold Compound Flammability Rating:** | V-O per UL94 |
| **Oxygen Rating Index:** | None |
| **Lead Frame Material:** | Copper |
| **Lead Finish, Composition / Thickness:** | NiPdAu |
| **Die Backside Preparation Method/Metallization:** | Backgrind |
| **Die Separation Method:** | 100% Saw |
| **Die Attach Supplier:** | Henkel |
| **Die Attach Material:** | QMI-509 |
| **Die Attach Method:** | Epoxy |
| **Bond Diagram Designation:** | 001-71917 |
| **Wire Bond Method:** | Thermosonic |
| **Wire Material/Size:** | Au / 0.9 mil |
| **Thermal Resistance Theta JA °C/W:** | 101.8°C/W |
| **Package Cross Section Yes/No:** | N/A |
| **Assembly Process Flow:** | 001-69914 |
| **Name/Location of Assembly (prime) facility:** | CML – RA |
| **MSL Level** | 3 |
| **Reflow Profile** | 260C |

## RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENT

| Stress/Test | Test Condition (Temp/Bias) | Result P/F |
|---|---|---|
| High Temperature Operating Life<br>Early Failure Rate (EFR) | Dynamic Operating Condition, 2.7V/3.3V/5.5V, 150°C/48H or 125°C/96H<br>JESD22-A-108-B | P |
| High Temperature Operating Life<br>Latent Failure Rate (LFR) | Dynamic Operating Condition, 2.7V/3.3C/5.5V, 150°C/500H or 125°C/1000H<br>JESD22-A-108-B | P |
| Pre/Post LFR AC/DC Char | AC/DC Critical Parameter Char at LFR 0hrs, 80hrs & 500hrs | P |
| Endurance | 1 Million Cycles @ 90C, Per datasheet | P |
| Data Retention | 150°C, 1000 Hours | P |
| Temperature Cycle | -65$^0$C to 150$^0$C, JESD22-A-104<br>500 Cycs, Require Precondition | P |
| High Accelerated Saturation Test<br>(HAST) | 130°C, 3.63V, 85%RH, JESD22-A-110-B<br>128 Hours, Require Precondition | P |
| Pressure Cooker | 121°C/100%RH, JESD22-A102-C<br>168 Hours, Require Precondition | P |
| Precondition | JESD22 Moisture Sensitivity | P |
| Electrostatic Discharge<br>Human Body Model (ESD-HBM) | 2,200V, JESD22-A114E | P |
| Electrostatic Discharge<br>Charge Device Model (ESD-CDM) | 500V, JESD22-C101C | P |
| Electrostatic Discharge<br>Machine Model (ESD-MM) | 200V, JESD22-A115-A | P |
| Latch-up Sensitivity | 5.4V,± 200mA, 125°C, EIA/JESD78 | P |
| Age Bond Strength | Mil-Std-883, Method 2011 | P |
| Acoustic | MSL 3 | P |
| Soft Error (Alpha Particle) | JESD89A | P |
| Soft Error (Neutron/Proton) | JESD89A | P |
| SEM X-Section | XY audit at center wafer and edge wafer | P |
| Low Temperature Operating Life Test | Dynamic Operating Condition, 2.7V, -30°C, 500 Hours | P |
| High Temp Steady State Life Test | Static Operating Condition, 2.7V, 150°C, 1000 Hours | P |

## RELIABILITY FAILURE RATE SUMMARY

| Stress/Test | Device Tested/ Device Hours | # Fails | Activation Energy | Thermal AF[4] | Failure Rate |
|---|---|---|---|---|---|
| High Temperature Operating Life Early Failure Rate | 4,617 Devices [1] | 0 | N/A | N/A | 0 PPM |
| High Temperature Operating Life[1,2,] Long Term Failure Rate | 537,816 DHRs [2] | 0 | 0.7 | 170 | 9 FITs |
| | 188,640 DHRs [3] | 0 | 0.7 | 55 | |

[1] Assuming an ambient temperature of 55°C and a junction temperature rise of 15°C.
[2] Chi-squared 60% estimations used to calculate the failure rate.
[3] 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:

$E_A$ =The Activation Energy of the defect mechanism.
k = Boltzmann's constant = $8.62 \times 10^{-5}$ eV/Kelvin.
$T_1$ is the junction temperature of the device under stress and $T_2$ is the junction temperature of the device at use conditions.

[1] EFR failure rate data is based on QTP#113005
[2] LFR data from QTP#071304 & QTP#102204
[3] LFR data from QTP#122802 & QTP113005

# Reliability Test Data

## QTP #: 071304

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 2.7V, Vcc Max*** | | | | | | | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | 48 | 1222 | 0 | |
| CY14B104L (7C14104AC) | 4814841 | *610832326* | *CML-RA* | 48 | 1316 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | 48 | 932 | 0 | |
| CY14B104L (7C14104AC) | 4819437 | *610842294* | *CML-RA* | 48 | 813 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 2.7V, Vcc Max*** | | | | | | | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | 500 | 120 | 0 | |
| CY14B104L (7C14104AC) | 4814841 | *610832326* | *CML-RA* | 500 | 120 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | 500 | 119 | 0 | |
| CY14B104L (7C14104AC) | 4819437 | *610842294* | *CML-RA* | 500 | 119 | 0 | |
| ***STRESS: Pre-/ Post HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE CHAR*** | | | | | | | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | 80/500 | 10 | 0 | |
| CY14B104L (7C14104AC) | 4814841 | *610832326* | *CML-RA* | 80/500 | 10 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | 80/500 | 10 | 0 | |
| CY14B104L (7C14104AC) | 4819437 | *610842294* | *CML-RA* | 80/500 | 10 | 0 | |
| ***STRESS: ENDURANCE, 200K CYCLES, 90C*** | | | | | | | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | COMP | 80 | 0 | |
| CY14B104L (7C14104AC) | 4817305 | *610841260* | *CML-RA* | COMP | 77 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | COMP | 160 | 0 | |
| CY14B104L (7C14104AC) | 4819437 | *610842294* | *CML-RA* | COMP | 80 | 0 | |
| CY14B104L (7C14104AC) | 4817306/4818074 | | *CML-RA* | COMP | 3307 | 0 | |
| ***STRESS: DATA RETENTION, 150C*** | | | | | | | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | 1000 | 77 | 0 | |
| CY14B104L (WAFER) | 4817306 | *610830615* | *CML-RA* | 1008 | 228 | 0 | |
| CY14B104L (7C14104AC) | 4817305 | *610841260* | *CML-RA* | 1000 | 80 | 0 | |
| CY14B104L (WAFER) | 4817305 | *610841260* | *CML-RA* | 1008 | 216 | 0 | |
| CY14B104L (7C14104AC) | 4818074 | *N/A* | *CML-RA* | 1000 | 80 | 0 | |
| CY14B104L (WAFER) | 4818074 | *N/A* | *CML-RA* | 1008 | 402 | 0 | |

# Reliability Test Data

## QTP #: 071304

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114-B, 2,200V*** | | | | | | | |
| CY14B104L (7C14104AC) | 4807004 | *610812949* | *CML-RA* | COMP | 8 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | COMP | 8 | 0 | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | COMP | 8 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 500V*** | | | | | | | |
| CY14B104L (7C14104AC) | 4807004 | *610812949* | *CML-RA* | COMP | 9 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | COMP | 9 | 0 | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | COMP | 9 | 0 | |
| ***STRESS: ESD-MACHINE MODEL, 200V*** | | | | | | | |
| CY14B104L (7C14104AC) | 4807004 | *610812949* | *CML-RA* | COMP | 5 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | COMP | 5 | 0 | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | COMP | 5 | 0 | |
| ***STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 1.98V, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | 128 | 77 | 0 | |
| CY14B104L (7C14104AC) | 4814841 | *610832326* | *CML-RA* | 128 | 80 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | 128 | 77 | 0 | |
| ***STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY14B104L (7C14104AC) | 4807004 | *610812949* | *CML-RA* | 168 | 77 | 0 | |
| CY14B104L (7C14104AC) | 4814841 | *610832326* | *CML-RA* | 168 | 80 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | 168 | 77 | 0 | |
| ***STRESS: TEMPERATURE CYCLE COND. C, -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3*** | | | | | | | |
| CY14B104L (7C14104AC) | 4807004 | *610812949* | *CML-RA* | 1000 | 77 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | 1000 | 80 | 0 | |
| CY14B104L (7C14104AC) | 4814841 | *610832326* | *CML-RA* | 500 | 80 | 0 | |
| ***STRESS: STATIC LATCH-UP TESTING, 125C, 5.4V, ±200mA*** | | | | | | | |
| CY14B104L (7C14104AC) | 4807004 | *610812949* | *CML-RA* | COMP | 6 | 0 | |
| CY14B104L (7C14104AC) | 4814841 | *610832326* | *CML-RA* | COMP | 6 | 0 | |
| CY14B104L (7C14104AC) | 4819437 | *610842294* | *CML-RA* | COMP | 6 | 0 | |

# Reliability Test Data

**QTP #: 071304**

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: AGE BOND*** | | | | | | | |
| CY14B104L (7C14104AC) | 4807004 | *610812949* | *CML-RA* | COMP | 10 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | COMP | 10 | 0 | |
| CY14B104L (WAFER) | 4818074 | *N/A* | *CML-RA* | COMP | 10 | 0 | |
| ***STRESS: ACOUSTIC-MSL3*** | | | | | | | |
| CY14B104L (7C14104AC) | 4807004 | *610812949* | *CML-RA* | COMP | 15 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | COMP | 15 | 0 | |
| CY14B104L (7C14104AC) | 4814841 | *610832326* | *CML-RA* | COMP | 15 | 0 | |
| ***STRESS: SER – ALPHA PARTICLE, 3-TEPM, 3-VOLTAGE, FIT=550 FIT/Mbit @ 85C, Vcc Nom*** | | | | | | | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | COMP | 3 | 0 | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | COMP | 3 | 0 | |
| CY14B104L (7C14104AC) | 4819437 | *610842294* | *CML-RA* | COMP | 3 | 0 | |
| ***STRESS: SER – NEUTRON/PROTON*** | | | | | | | |
| CY14B104L (7C14104AC) | 4808220 | *N/A* | *CML-RA* | COMP | 3 | 0 | |
| ***STRESS: LOW TEMPERATURE OPERATING LIFE TEST, -30C, 2.7V, Vcc Max*** | | | | | | | |
| CY14B104L (7C14104AC) | 4817306 | *610830615* | *CML-RA* | 500 | 77 | 0 | |
| ***STRESS: HIGH TEMP STEADY STATE LIFE TEST, 150C, 2.7V, Vcc Max*** | | | | | | | |
| CY14B104L (7C14104AC) | 4811240 | *610819876* | *CML-RA* | 1000 | 76 | 0 | |

# Reliability Test Data

## QTP #: 102204

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 3.3V, Vcc Max*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4033346 | *611113629* | *CML-RA* | 48 | 631 | 0 | |
| CY14MB064J2 (7C14104B) | 4033346 | *611113777* | *CML-RA* | 48 | 1461 | 0 | |
| CY14B101Q2A (7C1431B5A) | 4034960 | *611109619* | *M-PHIL* | 48 | 1073 | 0 | |
| CY14B101Q1A (7C1431B9A) | 4050477 | *611118869* | *CML-RA* | 48 | 883 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 3.3V, Vcc Max*** | | | | | | | |
| CY14B101Q2A (7C1431B5A) | 4034960 | *611109619* | *M-PHIL* | 80 | 1050 | 0 | |
| CY14B101Q2A (7C1431B5A) | 4034960 | *611109619* | *M-PHIL* | 168 | 130 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4033346 | *611113629* | *CML-RA* | 80 | 618 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4033346 | *611113629* | *CML-RA* | 168 | 194 | 0 | |
| CY14MB064J2 (7C14104B) | 4033346 | *611113777* | *CML-RA* | 80 | 1442 | 0 | |
| CY14B101Q1A (7C1431B9A) | 4050477 | *611118869* | *CML-RA* | 168 | 128 | 0 | |
| ***STRESS: Pre-/ Post HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE CHAR*** | | | | | | | |
| CY14B101Q1A (7C1431B9A) | 4050477 | *611118869* | *CML-RA* | COMP | 10 | 0 | |
| CY14ME064Q2A (7C1436E5A) | 4050477 | *611118870* | *CML-RA* | COMP | 10 | 0 | |
| ***STRESS: ENDURANCE, 1M CYCLES+168 HOURS DATA RETENTION*** | | | | | | | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | 168 | 39 | 0 | |
| CY14E101PA (7C1431E3A) | 4032722 | *611056066* | *CML-RA* | 168 | 41 | 0 | |
| ***STRESS: DATA RETENTION (150C)*** | | | | | | | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | 500 | 80 | 0 | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | 1000 | 80 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114-B, 2,200V*** | | | | | | | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | COMP | 8 | 0 | |
| CY14E101Q2A (7C1431E5A) | 4032722 | *611055560* | *CML-RA* | COMP | 8 | 0 | |
| CY14E101J2 (7C1431ECA) | 4032722 | *611056167* | *CML-RA* | COMP | 8 | 0 | |
| CY14E101PA (7C1431E3A) | 4032722 | *611056066* | *M-PHIL* | COMP | 8 | 0 | |
| CY14B101PA (7C1431B3A) | 4032722 | *611056060* | *M-PHIL* | COMP | 8 | 0 | |
| CY14E101Q1A (7C1431E9A) | 4032722 | *611055556* | *CML-RA* | COMP | 8 | 0 | |
| CY14E101PA (7C1431E9A) | 4034960 | 611109616 | M-PHIL | COMP | 8 | 0 | |

# Reliability Test Data

**QTP #: 102204**

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ESD-CHARGE DEVICE MODEL, 500V*** | | | | | | | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | COMP | 9 | 0 | |
| CY14E101PA (7C1431E3A) | 4032722 | *611056066* | *M-PHIL* | COMP | 9 | 0 | |
| CY14B101PA (7C1431B3A) | 4032722 | *611056060* | *M-PHIL* | COMP | 9 | 0 | |
| CY14E101Q1A (7C1431E9A) | 4032722 | *611055556* | *CML-RA* | COMP | 9 | 0 | |
| ***STRESS: ESD-MACHINE MODEL, 200V*** | | | | | | | |
| CY14E101Q2A (7C1431E5A) | 4032722 | *611055560* | *CML-RA* | COMP | 5 | 0 | |
| CY14E101PA (7C1431E9A) | 4034960 | *611109616* | *M-PHIL* | COMP | 5 | 0 | |
| CY14E101J2 (7C1431E3A) | 4034960 | *611109614* | *M-PHIL* | COMP | 5 | 0 | |
| ***STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | 168 | 80 | 0 | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | 288 | 80 | 0 | |
| ***STRESS: TEMPERATURE CYCLE COND. C, -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3*** | | | | | | | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | 500 | 80 | 0 | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | 1000 | 80 | 0 | |
| ***STRESS: STATIC LATCH-UP TESTING, 125C, ±140mA*** | | | | | | | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | COMP | 6 | 0 | |
| CY14B101Q1A (7C1431B9A) | 4032722 | *611057658* | *M-PHIL* | COMP | 6 | 0 | |
| CY14E101PA (7C1431E3A) | 4032722 | *611056066* | *M-PHIL* | COMP | 6 | 0 | |
| CY14B101PA (7C1431B3A) | 4032722 | *611056060* | *M-PHIL* | COMP | 6 | 0 | |
| CY14E101Q1A (7C1431E9A) | 4032722 | *611055556* | *CML-RA* | COMP | 6 | 0 | |
| CY14E101PA (7C1431E9A) | 4034960 | *611109616* | *M-PHIL* | COMP | 6 | 0 | |
| CY14B101PA (7C1431B3A) | 4034960 | *611109618* | *M-PHIL* | COMP | 6 | 0 | |
| ***STRESS: ACOUSTIC-MSL3*** | | | | | | | |
| CY14B101Q2A (7C1431B5A) | 4032722 | *611055561* | *CML-RA* | COMP | 15 | 0 | |
| ***STRESS: SER – ALPHA PARTICLE, 3-TEPM, 3-VOLTAGE, @ 85C, Vcc Nom*** | | | | | | | |
| CY14E101Q2A (7C14104B) | 4034960 | *611109692* | *M-PHIL* | COMP | 3 | 0 | |

# Reliability Test Data

## QTP #: 122802

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 5.5V, Vcc Max*** | | | | | | | |
| CY14ME064Q2A (7C1436B5A) | 4228534 | 611230237 | *CML-RA* | 96 | 1201 | 0 | |
| CY14ME064Q2A (7C1436B5A) | 4229040 | 611230238 | *CML-RA* | 96 | 1939 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 3.3V, Vcc Max*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4229040 | 611230171 | *CML-RA* | 96 | 697 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611230172 | *CML-RA* | 96 | 686 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 5.5V, Vcc Max*** | | | | | | | |
| CY14ME064Q2A (7C1436B5A) | 4228534 | 611230237 | *CML-RA* | 168 | 108 | 0 | |
| CY14ME064Q2A (7C1436B5A) | 4229040 | 611230238 | *CML-RA* | 168 | 108 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 3.3V, Vcc Max*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4229040 | 611230171 | *CML-RA* | 168 | 88 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611230172 | *CML-RA* | 168 | 88 | 0 | |
| ***STRESS: Pre-/ Post HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE CHAR*** | | | | | | | |
| CY14ME064Q2A (7C1436B5A) | 4228534 | 611230237 | *CML-RA* | COMP | 10 | 0 | |
| CY14ME064Q2A (7C1436B5A) | 4229040 | 611230238 | *CML-RA* | COMP | 10 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4229040 | 611230171 | *CML-RA* | COMP | 10 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611230172 | *CML-RA* | COMP | 10 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114-B, 2,200V*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229009 | *CML-RA* | COMP | 8 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229013 | *CML-RA* | COMP | 8 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229012 | *CML-RA* | COMP | 8 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 500V*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229009 | *CML-RA* | COMP | 9 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229013 | *CML-RA* | COMP | 9 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229012 | *CML-RA* | COMP | 9 | 0 | |
| ***STRESS: ESD-MACHINE MODEL, 200V*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229009 | *CML-RA* | COMP | 5 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229013 | *CML-RA* | COMP | 5 | 0 | |

# Reliability Test Data

**QTP #: 122802**

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: STATIC LATCH-UP TESTING, 85C/125C, ±140mA*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229011 | *CML-RA* | COMP | 6 | 0 | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229012 | *CML-RA* | COMP | 6 | 0 | |
| ***STRESS: ACOUSTIC-MSL3*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229009 | *CML-RA* | COMP | 15 | 0 | |
| ***STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229009 | *CML-RA* | 168 | 76 | 0 | |
| ***STRESS: TEMPERATURE CYCLE COND. C, -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3*** | | | | | | | |
| CY14MB064Q2A (7C1436B5A) | 4228534 | 611229009 | *CML-RA* | 500 | 77 | 0 | |

# Reliability Test Data

## QTP #: 113005

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 5.5V, Vcc Max*** | | | | | | | |
| CY14ME064Q2B (7C1446E5A) | 4231244 | 611236507 | CML-RA | 96 | 3330 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 3.3V, Vcc Max*** | | | | | | | |
| CY14MB064Q2B (7C1446B5A) | 4231244 | 611236508 | CML-RA | 96 | 594 | 0 | |
| CY14MB064Q2B (7C1446B5A) | 4231244 | 611236522 | CML-RA | 96 | 693 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 5.5V, Vcc Max*** | | | | | | | |
| CY14ME064Q2B (7C1446E5A) | 4231244 | 611236507 | CML-RA | 168 | 108 | 0 | |
| CY14ME064Q2B (7C1446E5A) | 4231244 | 611236507 | CML-RA | 500 | 108 | 0 | |
| CY14ME064Q2B (7C1446E5A) | 4231244 | 611236507 | CML-RA | 1000 | 108 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 3.3V, Vcc Max*** | | | | | | | |
| CY14MB064Q2B (7C1446B5A) | 4231244 | 611236508 | CML-RA | 168 | 88 | 0 | |
| ***STRESS: Pre-/ Post HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE CHAR*** | | | | | | | |
| CY14ME064Q2B (7C1446E5A) | 4231244 | 611236507 | CML-RA | 168 | 16 | 0 | |
| CY14MB064Q2B (7C1446B5A) | 4231244 | 611236508 | CML-RA | 168 | 16 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT PER JEDEC EIA/JESD22-A114-B, 2,200V*** | | | | | | | |
| CY14ME064Q1B (7C1446E9A) | 4231244 | 611236512 | CML-RA | COMP | 8 | 0 | |
| CY14ME064Q2B (7C1446E5A) | 4231244 | 611236507 | CML-RA | COMP | 8 | 0 | |
| CY14ME064J2A (7C14EC46A) | 4231244 | 611236510 | CML-RA | COMP | 8 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 500V*** | | | | | | | |
| CY14ME064Q1B (7C1446E9A) | 4231244 | 611236512 | CML-RA | COMP | 9 | 0 | |
| ***STRESS: ESD-MACHINE MODEL, 200V*** | | | | | | | |
| CY14ME064Q1B (7C1446E9A) | 4231244 | 611236512 | CML-RA | COMP | 5 | 0 | |
| CY14ME064Q2B (7C1446E5A) | 4231244 | 611236507 | CML-RA | COMP | 5 | 0 | |
| CY14ME064J2A (7C14EC46A) | 4231244 | 611236510 | CML-RA | COMP | 5 | 0 | |
| ***STRESS: STATIC LATCH-UP TESTING, 85C, ±140mA*** | | | | | | | |
| CY14ME064Q1B (7C1446E9A) | 4231244 | 611236512 | CML-RA | COMP | 6 | 0 | |
| CY14MB064Q1B (7C1446B9A) | 4231244 | 611236511 | CML-RA | COMP | 6 | 0 | |
| ***STRESS: DYNAMIC LATCH-UP TESTING, 125C (3V part – 5.5V, 5V Part – 8V)*** | | | | | | | |
| CY14ME064Q1B (7C1446E9A) | 4231244 | 611236512 | CML-RA | COMP | 1 | 0 | |
| CY14MB064Q1B (7C1446B9A) | 4231244 | 611236511 | CML-RA | COMP | 1 | 0 | |

# Document History Page

Document Title: QTP 113005: 64K SERIAL NON-VOLATILE SRAM PRODUCT FAMILY S8 TECHNOLOGY, CMI (FAB 4)
Document Number: 001-85611

| Rev. | ECN No. | Orig. of Change | Description of Change |
|---|---|---|---|
| ** | 3863005 | NSR | Initial spec release |
| *A | 5106807 | ILZ<br><br>DCON | No Change. Sunset Review<br><br>Removed Distribution: WEB and Posting: None in the document history page. |