# Cypress Semiconductor Automotive Product Qualification Report

## QTP# 061806 VERSION *D
**March 2025**

| 4 Meg MoBL SRAM Automotive Devices<br><br>R95LD-3R, Fab 4 | |
|---|---|
| **CY62136EV18 MoBL2™<br>CY62137EV18 MoBL2™** | **2-Mbit (128K x 16) Static RAM** |
| **CY62136EV30 MoBL®<br>CY62137EV30 MoBL®** | **2-Mbit (128K x 16) Static RAM** |
| **CY62138EV30 MoBL®** | **2-Mbit (256K x 8) Static RAM** |
| **CY62146EV18 MoBL2®<br>CY62147EV18 MoBL2®** | **2-Mbit (256K x 16) Static RAM** |
| **CY62146EV30 MoBL®<br>CY62147EV30 MoBL®<br>CY621472E30 MoBL®** | **4-Mbit (256K x 16) Static RAM** |
| **CY62148E MoBL®<br>CY62148EV30 MoBL®** | **4-Mbit (512K x 8) Static RAM** |

**FOR ANY QUESTIONS ON THIS REPORT, PLEAE CONTACT**
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## PRODUCT QUALIFICATION HISTORY

| QTP Number | Description of Qualification Purpose | Date |
|---|---|---|
| 071103 | 8 Meg MoBL SRAM Automotive Device Family & Technology (R95LD-3R) Qualification at Fab 4 | Mar 07 |
| 061806 | Qualify 4Meg MoBL Static RAM Automotive device and family on R95LD-3R Technology at Fab 4 | Apr 07 |
| 084612 | MoBL SRAM Hirel Technology Qual using 7C62167FC, R95LD-3R, 16Meg at Fab4 | May 09 |
| 134512 | Qualify polyimide mask to qualified Automotive 4 Meg MoBL SRAM, R95LD-3R Technology at Fab 4 | Nov 13 |
| 134803 | Qualify metal mask option die part (7A62142FC) Automotive on R95LD-3R Technology at Fab4 | Jul 14 |

| PRODUCT DESCRIPTION (for qualification) | |
|---|---|
| Qualification Purpose: : Qualify 4Meg MoBL SRAM Automotive device and family, R95LD-3R Technology at Fab4 | |
| Automotive Marketing Part #: | CY62136/7EV18, CY62136/7/8EV30, CY62146/7EV18, CY62146/7/8EV40, CY62148E |
| Device Description: | 3V Automotive |
| Cypress Division: | Cypress Semiconductor Corporation – Programmable Systems Division (PSD) |

| TECHNOLOGY/FAB PROCESS DESCRIPTION | | | |
|---|---|---|---|
| Number of Metal Layers: | 2 | Metal Composition: | Metal 1: 100Å Ti / 3200Å Al / 300Å TiW<br>Metal 2: 150Å Ti / 8000Å Al / 300Å TiW |
| Passivation Type and Thickness: | | 1000Å Oxide TEOS / 9000Å Nitride | |
| Generic Process Technology/Design Rule (μ-drawn): | | CMOS, Double Metal, 0.09μm | |
| Gate Oxide Material/Thickness (MOS): | | 28Å | |
| Name/Location of Die Fab (prime) Facility: | | Cypress Semiconductor -- Bloomington, MN | |
| Die Fab Line ID/Wafer Process ID: | | Fab4/R95LD-3R | |

## PACKAGE AVAILABILITY

| PACKAGE | ASSEMBLY FACILITY SITE |
|---|---|
| **32-Pin SOIC** | **CML-R** |
| **32-Pin STSOP I/TSOP II** | **CML-R, TAIWAN-G** |
| **36/48-Ball VFBGA** | **TAIWAN-G** |
| **44-Pin TSOP II** | **CML-R** |

| MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION | |
|---|---|
| **Package Designation:** | ZW44 |
| **Package Outline, Type, or Name:** | 44-Pin TSOPII |
| **Mold Compound Name/Manufacturer:** | Hitachi CEL9200CYRU |
| **Mold Compound Flammability Rating:** | V-O per UL94 |
| **Oxygen Rating Index:** | 28% |
| **Substrate Material:** | N/A |
| **Lead Finish, Composition / Thickness:** | NiPdAu |
| **Die Backside Preparation Method/Metallization:** | Backgrind |
| **Die Separation Method:** | Wafer Saw |
| **Die Attach Supplier:** | Dexter |
| **Die Attach Material:** | QMI509 |
| **Die Attach Method:** | Die Attach Epoxy |
| **Bond Diagram Designation:** | 10-06259 |
| **Wire Bond Method:** | Thermosonic |
| **Wire Material/Size:** | Au. 1.0mil |
| **Thermal Resistance Theta JA °C/W:** | 39.3 °C/W |
| **Package Cross Section Yes/No:** | N/A |
| **Name/Location of Assembly (prime) facility:** | CML-R |
| **MSL Level** | 3 |
| **Reflow Profile** | 260C |

| ELECTRICAL TEST / FINISH DESCRIPTION | |
|---|---|
| Test Location: | **CML-R** |

**Note:** Please contact a Cypress Representative for other package availability.

## RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

| Stress/Test | Test Condition (Temp/Bias) | Result P/F |
|---|---|---|
| High Temperature Operating Life<br>Early Failure Rate | AEC-Q100-008 and JESD22-A108<br>Dynamic Operating Condition, Vcc Max = 1.85V, 125°C/150°C | P |
| High Temperature Operating Life<br>Latent Failure Rate | JESD22-A108<br>Dynamic Operating Condition, Vcc Max = 1.85V, 125°C/150°C | P |
| High Accelerated Saturation Test (HAST) | JESD22-A110, 130°C, 5.5V, 85%RH<br>Precondition: JESD22-A113 Moisture Sensitivity MSL 3<br>192 Hrs, 30C/60%RH + Reflow, 260°C+0, -5°C | P |
| Temperature Cycle | JESD22-A104, Condition C, -65°C to 150°C<br>Precondition: JESD22-A113 Moisture Sensitivity MSL 3<br>192 Hrs, 30C/60%RH + Reflow, 260°C+0, -5°C | P |
| Pressure Cooker | JESD22-A102, 121°C, 100%RH, 15 Psig<br>Precondition: JESD22-A113 Moisture Sensitivity MSL 3<br>192 Hrs, 30C/60%RH+ Reflow, 260°C+0, -5°C | P |
| Acoustics | J-STD-020<br>Precondition: JESD22-A113 Moisture Sensitivity MSL 3<br>192 Hrs., 30°C/60%RH + Reflow, 260°C+0, -5°C | P |
| Ball Shear | AEC-Q100-010 | P |
| Bond Pull | Mil-Std 883, Method 2011 | P |
| Constructional Analysis | Criteria: Meet external and internal characteristics of Cypress package | P |
| Dye Penetration Test | Test to determine the existence and extent of cracks,<br>Criteria: No Package Crack | P |
| Electrostatic Discharge<br>Human Body Model (ESD-HBM) | AEC-Q100-002 | P |
| Electrostatic Discharge<br>Charge Device Model (ESD-CDM) | AEC Q100-011 | P |
| Electrical Distributions | AEC Q100-009 | P |
| External Visual | JESD22-B100 | P |
| High Temperature Storage | JESD22-A103, 150C | P |
| Physical Dimensions | JESD22B100 and B108<br>AEC Q100-009 | P |
| Post Temp Cycle Bond Pull | Mil-Std 883, Method 2011 | P |
| Solderability | JESD22-B102 | P |
| Static Latch-up | AEC-Q100-004 | P |

## RELIABILITY FAILURE RATE SUMMARY

| Stress/Test | Device Tested/ Device Hours | # Fails | Activation Energy | Thermal AF[3] | Failure Rate |
|---|---|---|---|---|---|
| High Temperature Operating Life Early Failure Rate | 10,438 Devices | 0 | N/A | N/A | 0 PPM |
| High Temperature Operating Life[1,2] Long Term Failure Rate | 225,568 DHRs | 0 | 0.7 | 170 | 31 FIT** |

[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.

**Insufficient samples to calculate FIT Rate.
**Based on Automotive qual samples size not Commercial qual sample size.

# Reliability Test Data

## QTP #: 071103

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: BALL SHEAR*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 5 | 0 | |
| ***STRESS: BOND PULL*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 5 | 0 | |
| ***STRESS: POST TEMP CYCLE BOND PULL*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 5 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 250V*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 500V*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 750V, Corner Pins Only*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 500V*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 1,000V*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 1,500V*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 2,000V*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: EXTERNAL VISUAL*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 340 | 0 | |
| CY62157EV30 (7C62157F) | 4641534 | *610700620/2/3* | *CML-R* | COMP | 4452 | 0 | |
| CY62157EV30 (7C62157F) | 4644874 | *610701731/2/3* | *CML-R* | COMP | 4292 | 0 | |
| CY62157EV30 (7C62157F) | 4638533 | *610702506/8/981* | *CML-R* | COMP | 4344 | 0 | |
| CY62157EV30 (7C62157F) | 4629071 | *610660071* | *CML-R* | COMP | 30 | 0 | |
| CY62157EV30 (7C62157F) | 4627156 | *610661704* | *CML-R* | COMP | 30 | 0 | |

# Reliability Test Data

## QTP #: 071103

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ELECTRICAL DISTRIBUTIONS*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 30 | 0 | |
| CY62157EV30 (7C62157F) | 4629071 | *610660071* | *CML-R* | COMP | 30 | 0 | |
| CY62157EV30 (7C62157F) | 4627156 | *610661704* | *CML-R* | COMP | 30 | 0 | |
| ***STRESS: PHYSICAL DIMENSIONS*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 10 | 0 | |
| CY62157EV30 (7C62157F) | 4641534 | *610700620* | *CML-R* | COMP | 10 | 0 | |
| CY62157EV30 (7C62157F) | 4644874 | *610701731* | *CML-R* | COMP | 10 | 0 | |
| CY62157EV30 (7C62157F) | 4638533 | *610702506* | *CML-R* | COMP | 10 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.85V, Vcc Max*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4641534 | *610700620* | *CML-R* | 48 | 1410 | 0 | |
| CY62157EV30 (7C62157F) | 4641534 | *610700622* | *CML-R* | 48 | 1497 | 0 | |
| CY62157EV30 (7C62157F) | 4641534 | *610700623* | *CML-R* | 48 | 1535 | 0 | |
| CY62157EV30 (7C62157F) | 4644874 | *610701731* | *CML-R* | 48 | 1427 | 0 | |
| CY62157EV30 (7C62157F) | 4644874 | *610701732* | *CML-R* | 48 | 1469 | 0 | |
| CY62157EV30 (7C62157F) | 4644874 | *610701733* | *CML-R* | 48 | 1386 | 0 | |
| CY62157EV30 (7C62157F) | 4638533 | *610702506* | *CML-R* | 48 | 1490 | 0 | |
| CY62157EV30 (7C62157F) | 4638533 | *610702508* | *CML-R* | 48 | 1444 | 0 | |
| CY62157EV30 (7C62157F) | 4638533 | *610702981* | *CML-R* | 48 | 1400 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 1.85V, Vcc Max*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | 408 | 50 | 0 | |
| ***STRESS: HIGH TEMPERATURE STORAGE, 150C, no bias*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | 1000 | 50 | 0 | |
| ***STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 5.5V, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | 96 | 45 | 0 | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | 128 | 45 | 0 | |

# Reliability Test Data

## QTP #: 071103

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | 96 | 50 | 0 | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | 168 | 48 | 0 | |
| ***STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | 500 | 55 | 0 | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | 1000 | 50 | 0 | |
| ***STRESS: STATIC LATCH-UP TESTING, 125C, 8.27V,* ±100mA** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 6 | 0 | |
| ***STRESS: SOLDERABILITY*** | | | | | | | |
| CY62157EV30 (7C62157F) | 4622329 | *610650792* | *CML-R* | COMP | 15 | 0 | |
| CY62157EV30 (7C62157F) | 4629071 | *610660070* | *CML-R* | COMP | 15 | 0 | |
| CY62157EV30 (7C62157F) | 4627156 | *610661706* | *CML-R* | COMP | 15 | 0 | |

# Reliability Test Data

## QTP #: 061806

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ESD-CHARGE DEVICE MODEL, 200V*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610649644* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 250V*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610649644* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 500V*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610649644* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 750V, Corner Pins Only*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610649644* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT , 500V*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610649644* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 1,000V*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610649644* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 1,500V*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610649644* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 2,000V*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610649644* | *CML-R* | COMP | 3 | 0 | |
| ***STRESS: STATIC LATCH-UP TESTING, 125C, 7.37V, ±100mA*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610646970* | *CML-R* | COMP | 6 | 0 | |
| ***STRESS: STATIC LATCH-UP TESTING, 125C, 8.2V, ±100mA*** | | | | | | | |
| CY62148EV30LL (7C62148F) | 4626753 | *610700518* | *TAIWAN-T* | COMP | 6 | 0 | |
| ***STRESS: ELECTRICAL DISTRIBUTIONS*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4618815 | *610649644* | *CML-R* | COMP | 30 | 0 | |
| CY62147EV30LL (7C62147F) | 4615747 | *610649639* | *CML-R* | COMP | 30 | 0 | |
| CY62147EV30LL (7C62147F) | 4616092 | *610658569* | *CML-R* | COMP | 30 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 1.85V, Vcc Max*** | | | | | | | |
| CY62147EV30LL (7C62147F) | 4638211 | *610704264* | *CML-R* | 48 | 2619 | 0 | |
| CY62147EV30LL (7C62147F) | 4638211 | *610704265* | *CML-R* | 48 | 2644 | 0 | |
| CY62147EV30LL (7C62147F) | 4638211 | *610704266* | *CML-R* | 48 | 2565 | 0 | |
| CY62147EV30LL (7C62147F) | 4638211 | *610710367* | *CML-R* | 48 | 2520 | 0 | |

# Reliability Test Data

## QTP #: 084612

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ACOUSTICS*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 22 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | COMP | 22 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | COMP | 22 | 0 | |
| ***STRESS: BALL SHEAR*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 30 | 0 | |
| ***STRESS: BOND PULL*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 30 | 0 | |
| ***STRESS: CONSTRUCTIONAL ANALYSIS*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 5 | 0 | |
| ***STRESS: DYE PENETRATION TEST*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 15 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | COMP | 15 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | COMP | 15 | 0 | |
| ***STRESS: POST TEMP CYCLE BOND PULL*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 5 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 500 V*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 3 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 1000V*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 3 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 1250V*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 3 | 0 | |
| ***STRESS: ESD-CHARGE DEVICE MODEL, 750V, Corner Pins Only*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT , 500V*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 1,000V*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 3 | 0 | |
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 1,500V*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 3 | 0 | |

# Reliability Test Data

## QTP #: 084612

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 2,000V*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | 610854900 | TAIWAN-T | COMP | 3 | 0 | |
| ***STRESS: ELECTRICAL DISTRIBUTIONS*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 30 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | COMP | 30 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | COMP | 30 | 0 | |
| ***STRESS: PHYSICAL DIMENSIONS*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 10 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | COMP | 10 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | COMP | 10 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 150C, 1.85V, Vcc Max*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | 24 | 4249 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | 24 | 3730 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | 24 | 3295 | 0 | |
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 1.85V, Vcc Max*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | 432 | 100 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | 432 | 99 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | 432 | 100 | 0 | |
| ***STRESS: HIGH TEMPERATURE STORAGE, 150C, no bias*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | 1000 | 80 | 0 | |
| ***STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.6V, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | 96 | 79 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | 96 | 79 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | 96 | 80 | 0 | |

# Reliability Test Data

## QTP #: 084612

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | 96 | 80 | 0 | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | 168 | 80 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | 96 | 80 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | 168 | 80 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | 96 | 80 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | 168 | 80 | 0 | |
| ***STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | 500 | 85 | 0 | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | 1000 | 79 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | 500 | 85 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | 1000 | 85 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | 500 | 85 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | 1000 | 85 | 0 | |
| ***STRESS: STATIC LATCH-UP TESTING, 125C, ±200mA*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 6 | 0 | |
| ***STRESS: SOLDERABILITY*** | | | | | | | |
| CY62177EV30LL (7A62167F) | 4838611 | *610854900* | *TAIWAN-T* | COMP | 15 | 0 | |
| CY62177EV30LL (7A62167F) | 4836421 | *610854901* | *TAIWAN-T* | COMP | 15 | 0 | |
| CY62177EV30LL (7A62167F) | 4836814 | *610854902* | *TAIWAN-T* | COMP | 15 | 0 | |

# Reliability Test Data
## QTP #: 134512

| Device | Fab Lot # | Assy Lot # | Assy Loc | Duration | Samp | Rej | Failure Mechanism |
|---|---|---|---|---|---|---|---|
| ***STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 125C, 1.85V, Vcc Max (Core)*** | | | | | | | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | 168 | 76 | 0 | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | 1000 | 76 | 0 | |
| ***STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3*** | | | | | | | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | 500 | 77 | 0 | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | 1000 | 76 | 0 | |
| ***STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | 96 | 76 | 0 | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | 168 | 65 | 0 | |
| ***STRESS: HI-ACCEL SATURATION TEST, 110C, 85%RH, 1.85V, PRE COND 192 HR 30C/60%RH, MSL3*** | | | | | | | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | 128 | 77 | 0 | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | 264 | 77 | 0 | |
| ***STRESS: HIGH TEMPERATURE STORAGE*** | | | | | | | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | 1000 | 77 | 0 | |
| ***STRESS: INTERNAL VISUAL*** | | | | | | | |
| CY62157EV30LL (7C62157F) | 4229219 | *611238363* | CML-RA | COMP | 5 | 0 | |
| ***STRESS: SORT YIELD*** | | | | | | | |
| 7C62155FC | VARIOUS | *NA* | NA | COMP | EQUIVALENT | | |
| ***STRESS: E-TEST YIELD*** | | | | | | | |
| 7C62155FC | VARIOUS | *NA* | NA | COMP | EQUIVALENT | | |

# *Reliability Test Data*
## *QTP #:* 134803

| *Device* | *Fab Lot #* | *Assy Lot #* | *Assy Loc* | *Duration* | *Samp* | *Rej* | *Failure Mechanism* |
|---|---|---|---|---|---|---|---|
| ***STRESS: ESD-HUMAN BODY CIRCUIT, 2,000V*** | | | | | | | |
| CY621472E30LL (7A621473FC) | 4344239 | 611415236 | CHINA - JT | COMP | 3 | 0 | |
| ***STRESS: STATIC LATCH-UP TESTING, 125C, ±140mA*** | | | | | | | |
| CY621472E30LL (7A621473FC) | 4344239 | 611415236 | CHINA - JT | COMP | 3 | 0 | |
| ***STRESS: SORT YIELD*** | | | | | | | |
| 7A621473FC | 4344239 | *NA* | NA | COMP | EQUIVALENT | | |
| ***STRESS: E-TEST YIELD*** | | | | | | | |
| 7A621473FC | 4344239 | *NA* | NA | COMP | EQUIVALENT | | |

# Document History Page

Document Title: QTP# 061806: AUTOMOTIVE 4 MEG MOBL SRAM DEVICES, R95LD-3R, FAB 4
Document Number: 001-59339

| Rev. | ECN No. | Orig. of Change | Description of Change |
|---|---|---|---|
| ** | 2875207 | NSR | Initial Spec Release<br>Added data of QTP084612. Updated FIT rate and device hours data in Reliability Failure Rate Summary.<br>Remove CML-RA to Assembly Facility Site of 36/48-Ball VFBGA package<br>(Ref. Memo LGQ-719, 061806 Rev. 1.0) |
| *A | 3912663 | NSR | Removed “Version 2.0” in QTP# 061806 title page;<br>Updated Reliability Tests Performed Table:<br>-Removed referenced Cypress Spec# of Acoustic, Constructional Analysis and Dye Penetration Test and replaced with referenced industry standards/criteria.<br>-Removed “3IR” in test condition of reflow for HAST, TCT and PCT. |
| *B | 4185762 | JYF | Deleted obsolete spec 11-20047 in Major Package Information table and replaced with 001-64160;<br>Template alignment & addition of polyimide qualification data. |
| *C | 4484039 | HSTO | Align qualification report based on the new template in the front page<br>Add metal mask qualification data |
| *D | 8115823 | HSTO | Sunset review<br>Removed obsolete spec#001-64160 |