

Features

- Very high speed: 45 ns
- Temperature ranges
 - Industrial: -40 °C to +85 °C
 - Automotive-A: -40 °C to +85 °C
 - Automotive-E: -40 °C to +125 °C
- Wide voltage range: 2.20 V to 3.60 V
- Pin compatible with CY62136V, CY62136CV30/CV33, and CY62136EV30
- Ultra low standby power
 - Typical standby current: 1 μA
 - Maximum standby current: 5 μA (Industrial)
- Ultra low active power
 - Typical active current: 1.6 mA at f = 1 MHz (45 ns speed)
- Easy memory expansion with \overline{CE} and \overline{OE} features
- Automatic power down when deselected
- Complementary metal oxide semiconductor (CMOS) for optimum speed and power
- Available in Pb-free 48-ball very fine-pitch ball grid array (VFBGA) and 44-pin thin small outline package (TSOP) II packages

Functional Description

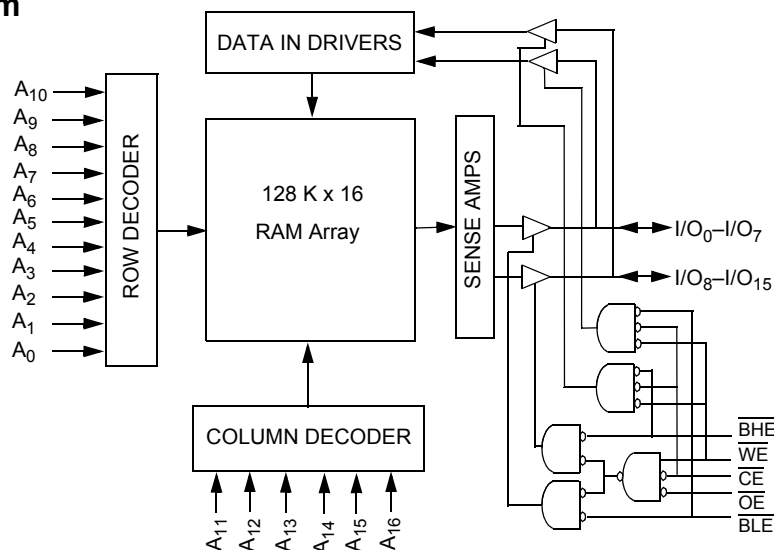
The CY62136FV30 is a high performance CMOS static RAM organized as 128K words by 16 bits. This device features advanced circuit design to provide ultra low active current. This is ideal for providing More Battery Life™ (MoBL®) in portable applications such as cellular telephones. The device also has an automatic power down feature that significantly reduces power consumption by 90 percent when addresses are not toggling. Placing the device into standby mode reduces power consumption by more than 99 percent when deselected (\overline{CE} HIGH). The input and output pins (I/O₀ through I/O₁₅) are placed in a high impedance state when the device is deselected (\overline{CE} HIGH), the outputs are disabled (\overline{OE} HIGH), both Byte High Enable and Byte Low Enable are disabled (\overline{BHE} , \overline{BLE} HIGH) or during a write operation (\overline{CE} LOW and \overline{WE} LOW).

Write to the device by taking Chip Enable (\overline{CE}) and Write Enable (\overline{WE}) inputs LOW. If Byte Low Enable (\overline{BLE}) is LOW, then data from I/O pins (I/O₀ through I/O₇) is written into the location specified on the address pins (A₀ through A₁₆). If Byte High Enable (\overline{BHE}) is LOW, then data from I/O pins (I/O₈ through I/O₁₅) is written into the location specified on the address pins (A₀ through A₁₆).

Read from the device by taking Chip Enable (\overline{CE}) and Output Enable (\overline{OE}) LOW while forcing the Write Enable (\overline{WE}) HIGH. If Byte Low Enable (\overline{BLE}) is LOW, then data from the memory location specified by the address pins appears on I/O₀ to I/O₇. If Byte High Enable (\overline{BHE}) is LOW, then data from memory appears on I/O₈ to I/O₁₅. See the [Truth Table on page 11](#) for a complete description of read and write modes.

For a complete list of related resources, [click here](#).

Logic Block Diagram



Contents

| | | | |
|---|-----------|--|-----------|
| Product Portfolio | 3 | Ordering Information | 12 |
| Pin Configuration | 3 | Ordering Code Definitions | 12 |
| Maximum Ratings | 4 | Package Diagrams | 13 |
| Operating Range | 4 | Acronyms | 15 |
| Electrical Characteristics | 4 | Document Conventions | 15 |
| Capacitance | 5 | Units of Measure | 15 |
| Thermal Resistance | 5 | Document History Page | 16 |
| AC Test Loads and Waveforms | 5 | Sales, Solutions, and Legal Information | 18 |
| Data Retention Characteristics | 6 | Worldwide Sales and Design Support | 18 |
| Data Retention Waveform | 6 | Products | 18 |
| Switching Characteristics | 7 | PSoC [®] Solutions | 18 |
| Switching Waveforms | 8 | Cypress Developer Community | 18 |
| Truth Table | 11 | Technical Support | 18 |

Product Portfolio

| Product | Range | V _{CC} Range (V) | | | Speed (ns) | Power Dissipation | | | | | |
|---------------|-------------------|---------------------------|--------------------|----------------------|------------|--------------------------------|-----|--------------------|-----|-------------------------------|-----|
| | | | | | | Operating I _{CC} (mA) | | | | Standby I _{SB2} (μA) | |
| | | f = 1 MHz | | f = f _{max} | | | | | | | |
| | | Min | Typ ^[1] | Max | | Typ ^[1] | Max | Typ ^[1] | Max | Typ ^[1] | Max |
| CY62136FV30LL | Industrial/Auto-A | 2.2 | 3.0 | 3.6 | 45 | 1.6 | 2.5 | 13 | 18 | 1 | 5 |
| | Auto-E | 2.2 | 3.0 | 3.6 | 55 | 2 | 3 | 15 | 25 | 1 | 20 |

Pin Configuration

Figure 1. 48-ball VFBGA pinout^[2, 3]

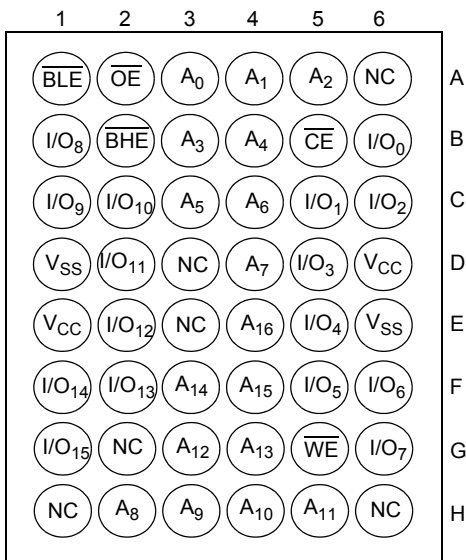
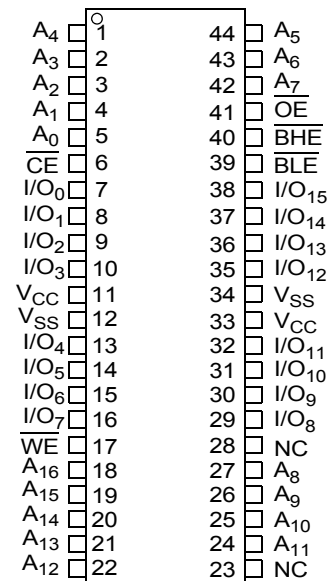


Figure 2. 44-pin TSOP II pinout^[2]



Notes

- Typical values are included for reference only and are not guaranteed or tested. Typical values are measured at V_{CC} = V_{CC(typ)}, T_A = 25 °C.
- NC pins are not connected on the die.
- Pins D3, H1, G2, H6 and H3 in the VFBGA package are address expansion pins for 4 Mb, 8 Mb, 16 Mb, and 32 Mb and 64 Mb respectively.

Maximum Ratings

Exceeding the maximum ratings may impair the useful life of the device. These user guidelines are not tested.

Storage temperature -65 °C to +150 °C

Ambient temperature with power applied -55 °C to +125 °C

Supply voltage to ground potential [4, 5] ... -0.3 V to 3.9 V ($V_{CC(max)} + 0.3$ V)

DC voltage applied to outputs in High Z State [4, 5] -0.3 V to 3.9 V ($V_{CC(max)} + 0.3$ V)

DC input voltage [4, 5] -0.3 V to 3.9 V ($V_{CC(max)} + 0.3$ V)

Output current into outputs (LOW) 20 mA

Static discharge voltage (MIL-STD-883, Method 3015) > 2001 V

Latch up current > 200 mA

Operating Range

| Device | Range | Ambient Temperature | $V_{CC}^{[6]}$ |
|---------------|-------------------|---------------------|----------------|
| CY62136FV30LL | Industrial/Auto-A | -40 °C to +85 °C | 2.2 V to 3.6 V |
| | Auto-E | -40 °C to +125 °C | |

Electrical Characteristics

Over the Operating Range

| Parameter | Description | Test Conditions | -45 (Industrial/Auto-A) | | | -55 (Auto-E) | | | Unit |
|-----------------|---|--|-------------------------|---------|----------------|--------------|---------|----------------|---------|
| | | | Min | Typ [7] | Max | Min | Typ [7] | Max | |
| V_{OH} | Output high voltage | $2.2 \leq V_{CC} \leq 2.7$ $I_{OH} = -0.1$ mA | 2.0 | – | – | 2.0 | – | – | V |
| | | $2.7 \leq V_{CC} \leq 3.6$ $I_{OH} = -1.0$ mA | 2.4 | – | – | 2.4 | – | – | V |
| V_{OL} | Output low voltage | $2.2 \leq V_{CC} \leq 2.7$ $I_{OL} = 0.1$ mA | – | – | 0.4 | – | – | 0.4 | V |
| | | $2.7 \leq V_{CC} \leq 3.6$ $I_{OL} = 2.1$ mA | – | – | 0.4 | – | – | 0.4 | V |
| V_{IH} | Input high voltage | $2.2 \leq V_{CC} \leq 2.7$ | 1.8 | – | $V_{CC} + 0.3$ | 1.8 | – | $V_{CC} + 0.3$ | V |
| | | $2.7 \leq V_{CC} \leq 3.6$ | 2.2 | – | $V_{CC} + 0.3$ | 2.2 | – | $V_{CC} + 0.3$ | V |
| V_{IL} | Input low voltage | $2.2 \leq V_{CC} \leq 2.7$ | -0.3 | – | 0.6 | -0.3 | – | 0.6 | V |
| | | $2.7 \leq V_{CC} \leq 3.6$ | -0.3 | – | 0.8 | -0.3 | – | 0.8 | V |
| I_{IX} | Input leakage current | $GND \leq V_I \leq V_{CC}$ | -1 | – | +1 | -4 | – | +4 | μ A |
| I_{OZ} | Output leakage current | $GND \leq V_O \leq V_{CC}$, Output disabled | -1 | – | +1 | -4 | – | +4 | μ A |
| I_{CC} | V_{CC} operating supply current | $f = f_{max} = 1/t_{RC}$ $V_{CC} = V_{CCmax}$ | – | 13 | 18 | – | 15 | 25 | mA |
| | | $f = 1$ MHz $I_{OUT} = 0$ mA CMOS levels | – | 1.6 | 2.5 | – | 2 | 3 | |
| $I_{SB1}^{[8]}$ | Automatic CE power down current — CMOS inputs | $CE \geq V_{CC} - 0.2$ V, $V_{IN} \geq V_{CC} - 0.2$ V, $V_{IN} \leq 0.2$ V, $f = f_{max}$ (Address and data only), $f = 0$ (\overline{OE} , \overline{WE} , \overline{BHE} , and \overline{BLE}), $V_{CC} = 3.60$ V | – | 1 | 5 | – | 1 | 20 | μ A |
| $I_{SB2}^{[8]}$ | Automatic CE power down current — CMOS inputs | $CE \geq V_{CC} - 0.2$ V, $V_{IN} \geq V_{CC} - 0.2$ V or $V_{IN} \leq 0.2$ V, $f = 0$, $V_{CC} = 3.60$ V | – | 1 | 5 | – | 1 | 20 | μ A |

Notes

- $V_{IL(min)}$ = -2.0 V for pulse durations less than 20 ns.
- $V_{IH(max)}$ = $V_{CC} + 0.75$ V for pulse durations less than 20 ns.
- Full device AC operation assumes a minimum of 100 μ s ramp time from 0 to $V_{CC(min)}$ and 200 μ s wait time after V_{CC} stabilization.
- Typical values are included for reference only and are not guaranteed or tested. Typical values are measured at $V_{CC} = V_{CC(typ)}$, $T_A = 25$ °C.
- Chip enable (CE) and byte enables (\overline{BHE} and \overline{BLE}) need to be tied to CMOS levels to meet the I_{SB1} / I_{SB2} / I_{CCDR} specification. Other inputs can be left floating.

Capacitance

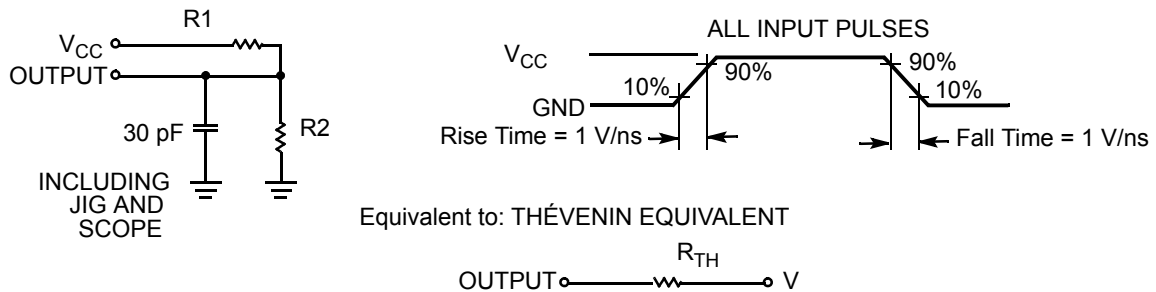
| Parameter ^[9] | Description | Test Conditions | Max | Unit |
|--------------------------|--------------------|---|-----|------|
| C _{IN} | Input capacitance | T _A = 25 °C, f = 1 MHz, V _{CC} = V _{CC(typ)} | 10 | pF |
| C _{OUT} | Output capacitance | | 10 | pF |

Thermal Resistance

| Parameter ^[9] | Description | Test Conditions | 48-ball VFBGA | 44-pin TSOP II | Unit |
|--------------------------|--|--|---------------|----------------|------|
| Θ _{JA} | Thermal resistance (junction to ambient) | Still air, soldered on a 3 × 4.5 inch, two layer printed circuit board | 75 | 77 | °C/W |
| Θ _{JC} | Thermal resistance (junction to case) | | 10 | 13 | °C/W |

AC Test Loads and Waveforms

Figure 3. AC Test Loads and Waveforms



| Parameters | 2.5 V (2.2 V to 2.7 V) | 3.0 V (2.7 V to 3.6 V) | Unit |
|-----------------|------------------------|------------------------|------|
| R1 | 16667 | 1103 | Ω |
| R2 | 15385 | 1554 | Ω |
| R _{TH} | 8000 | 645 | Ω |
| V _{TH} | 1.20 | 1.75 | V |

Note

9. Tested initially and after any design or process changes that may affect these parameters.

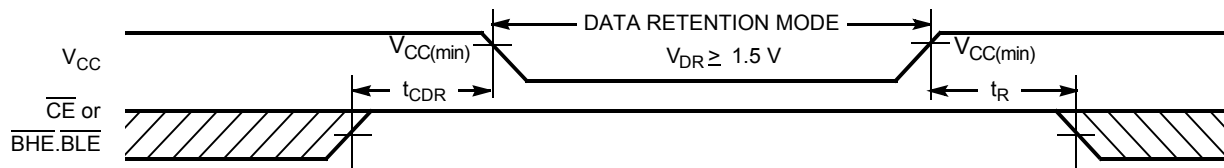
Data Retention Characteristics

Over the Operating Range

| Parameter | Description | Conditions | | Min | Typ ^[10] | Max | Unit |
|----------------------------|--------------------------------------|--|-----------------------------|-----|---------------------|-----|---------------|
| V_{DR} | V_{CC} for data retention | | | 1.5 | – | – | V |
| I_{CCDR} ^[11] | Data retention current | $V_{CC} = 1.5\text{ V}$, $CE \geq V_{CC} - 0.2\text{ V}$, $V_{IN} \geq V_{CC} - 0.2\text{ V}$ or $V_{IN} \leq 0.2\text{ V}$ | Industrial/ Automotive-A | – | – | 4 | μA |
| | | | Automotive-E | – | – | 12 | |
| t_{CDR} ^[12] | Chip deselect to data retention time | | | 0 | – | – | ns |
| t_R ^[13] | Operation recovery time | CY62136FV30LL-45 | | 45 | – | – | ns |
| | | CY62136FV30LL-55 | | 55 | – | – | |

Data Retention Waveform

Figure 4. Data Retention Waveform^[14]



Notes

10. Typical values are included for reference only and are not guaranteed or tested. Typical values are measured at $V_{CC} = V_{CC(typ)}$, $T_A = 25\text{ }^\circ\text{C}$.
11. Chip enable (\overline{CE}) and byte enables (\overline{BHE} and \overline{BLE}) need to be tied to CMOS levels to meet the I_{SB1} / I_{SB2} / I_{CCDR} specification. Other inputs can be left floating.
12. Tested initially and after any design or process changes that may affect these parameters.
13. Full device operation requires linear V_{CC} ramp from V_{DR} to $V_{CC(min)} \geq 100\text{ }\mu\text{s}$ or stable at $V_{CC(min)} \geq 100\text{ }\mu\text{s}$.
14. $\overline{BHE.BLE}$ is the AND of both \overline{BHE} and \overline{BLE} . Deselect the chip by either disabling chip enable signals or by disabling both \overline{BHE} and \overline{BLE} .

Switching Characteristics

Over the Operating Range

| Parameter ^[15, 16] | Description | -45 (Industrial/Automotive-A) | | -55 (Automotive-E) | | Unit |
|--|--|-------------------------------|-----|--------------------|-----|------|
| | | Min | Max | Min | Max | |
| Read Cycle | | | | | | |
| t_{RC} | Read cycle time | 45 | – | 55 | – | ns |
| t_{AA} | Address to data valid | – | 45 | – | 55 | ns |
| t_{OHA} | Data hold from address change | 10 | – | 10 | – | ns |
| t_{ACE} | \overline{CE} LOW to data valid | – | 45 | – | 55 | ns |
| t_{DOE} | \overline{OE} LOW to data valid | – | 22 | – | 25 | ns |
| t_{LZOE} | \overline{OE} LOW to low Z ^[17] | 5 | – | 5 | – | ns |
| t_{HZOE} | \overline{OE} HIGH to high Z ^[17, 18] | – | 18 | – | 20 | ns |
| t_{LZCE} | \overline{CE} LOW to low Z ^[17] | 10 | – | 10 | – | ns |
| t_{HZCE} | \overline{CE} HIGH to high Z ^[17, 18] | – | 18 | – | 20 | ns |
| t_{PU} | \overline{CE} LOW to power up | 0 | – | 0 | – | ns |
| t_{PD} | \overline{CE} HIGH to power down | – | 45 | – | 55 | ns |
| t_{DBE} | $\overline{BLE}/\overline{BHE}$ LOW to data valid | – | 22 | – | 25 | ns |
| t_{LZBE} | $\overline{BLE}/\overline{BHE}$ LOW to low Z ^[17] | 5 | – | 5 | – | ns |
| t_{HZBE} | $\overline{BLE}/\overline{BHE}$ HIGH to high Z ^[17, 18] | – | 18 | – | 20 | ns |
| Write Cycle ^[19, 20] | | | | | | |
| t_{WC} | Write cycle time | 45 | – | 55 | – | ns |
| t_{SCE} | \overline{CE} LOW to write end | 35 | – | 40 | – | ns |
| t_{AW} | Address setup to write end | 35 | – | 40 | – | ns |
| t_{HA} | Address hold from write end | 0 | – | 0 | – | ns |
| t_{SA} | Address setup to write start | 0 | – | 0 | – | ns |
| t_{PWE} | \overline{WE} pulse width | 35 | – | 40 | – | ns |
| t_{BW} | $\overline{BLE}/\overline{BHE}$ LOW to write end | 35 | – | 40 | – | ns |
| t_{SD} | Data setup to write end | 25 | – | 25 | – | ns |
| t_{HD} | Data Hold From Write End | 0 | – | 0 | – | ns |
| t_{HZWE} | \overline{WE} LOW to high Z ^[17, 18] | – | 18 | – | 20 | ns |
| t_{LZWE} | \overline{WE} HIGH to low Z ^[17] | 10 | – | 10 | – | ns |

Notes

- Test conditions for all parameters other than tristate parameters assume signal transition time of 3 ns (1V/ns) or less, timing reference levels of $V_{CC(typ)}/2$, input pulse levels of 0 to $V_{CC(typ)}$, and output loading of the specified I_{OL}/I_{OH} as shown in the [Figure 3 on page 5](#).
- In an earlier revision of this device, under a specific application condition, READ and WRITE operations were limited to switching of the byte enable and/or chip enable signals as described in the Application Notes [AN13842](#) and [AN66311](#). However, the issue has been fixed and in production now, and hence, these Application Notes are no longer applicable. They are available for download on our website as they contain information on the date code of the parts, beyond which the fix has been in production.
- At any given temperature and voltage condition, t_{HZCE} is less than t_{LZCE} , t_{HZBE} is less than t_{LZBE} , t_{HZOE} is less than t_{LZOE} , and t_{HZWE} is less than t_{LZWE} for any given device.
- t_{HZOE} , t_{HZCE} , t_{HZBE} , and t_{HZWE} transitions are measured when the outputs enter a high impedance state.
- The internal write time of the memory is defined by the overlap of \overline{WE} , $\overline{CE} = V_{IL}$, \overline{BHE} and/or $\overline{BLE} = V_{IL}$. All signals are ACTIVE to initiate a write and any of these signals can terminate a write by going INACTIVE. The data input setup and hold timing are referenced to the edge of the signal that terminates the write.
- The minimum write cycle pulse width for Write Cycle No. 3 and Write Cycle No. 4 should be equal to the sum of t_{HZWE} and t_{SD} .

Switching Waveforms

Figure 5. Read Cycle No.1: Address Transition Controlled [21, 22]

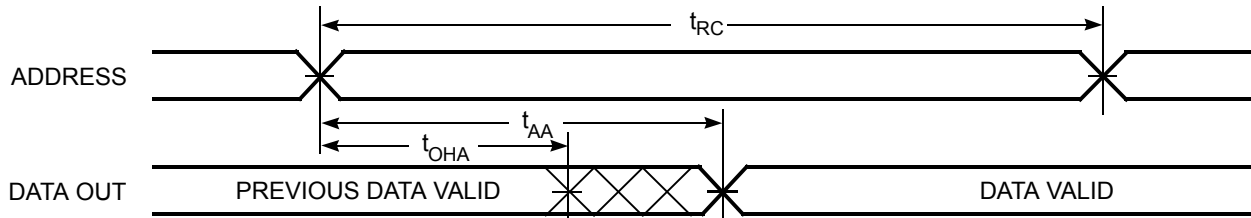
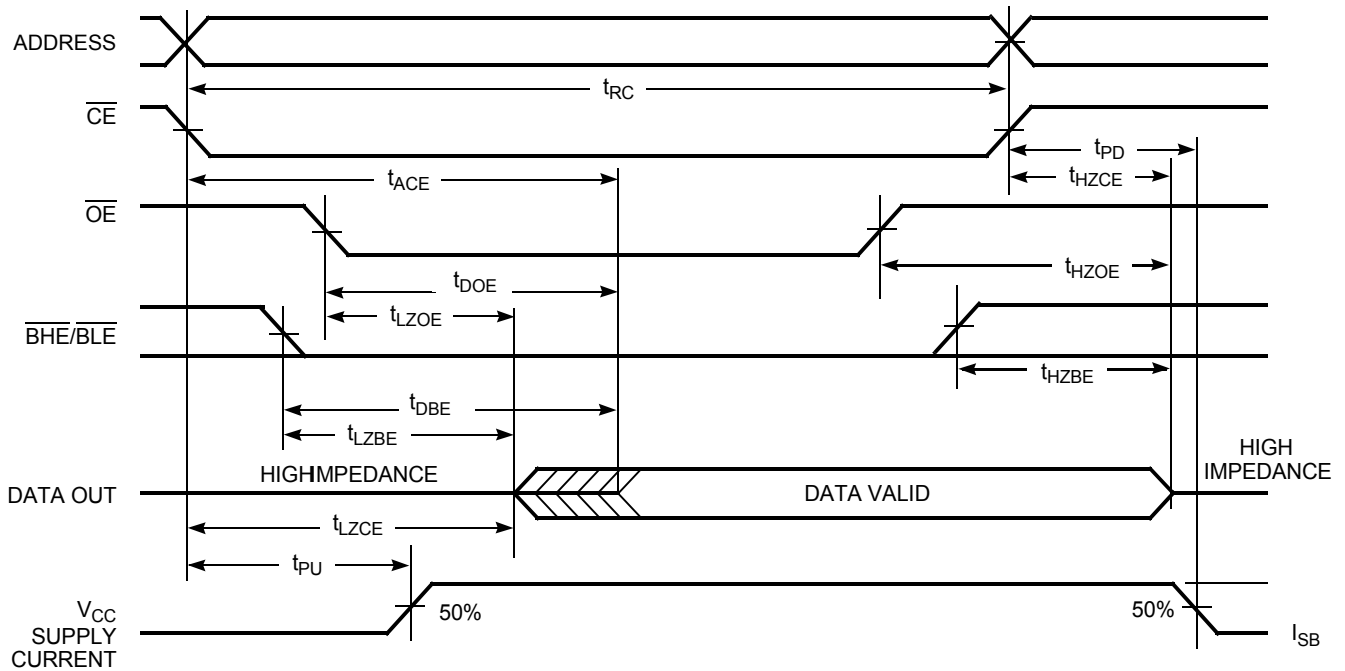


Figure 6. Read Cycle No. 2: \overline{OE} Controlled [22, 23]



Notes

- 21. The device is continuously selected. \overline{OE} , \overline{CE} = V_{IL} , \overline{BHE} and \overline{BLE} = V_{IL} .
- 22. \overline{WE} is HIGH for read cycle.
- 23. Address valid before or similar to \overline{CE} and \overline{BHE} , \overline{BLE} transition LOW.

Switching Waveforms (continued)

Figure 7. Write Cycle No 1: \overline{WE} Controlled [24, 25, 26]

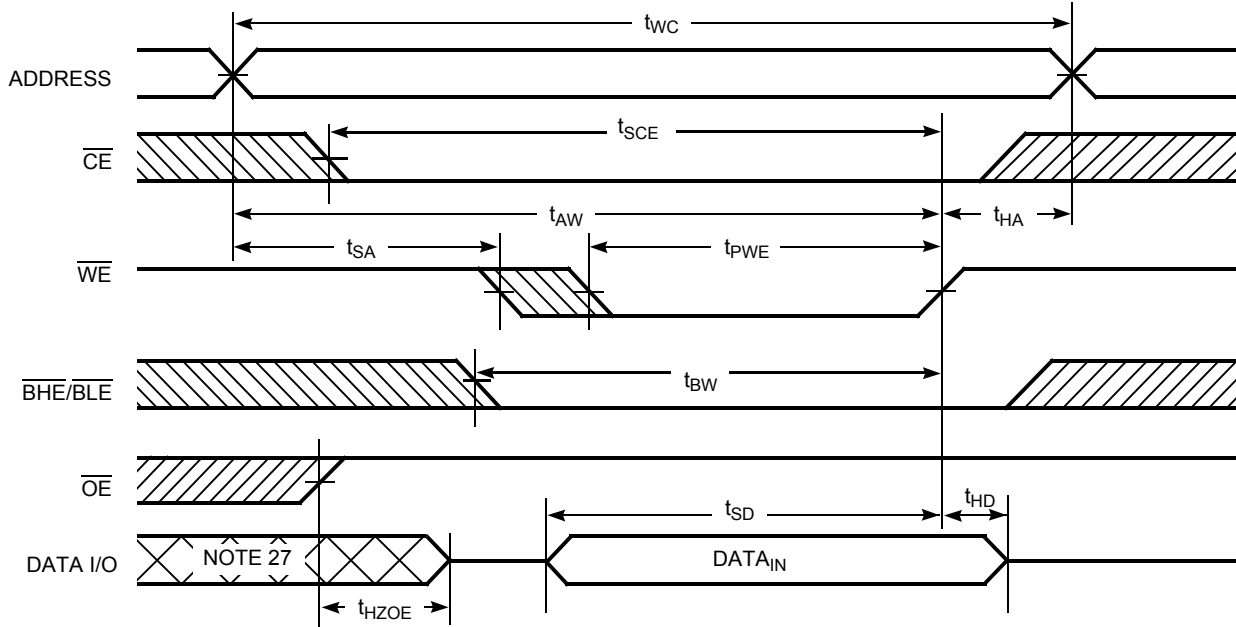
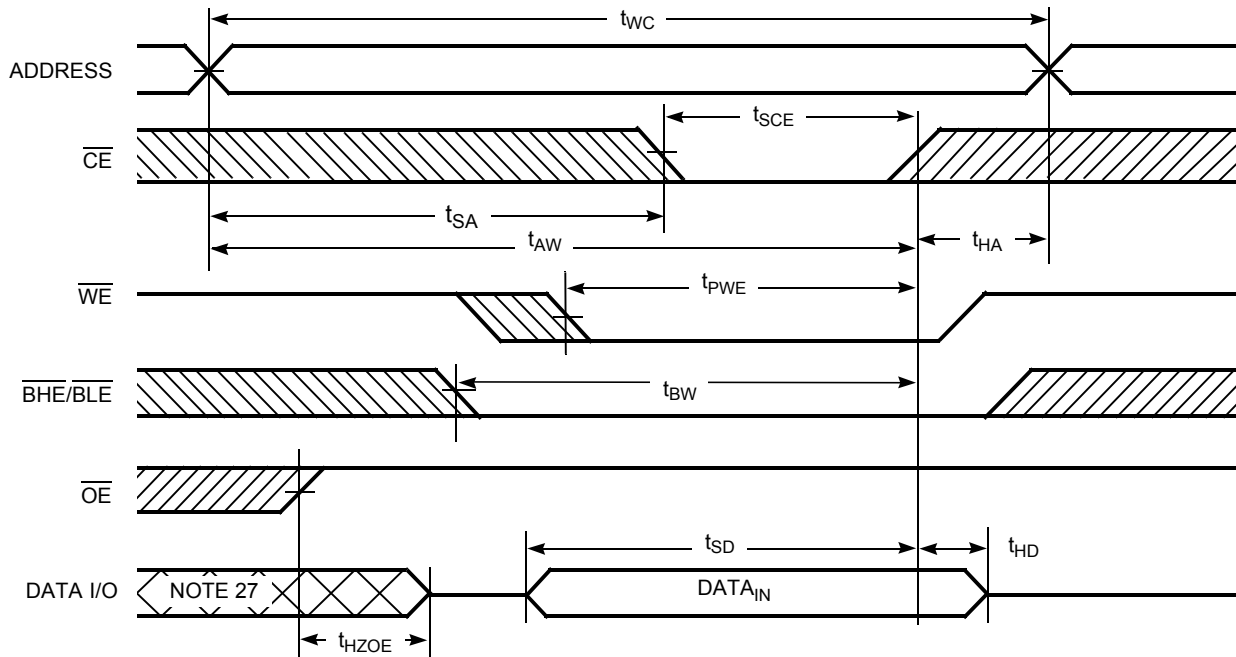


Figure 8. Write Cycle 2: \overline{CE} Controlled [24, 25, 26]



Notes

- 24. The internal write time of the memory is defined by the overlap of \overline{WE} , $\overline{CE} = V_{IL}$, \overline{BHE} and/or $\overline{BLE} = V_{IL}$. All signals are ACTIVE to initiate a write and any of these signals terminate a write by going INACTIVE. The data input setup and hold timing are referenced to the edge of the signal that terminates the write.
- 25. Data I/O is high impedance if $\overline{OE} = V_{IH}$.
- 26. If \overline{CE} goes HIGH simultaneously with $\overline{WE} = V_{IH}$, the output remains in a high impedance state.
- 27. During this period, the I/Os are in output state. Do not apply input signals.

Switching Waveforms (continued)

Figure 9. Write Cycle 3: \overline{WE} controlled, \overline{OE} LOW [28, 29]

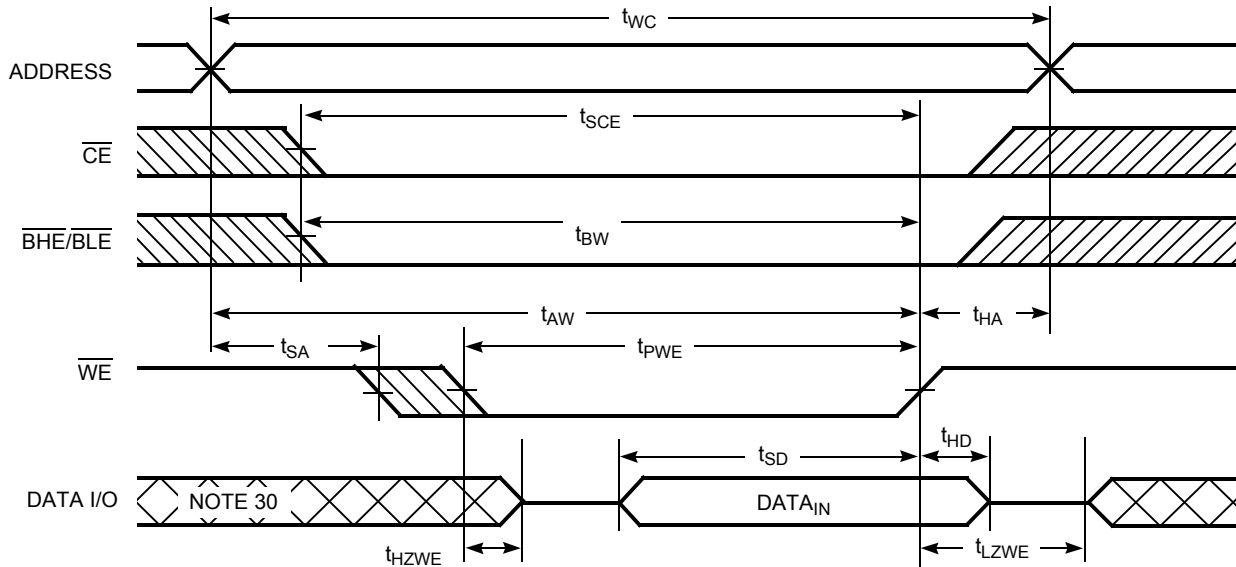
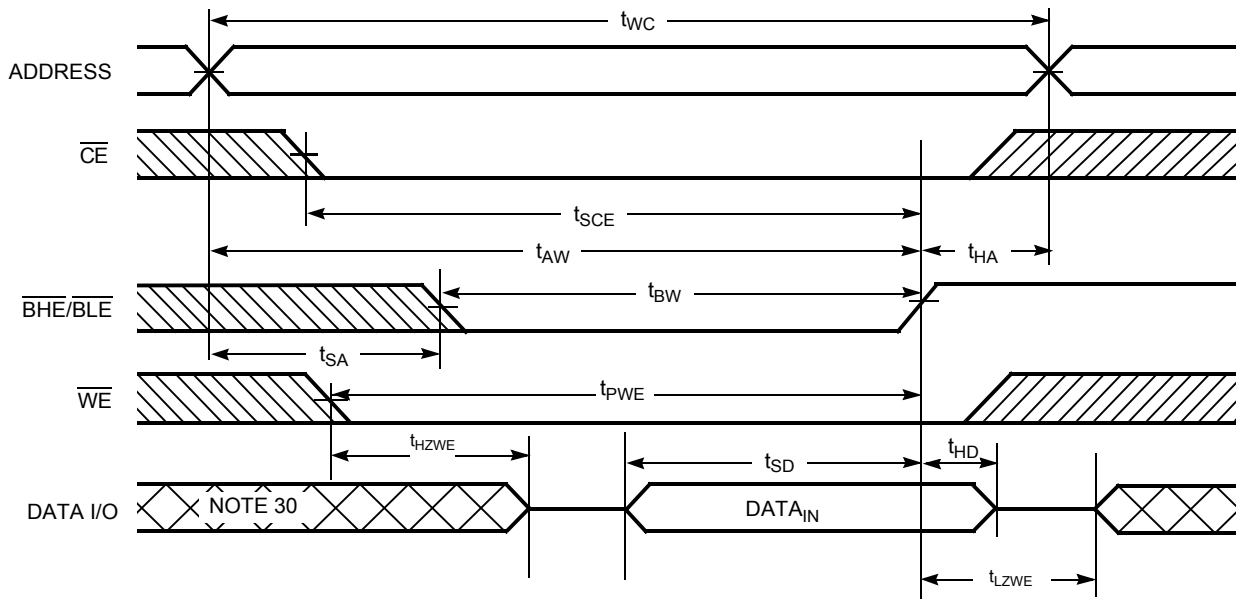


Figure 10. Write Cycle 4: $\overline{BHE}/\overline{BLE}$ Controlled, \overline{OE} LOW [28, 29]



Notes

- 28. If \overline{CE} goes HIGH simultaneously with $\overline{WE} = V_{IH}$, the output remains in a high impedance state.
- 29. The minimum write cycle pulse width should be equal to the sum of t_{HZWE} and t_{SD} .
- 30. During this period, the I/Os are in output state. Do not apply input signals.

Truth Table

| \overline{CE} | \overline{WE} | \overline{OE} | \overline{BHE} | \overline{BLE} | Inputs or Outputs | Mode | Power |
|-----------------|-----------------|-----------------|-------------------|-------------------|--|------------------------|----------------------|
| H | X | X | X ^[31] | X ^[31] | High Z | Deselect or power-down | Standby (I_{SB}) |
| L | X | X | H | H | High Z | Output disabled | Active (I_{CC}) |
| L | H | L | L | L | Data out (I/O ₀ –I/O ₁₅) | Read | Active (I_{CC}) |
| L | H | L | H | L | Data out (I/O ₀ –I/O ₇); I/O ₈ –I/O ₁₅ in High Z | Read | Active (I_{CC}) |
| L | H | L | L | H | Data out (I/O ₈ –I/O ₁₅); I/O ₀ –I/O ₇ in High Z | Read | Active (I_{CC}) |
| L | H | H | X | X | High Z | Output disabled | Active (I_{CC}) |
| L | L | X | L | L | Data in (I/O ₀ –I/O ₁₅) | Write | Active (I_{CC}) |
| L | L | X | H | L | Data in (I/O ₀ –I/O ₇); I/O ₈ –I/O ₁₅ in High Z | Write | Active (I_{CC}) |
| L | L | X | L | H | Data in (I/O ₈ –I/O ₁₅); I/O ₀ –I/O ₇ in High Z | Write | Active (I_{CC}) |

Note

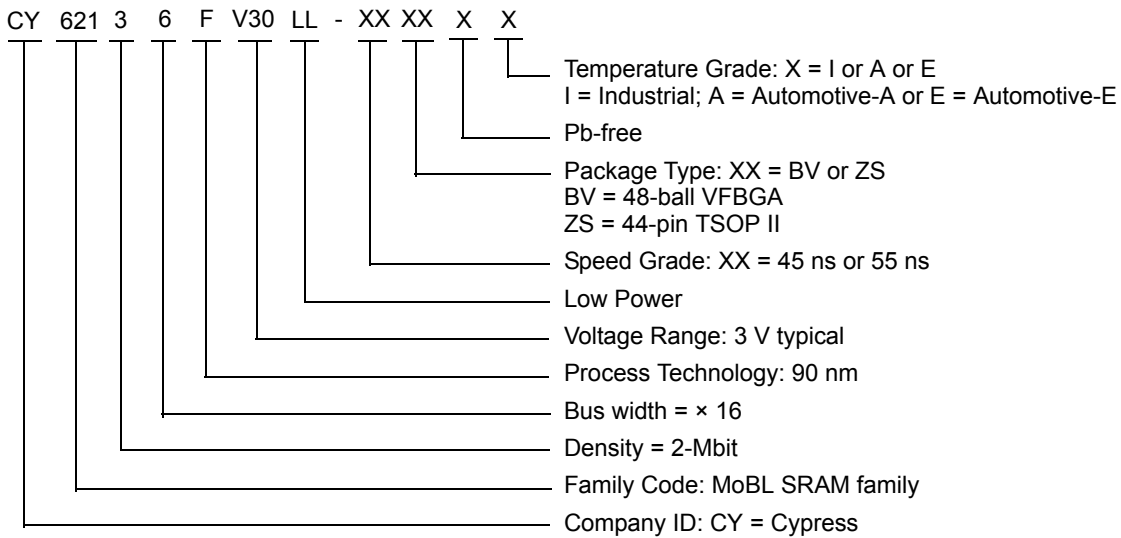
31. The 'X' (Don't care) state for the Chip enable (\overline{CE}) and Byte enables (\overline{BHE} and \overline{BLE}) in the truth table refer to the logic state (either HIGH or LOW). Intermediate voltage levels on these pins is not permitted.

Ordering Information

| Speed (ns) | Ordering Code | Package Diagram | Package Type | Operating Range |
|------------|----------------------|-----------------|--------------------------|-----------------|
| 45 | CY62136FV30LL-45BVXI | 51-85150 | 48-ball VFBGA (Pb-free) | Industrial |
| | CY62136FV30LL-45ZSXI | 51-85087 | 44-pin TSOP II (Pb-free) | |
| | CY62136FV30LL-45ZSXA | 51-85087 | 44-pin TSOP II (Pb-free) | Automotive-A |
| 55 | CY62136FV30LL-55ZSXE | 51-85087 | 44-pin TSOP II (Pb-free) | Automotive-E |

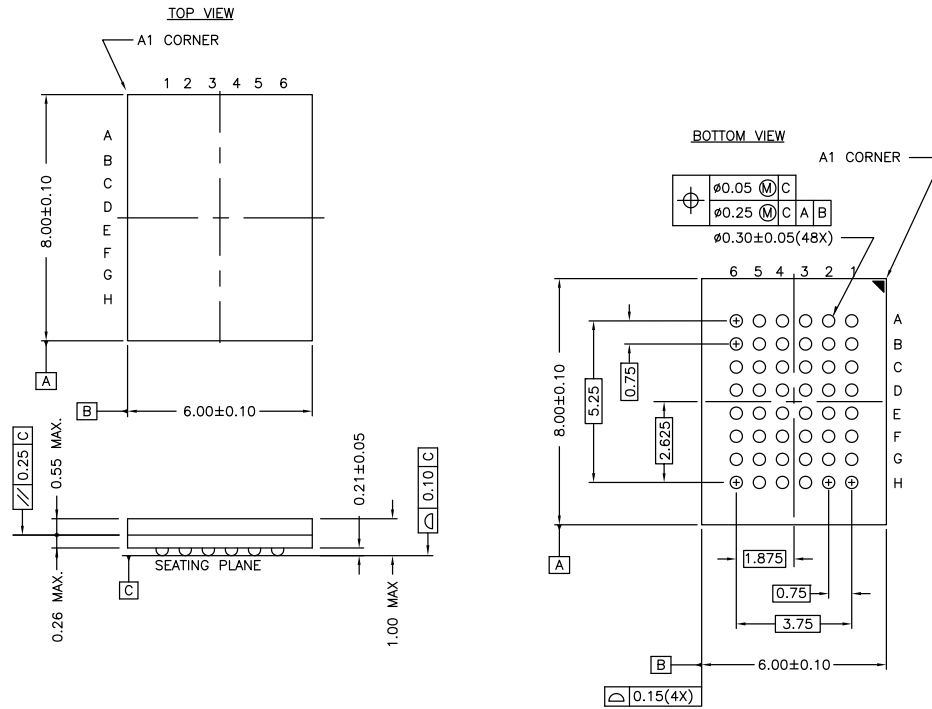
Contact your local Cypress sales representative for availability of these parts.

Ordering Code Definitions



Package Diagrams

Figure 11. 48-ball VFBGA (6 × 8 × 1.0 mm) BV48/BZ48 Package Outline, 51-85150

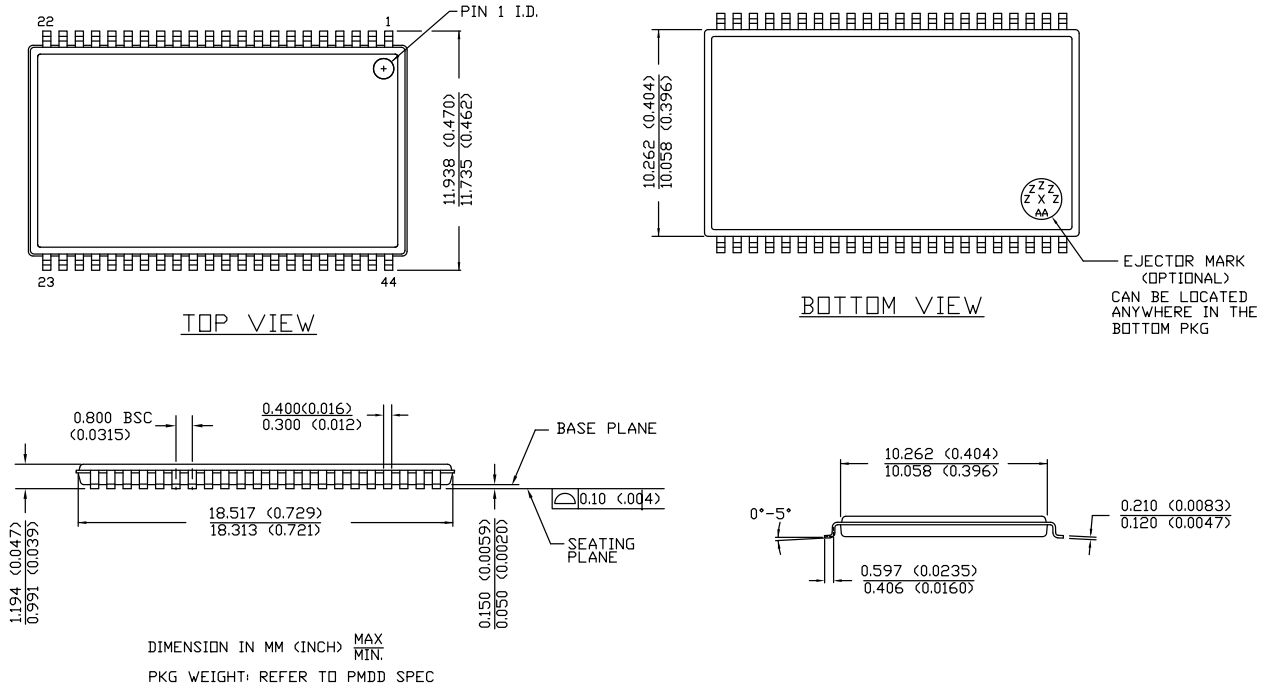


NOTE:
 PACKAGE WEIGHT: See Cypress Package Material Declaration Datasheet (PMDD) posted on the Cypress web.

51-85150 *H

Package Diagrams (continued)

Figure 12. 44-pin TSOP Z44-II Package Outline, 51-85087



51-85087 *E

Acronyms

| Acronym | Description |
|-------------------------|---|
| $\overline{\text{BHE}}$ | Byte High Enable |
| $\overline{\text{BLE}}$ | Byte Low Enable |
| $\overline{\text{CE}}$ | Chip Enable |
| CMOS | Complementary Metal Oxide Semiconductor |
| I/O | Input/Output |
| $\overline{\text{OE}}$ | Output Enable |
| SRAM | Static Random Access Memory |
| TSOP | Thin Small Outline Package |
| VFBGA | Very Fine-Pitch Ball Grid Array |
| $\overline{\text{WE}}$ | Write Enable |

Document Conventions

Units of Measure

| Symbol | Unit of Measure |
|--------|-----------------|
| °C | degree Celsius |
| MHz | megahertz |
| μA | microampere |
| μs | microsecond |
| mA | milliampere |
| ns | nanosecond |
| % | percent |
| pF | picofarad |
| Ω | ohm |
| V | volt |
| W | watt |

Document History Page

| Document Title: CY62136FV30 MoBL [®] , 2-Mbit (128 K × 16) Static RAM Document Number: 001-08402 | | | | |
|--|---------|-----------------|-----------------|--|
| Revision | ECN | Submission Date | Orig. of Change | Description of Change |
| ** | 467351 | See ECN | NXR | New data sheet. |
| *A | 797956 | See ECN | VKN | <p>Changed status from Preliminary to Final.</p> <p>Updated Features:</p> <p>Changed value of Typical standby current from 0.5 μA to 1.0 μA.</p> <p>Changed value of Maximum standby current from 2.5 μA to 5.0 μA.</p> <p>Updated Electrical Characteristics:</p> <p>Changed maximum value of I_{CC} parameter corresponding to Test Condition "f = 1 MHz" from 2.25 μA to 2.5 μA.</p> <p>Changed typical value of I_{SB1} parameter from 0.5 μA to 1.0 μA.</p> <p>Changed maximum value of I_{SB1} parameter from 2.5 μA to 5.0 μA.</p> <p>Changed typical value of I_{SB2} parameter from 0.5 μA to 1.0 μA.</p> <p>Changed maximum value of I_{SB2} parameter from 2.5 μA to 5.0 μA.</p> <p>Updated Data Retention Characteristics:</p> <p>Changed typical value of I_{CCDR} parameter from 0.5 μA to 1.0 μA.</p> <p>Changed maximum value of I_{CCDR} parameter from 2.5 μA to 4.0 μA.</p> |
| *B | 869500 | See ECN | VKN | <p>Added Automotive Temperature Grade related information in all instances across the document.</p> <p>Updated Switching Characteristics:</p> <p>Added Note "Access time parameters are subject to byte enable signals (\overline{BHE} or \overline{BLE}) not switching when chip is disabled. Please see application note AN3842 for further clarification." and referred the same in t_{ACE} parameter.</p> <p>Updated Ordering Information.</p> |
| *C | 901800 | See ECN | VKN | <p>Updated Electrical Characteristics:</p> <p>Added Note 8 and referred the same note in I_{SB2} parameter.</p> <p>Updated Data Retention Characteristics:</p> <p>Added Note 11 and referred the same note in I_{CCDR} parameter.</p> <p>Updated Switching Characteristics:</p> <p>Removed Note from t_{ACE} parameter and added the same note in "Parameters" column with some updates (Replaced Access time parameters with AC parameters in the note).</p> |
| *D | 1371124 | See ECN | VKN / AESA | <p>Changed status of Automotive information from Preliminary to Final (Removed shades).</p> <p>Updated Electrical Characteristics:</p> <p>Changed minimum value of I_{IX} parameter corresponding to 55 ns speed bin from -1 μA to -4 μA.</p> <p>Changed maximum value of I_{IX} parameter corresponding to 55 ns speed bin from +1 μA to +4 μA.</p> <p>Changed minimum value of I_{OZ} parameter corresponding to 55 ns speed bin from -1 μA to -4 μA.</p> <p>Changed maximum value of I_{OZ} parameter corresponding to 55 ns speed bin from +1 μA to +4 μA.</p> <p>Updated Switching Characteristics:</p> <p>Changed maximum value of t_{DBE} parameter corresponding to 55 ns speed bin from 55 ns to 25 ns.</p> |
| *E | 2594937 | 10/22/08 | NXR / PYRS | <p>Added Automotive-A Temperature Grade related information in all instances across the document.</p> <p>Updated Switching Characteristics:</p> <p>Changed minimum value of t_{LZBE} parameter corresponding to 55 ns speed bin from 10 ns to 5 ns.</p> |
| *F | 2675375 | 03/17/2009 | VKN / PYRS | <p>Updated Product Portfolio:</p> <p>Corrected typo (Replaced μA with mA for unit of Standby I_{SB2}).</p> |

Document History Page (continued)

| Document Title: CY62136FV30 MoBL [®] , 2-Mbit (128 K × 16) Static RAM Document Number: 001-08402 | | | | |
|--|---------|-----------------|-----------------|--|
| Revision | ECN | Submission Date | Orig. of Change | Description of Change |
| *G | 2882113 | 02/19/2010 | VKN / AESA | Updated Truth Table : Corrected typo. Updated Package Diagrams . |
| *H | 2943752 | 06/03/2010 | VKN | Updated Truth Table : Added footnote related to Chip enable and Byte enables. Updated Package Diagrams . |
| *I | 3055169 | 10/12/2010 | RAME | Updated all foot notes from table notes. Added Ordering Code Definitions . Added Acronyms and Units of Measure . Updated Package Diagrams . |
| *J | 3263825 | 06/17/2011 | RAME | Updated Functional Description (Removed "For best practice recommendations, refer to the Cypress application note AN1064, SRAM System Guidelines."). Updated Data Retention Characteristics (Minimum value of t_R parameter). Updated to new template. |
| *K | 3376161 | 09/19/2011 | RAME | No technical updates. Completing Sunset Review. |
| *L | 4102266 | 08/22/2013 | VINI | Updated Switching Characteristics : Updated Note 16. Updated Package Diagrams : spec 51-85150 – Changed revision from *G to *H. spec 51-85087 – Changed revision from *D to *E. Updated to new template. Completing Sunset Review. |
| *M | 4581648 | 11/27/2014 | VINI | Updated Functional Description : Added "For a complete list of related resources, click here ." at the end. Updated Maximum Ratings : Referred Notes 4, 5 in "Supply voltage to ground potential". |
| *N | 4989003 | 10/27/2015 | NILE | Updated Switching Characteristics : Added Note 20 and referred the same note in "Write Cycle". Updated Switching Waveforms : Added Note 29 and referred the same note in Figure 9 and Figure 10 . Updated Truth Table . Updated to new template. Completing Sunset Review. |
| *O | 6010500 | 01/02/2018 | AESATMP8 | Updated logo and Copyright. |

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