



## 128K x 8 Static RAM

### Features

- Low voltage range:
  - 2.7V–3.6V (CY62128V)
  - 2.3V–2.7V (CY62128V25)
  - 1.6V–2.0V (CY62128V18)
- Low active power and standby power
- Easy memory expansion with  $\overline{CE}$  and  $\overline{OE}$  features
- TTL-compatible inputs and outputs
- Automatic power-down when deselected
- CMOS for optimum speed/power

### Functional Description

The CY62128V family is composed of three high-performance CMOS static RAMs organized as 131,072 words by 8 bits. Easy memory expansion is provided by an active LOW Chip Enable ( $\overline{CE}_1$ ), an active HIGH Chip Enable ( $CE_2$ ), an active

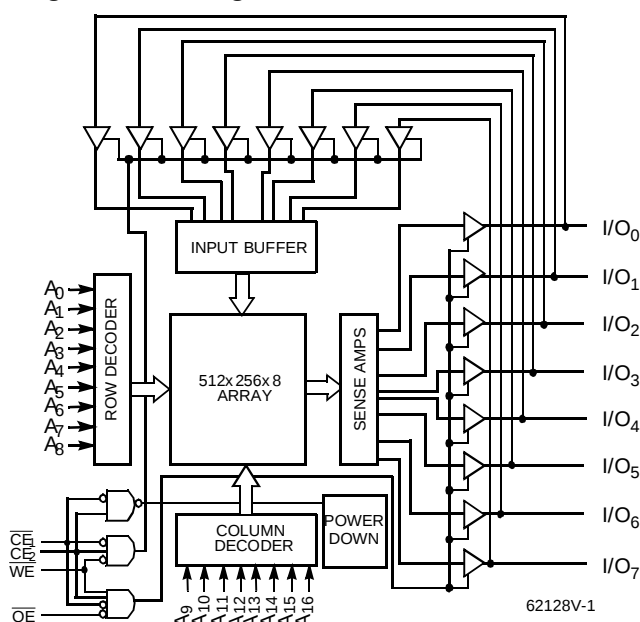
LOW Output Enable ( $\overline{OE}$ ) and three-state drivers. These devices have an automatic power-down feature, reducing the power consumption by over 99% when deselected. The CY62128V family is available in the standard 450-mil-wide SOIC, 32-lead TSOP-I, and STSOP packages.

Writing to the device is accomplished by taking Chip Enable one ( $\overline{CE}_1$ ) and Write Enable ( $\overline{WE}$ ) inputs LOW and the Chip Enable two ( $CE_2$ ) input HIGH. Data on the eight I/O pins ( $I/O_0$  through  $I/O_7$ ) is then written into the location specified on the address pins ( $A_0$  through  $A_{16}$ ).

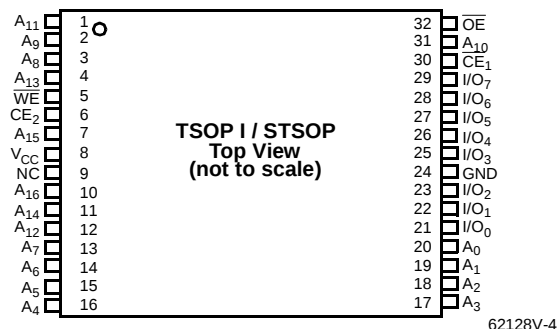
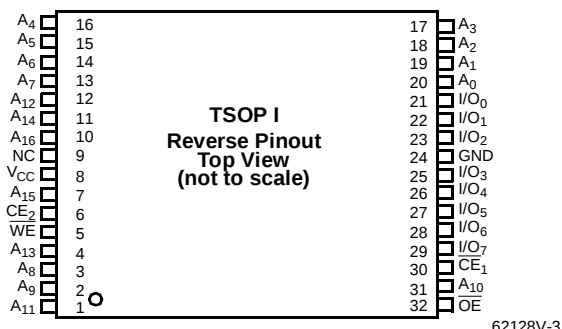
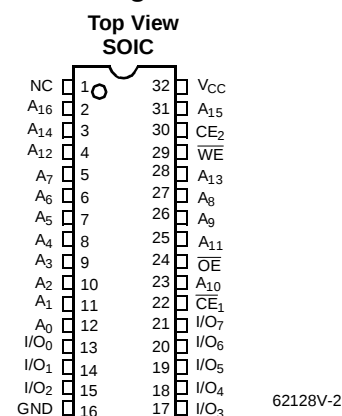
Reading from the device is accomplished by taking Chip Enable one ( $\overline{CE}_1$ ) and Output Enable ( $\overline{OE}$ ) LOW while forcing Write Enable ( $\overline{WE}$ ) and Chip Enable two ( $CE_2$ ) HIGH. Under these conditions, the contents of the memory location specified by the address pins will appear on the I/O pins.

The eight input/output pins ( $I/O_0$  through  $I/O_7$ ) are placed in a high-impedance state when the device is deselected ( $\overline{CE}_1$  HIGH or  $CE_2$  LOW), the outputs are disabled ( $\overline{OE}$  HIGH), or during a write operation ( $\overline{CE}_1$  LOW,  $CE_2$  HIGH, and  $\overline{WE}$  LOW).

### Logic Block Diagram



### Pin Configurations



## Maximum Ratings

(Above which the useful life may be impaired. For user guidelines, not tested.)

Storage Temperature ..... -65°C to +150°C

Ambient Temperature with  
Power Applied ..... -55°C to +125°C

Supply Voltage to Ground Potential  
(Pin 28 to Pin 14) ..... -0.5V to +4.6V

DC Voltage Applied to Outputs  
in High Z State<sup>[1]</sup> ..... -0.5V to  $V_{CC} + 0.5V$

DC Input Voltage<sup>[1]</sup> ..... -0.5V to  $V_{CC} + 0.5V$

Output Current into Outputs (LOW) ..... 20 mA

Static Discharge Voltage ..... >2001V  
(per MIL-STD-883, Method 3015)

Latch-Up Current ..... >200 mA

## Operating Range

| Range      | Ambient Temperature | $V_{CC}$     |
|------------|---------------------|--------------|
| Commercial | 0°C to +70°C        | 1.6V to 3.6V |
| Industrial | -40°C to +85°C      | 1.6V to 3.6V |

## Product Portfolio

| Product    | $V_{CC}$ Range |                     |      | Speed     | Power Dissipation (Commercial) |         |                       |                               |
|------------|----------------|---------------------|------|-----------|--------------------------------|---------|-----------------------|-------------------------------|
|            |                |                     |      |           | Operating ( $I_{CC}$ )         |         | Standby ( $I_{SB2}$ ) |                               |
|            | Min.           | Typ. <sup>[2]</sup> | Max. |           | Typ. <sup>[2]</sup>            | Maximum | Typ. <sup>[2]</sup>   | Maximum                       |
| CY62128V   | 2.7V           | 3.0V                | 3.6V | 55, 70 ns | 20 mA                          | 40 mA   | 0.4 $\mu$ A           | 100 $\mu$ A (XL = 10 $\mu$ A) |
| CY62128V25 | 2.3V           | 2.5V                | 2.7V | 100 ns    | 15 mA                          | 20 mA   | 0.3 $\mu$ A           | 50 $\mu$ A (LL = 12 $\mu$ A)  |
| CY62128V18 | 1.6V           | 1.8V                | 2.0V | 200 ns    | 10 mA                          | 15 mA   | 0.3 $\mu$ A           | 30 $\mu$ A (LL = 10 $\mu$ A)  |

## Electrical Characteristics Over the Operating Range

| Parameter       | Description                              | Test Conditions                                                                                 |                  |                                                   | CY62128V-55/70                                                                                                                                           |                     |                       | Unit |
|-----------------|------------------------------------------|-------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------|------|
|                 |                                          |                                                                                                 |                  |                                                   | Min.                                                                                                                                                     | Typ. <sup>[2]</sup> | Max.                  |      |
| V <sub>OH</sub> | Output HIGH Voltage                      | V <sub>CC</sub> = Min., I <sub>OH</sub> = −1.0 mA                                               |                  |                                                   | 2.4                                                                                                                                                      |                     |                       | V    |
| V <sub>OL</sub> | Output LOW Voltage                       | V <sub>CC</sub> = Min., I <sub>OL</sub> = 2.1 mA                                                |                  |                                                   |                                                                                                                                                          |                     | 0.4                   | V    |
| V <sub>IH</sub> | Input HIGH Voltage                       |                                                                                                 |                  |                                                   | 2                                                                                                                                                        |                     | V <sub>CC</sub> +0.5V | V    |
| V <sub>IL</sub> | Input LOW Voltage                        |                                                                                                 |                  |                                                   | −0.5                                                                                                                                                     |                     | 0.8                   | V    |
| I <sub>IX</sub> | Input Load Current                       | GND ≤ V <sub>I</sub> ≤ V <sub>CC</sub>                                                          |                  |                                                   | −1                                                                                                                                                       | ±1                  | +1                    | μA   |
| I <sub>OZ</sub> | Output Leakage Current                   | GND ≤ V <sub>O</sub> ≤ V <sub>CC</sub> , Output Disabled                                        |                  |                                                   | −1                                                                                                                                                       | ±1                  | +1                    | μA   |
| I <sub>CC</sub> | V <sub>CC</sub> Operating Supply Current | V <sub>CC</sub> = Max.,<br>I <sub>OUT</sub> = 0 mA,<br>f = f <sub>MAX</sub> = 1/t <sub>RC</sub> | Com'l,<br>70 ns  | L                                                 |                                                                                                                                                          | 20                  | 40                    | mA   |
|                 |                                          |                                                                                                 |                  | LL, XL                                            |                                                                                                                                                          | 20                  | 40                    |      |
|                 |                                          |                                                                                                 | Ind'l,<br>55 ns  | LL                                                |                                                                                                                                                          | 23                  | 50                    |      |
|                 |                                          |                                                                                                 |                  | Ind'l,<br>70 ns                                   | L                                                                                                                                                        |                     | 20                    |      |
|                 |                                          |                                                                                                 | LL               |                                                   |                                                                                                                                                          | 20                  | 40                    |      |
|                 |                                          |                                                                                                 | I <sub>SB1</sub> | Automatic CE<br>Power-Down Current—<br>TTL Inputs | Max. V <sub>CC</sub> , $\overline{CE} \geq V_{IH}$ ,<br>V <sub>IN</sub> ≥ V <sub>IH</sub> or<br>V <sub>IN</sub> ≤ V <sub>IL</sub> , f = f <sub>MAX</sub> | Com'l,<br>70 ns     | L                     |      |
| LL, XL          |                                          | 15                                                                                              |                  |                                                   |                                                                                                                                                          |                     | 300                   |      |
| Coml,<br>55 ns  | LL                                       |                                                                                                 |                  |                                                   |                                                                                                                                                          | 17                  | 350                   |      |
|                 | Ind'l                                    | L                                                                                               |                  |                                                   |                                                                                                                                                          |                     | 15                    | 300  |
| LL              |                                          |                                                                                                 |                  |                                                   |                                                                                                                                                          | 15                  | 300                   |      |

### Notes:

- $V_{IL}(\text{min.}) = -2.0V$  for pulse durations of less than 20 ns.
- Typical values are included for reference only and are not guaranteed or tested. Typical values are measured at  $V_{CC} = V_{CC} \text{ Typ.}, T_A = 25^\circ\text{C}$ .

**Electrical Characteristics** Over the Operating Range

| Parameter        | Description                                 | Test Conditions                                                                                                                       |       |     | CY62128V-55/70 |                     |      | Unit |
|------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------|-----|----------------|---------------------|------|------|
|                  |                                             |                                                                                                                                       |       |     | Min.           | Typ. <sup>[2]</sup> | Max. |      |
| I <sub>SB2</sub> | Automatic CE Power-Down Current—CMOS Inputs | Max. V <sub>CC</sub> ,<br>CE ≥ V <sub>CC</sub> – 0.3V<br>V <sub>IN</sub> ≥ V <sub>CC</sub> – 0.3V<br>or V <sub>IN</sub> ≤ 0.3V, f = 0 | Com'l | L   | 0.4            | 100                 | μA   |      |
|                  |                                             |                                                                                                                                       |       | LL  |                | 15                  | μA   |      |
|                  |                                             |                                                                                                                                       |       | XL  |                | 10                  | μA   |      |
|                  |                                             | Ind'l                                                                                                                                 | L     | 100 |                | μA                  |      |      |
|                  |                                             |                                                                                                                                       | LL    | 30  |                | μA                  |      |      |
|                  |                                             |                                                                                                                                       |       |     |                |                     |      |      |

**Electrical Characteristics** Over the Operating Range

| Parameter        | Description                                 | Test Conditions                                                                                                                                   | CY62128V25-100 |                     |                         | CY62128V18-200          |                     |                         | Unit |
|------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------|-------------------------|-------------------------|---------------------|-------------------------|------|
|                  |                                             |                                                                                                                                                   | Min.           | Typ. <sup>[2]</sup> | Max.                    | Min.                    | Typ. <sup>[2]</sup> | Max.                    |      |
| V <sub>OH</sub>  | Output HIGH Voltage                         | V <sub>CC</sub> = Min., I <sub>OH</sub> = –0.1 mA                                                                                                 | 2.4            |                     |                         | 0.8*<br>V <sub>CC</sub> |                     |                         | V    |
| V <sub>OL</sub>  | Output LOW Voltage                          | V <sub>CC</sub> = Min., I <sub>OL</sub> = 0.1 mA                                                                                                  |                |                     | 0.4                     |                         |                     | 0.2                     | V    |
| V <sub>IH</sub>  | Input HIGH Voltage                          |                                                                                                                                                   | 2              |                     | V <sub>CC</sub><br>+0.5 | 0.7*<br>V <sub>CC</sub> |                     | V <sub>CC</sub><br>+0.3 | V    |
| V <sub>IL</sub>  | Input LOW Voltage                           |                                                                                                                                                   | –0.5           |                     | 0.8                     | –0.5                    |                     | 0.3*<br>V <sub>CC</sub> | V    |
| I <sub>IX</sub>  | Input Load Current                          | GND ≤ V <sub>I</sub> ≤ V <sub>CC</sub>                                                                                                            | –1             | ±1                  | +1                      | –1                      | ±0.1                | +1                      | μA   |
| I <sub>OZ</sub>  | Output Leakage Current                      | GND ≤ V <sub>O</sub> ≤ V <sub>CC</sub> , Output Disabled                                                                                          | –1             | ±1                  | +1                      | –1                      | ±0.1                | +1                      | μA   |
| I <sub>CC</sub>  | V <sub>CC</sub> Operating Supply Current    | V <sub>CC</sub> = Max.,<br>I <sub>OUT</sub> = 0 mA,<br>f = f <sub>MAX</sub> = 1/t <sub>RC</sub>                                                   | L              | 15                  | 20                      |                         | 10                  | 15                      | mA   |
|                  |                                             |                                                                                                                                                   | LL             |                     |                         |                         |                     |                         |      |
| I <sub>SB1</sub> | Automatic CE Power-Down Current—TTL Inputs  | Max. V <sub>CC</sub> , CE ≥ V <sub>IH</sub> ,<br>V <sub>IN</sub> ≥ V <sub>IH</sub> or<br>V <sub>IN</sub> ≤ V <sub>IL</sub> , f = f <sub>MAX</sub> | L              | 15                  | 300                     |                         | 5                   | 100                     | μA   |
|                  |                                             |                                                                                                                                                   | LL             |                     |                         |                         |                     |                         |      |
| I <sub>SB2</sub> | Automatic CE Power-Down Current—CMOS Inputs | Max. V <sub>CC</sub> ,<br>CE ≥ V <sub>CC</sub> – 0.3V<br>V <sub>IN</sub> ≥ V <sub>CC</sub> – 0.3V<br>or V <sub>IN</sub> ≤ 0.3V, f = 0             | L              | 0.4                 | 50                      |                         | 0.4                 | 30                      | μA   |
|                  |                                             |                                                                                                                                                   | LL             |                     | 12                      |                         |                     | 10                      | μA   |
|                  |                                             | Indust'l Temp Range                                                                                                                               | LL             |                     | 24                      |                         |                     | 20                      | μA   |

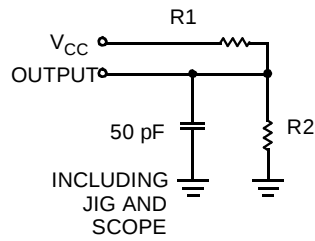
**Capacitance<sup>[3]</sup>**

| Parameter        | Description        | Test Conditions                                             | Max. | Unit |
|------------------|--------------------|-------------------------------------------------------------|------|------|
| C <sub>IN</sub>  | Input Capacitance  | T <sub>A</sub> = 25°C, f = 1 MHz,<br>V <sub>CC</sub> = 3.0V | 6    | pF   |
| C <sub>OUT</sub> | Output Capacitance |                                                             | 8    | pF   |

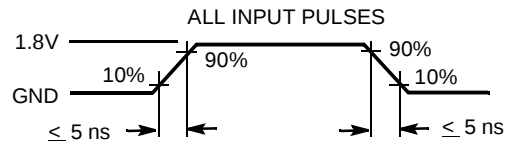
**Note:**

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

## AC Test Loads and Waveforms

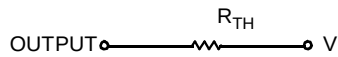


62128V-5



62128V-6

Equivalent to: THÉVENIN EQUIVALENT

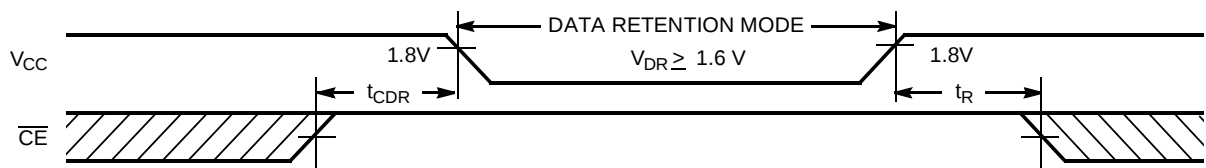


| Parameters | 3.3V  | 2.5V  | 1.8V  | Unit  |
|------------|-------|-------|-------|-------|
| R1         | 1213  | 15909 | 10800 | Ohms  |
| R2         | 1378  | 4487  | 4154  | Ohms  |
| $R_{TH}$   | 645   | 3500  | 3000  | Ohms  |
| $V_{TH}$   | 1.75V | 0.55V | 0.50V | Volts |

## Data Retention Characteristics (Over the Operating Range)

| Parameter       | Description                          |        | Conditions <sup>[4]</sup>                                                                                                                 | Min.     | Typ. <sup>[2]</sup> | Max. | Unit    |
|-----------------|--------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------|------|---------|
| $V_{DR}$        | $V_{CC}$ for Data Retention          |        |                                                                                                                                           | 1.6      |                     |      | V       |
| $I_{CCDR}$      | Data Retention Current               | Com'l  | $V_{CC} = 2V$<br>$CE \geq V_{CC} - 0.3V$ ,<br>$V_{IN} \geq V_{CC} - 0.3V$ or<br>$V_{IN} \leq 0.3V$<br>No input may exceed $V_{CC} + 0.3V$ |          | 0.4                 | 10   | $\mu A$ |
|                 |                                      | LL, XL |                                                                                                                                           |          |                     | 10   | $\mu A$ |
|                 |                                      | Ind'l  |                                                                                                                                           |          |                     | 20   | $\mu A$ |
|                 |                                      | LL     |                                                                                                                                           |          |                     | 20   | $\mu A$ |
| $t_{CDR}^{[3]}$ | Chip Deselect to Data Retention Time |        |                                                                                                                                           | 0        |                     |      | ns      |
| $t_R$           | Operation Recovery Time              |        |                                                                                                                                           | $t_{RC}$ |                     |      | ns      |

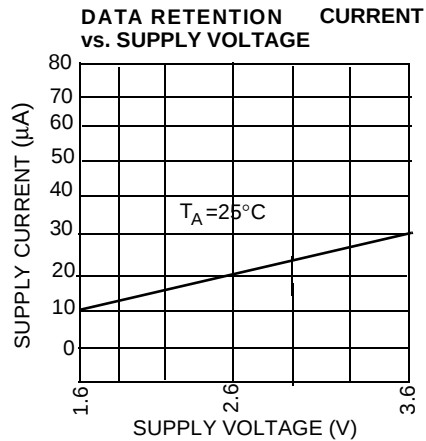
## Data Retention Waveform



C62128V-7

### Note:

4. No input may exceed  $V_{CC} + 0.3V$ .

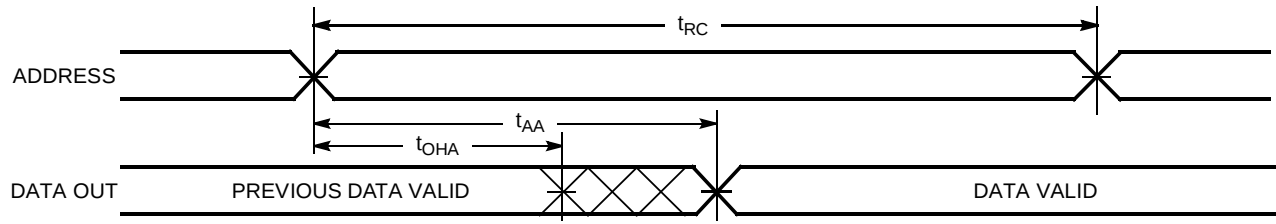
**Data Retention Current Graph** (for "L" version only)

**Switching Characteristics** Over the Operating Range<sup>[5]</sup>

| Parameter                     | Description                                      | 62128V-55 |      | 62128V-70 |      | 62128V25-100 |      | 62128V18-200 |      | Unit |
|-------------------------------|--------------------------------------------------|-----------|------|-----------|------|--------------|------|--------------|------|------|
|                               |                                                  | Min.      | Max. | Min.      | Max. | Min.         | Max. | Min.         | Max. |      |
| READ CYCLE                    |                                                  |           |      |           |      |              |      |              |      |      |
| t <sub>RC</sub>               | Read Cycle Time                                  | 55        |      | 70        |      | 100          |      | 200          |      | ns   |
| t <sub>AA</sub>               | Address to Data Valid                            |           | 55   |           | 70   |              | 100  |              | 200  | ns   |
| t <sub>OHA</sub>              | Data Hold from Address Change                    | 5         |      | 10        |      | 10           |      | 10           |      | ns   |
| t <sub>ACE</sub>              | $\overline{CE}$ LOW to Data Valid                |           | 55   |           | 70   |              | 100  |              | 200  | ns   |
| t <sub>DOE</sub>              | $\overline{OE}$ LOW to Data Valid                |           | 20   |           | 35   |              | 75   |              | 125  | ns   |
| t <sub>LZOE</sub>             | $\overline{OE}$ LOW to Low Z <sup>[6]</sup>      | 10        |      | 10        |      | 10           |      | 10           |      | ns   |
| t <sub>HZOE</sub>             | $\overline{OE}$ HIGH to High Z <sup>[6, 7]</sup> |           | 20   |           | 25   |              | 50   |              | 75   | ns   |
| t <sub>LZCE</sub>             | $\overline{CE}$ LOW to Low Z <sup>[6]</sup>      | 10        |      | 10        |      | 10           |      | 10           |      | ns   |
| t <sub>HZCE</sub>             | $\overline{CE}$ HIGH to High Z <sup>[6, 7]</sup> |           | 20   |           | 25   |              | 50   |              | 75   | ns   |
| t <sub>PU</sub>               | $\overline{CE}$ LOW to Power-Up                  | 0         |      | 0         |      | 0            |      | 0            |      | ns   |
| t <sub>PD</sub>               | $\overline{CE}$ HIGH to Power-Down               |           | 55   |           | 70   |              | 100  |              | 200  | ns   |
| WRITE CYCLE <sup>[8, 9]</sup> |                                                  |           |      |           |      |              |      |              |      |      |
| t <sub>WC</sub>               | Write Cycle Time                                 | 55        |      | 70        |      | 100          |      | 200          |      | ns   |
| t <sub>SCE</sub>              | $\overline{CE}$ LOW to Write End                 | 45        |      | 60        |      | 100          |      | 190          |      | ns   |
| t <sub>AW</sub>               | Address Set-Up to Write End                      | 45        |      | 60        |      | 100          |      | 190          |      | ns   |
| t <sub>HA</sub>               | Address Hold from Write End                      | 0         |      | 0         |      | 0            |      | 0            |      | ns   |
| t <sub>SA</sub>               | Address Set-Up to Write Start                    | 0         |      | 0         |      | 0            |      | 0            |      | ns   |
| t <sub>PWE</sub>              | $\overline{WE}$ Pulse Width                      | 45        |      | 55        |      | 90           |      | 125          |      | ns   |
| t <sub>SD</sub>               | Data Set-Up to Write End                         | 25        |      | 30        |      | 60           |      | 100          |      | ns   |
| t <sub>HD</sub>               | Data Hold from Write End                         | 0         |      | 0         |      | 0            |      | 0            |      | ns   |
| t <sub>HZWE</sub>             | $\overline{WE}$ LOW to High Z <sup>[6, 7]</sup>  |           | 20   |           | 25   |              | 50   |              | 100  | ns   |
| t <sub>LZWE</sub>             | $\overline{WE}$ HIGH to Low Z <sup>[6]</sup>     | 5         |      | 5         |      | 10           |      | 15           |      | ns   |

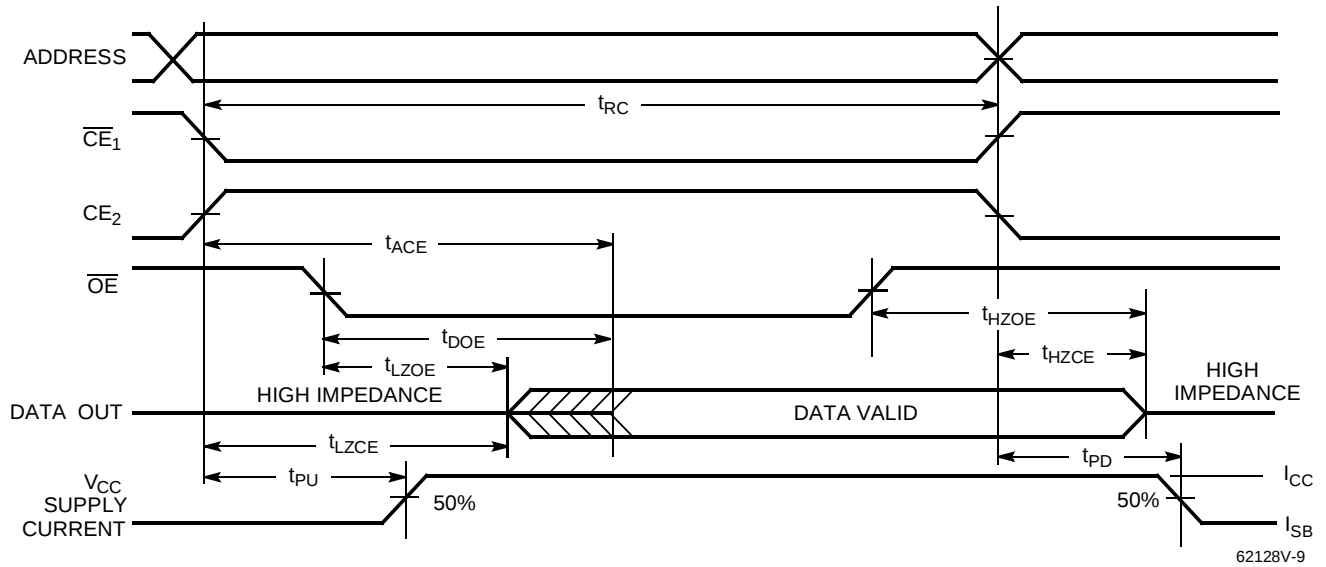
- Test conditions assume signal transition time of 5 ns or less timing reference levels of 1.5V, input pulse levels of 0 to 3.0V, and output loading of the specified I<sub>OL</sub>/I<sub>OH</sub> and 100-pF load capacitance.
- At any given temperature and voltage condition, t<sub>HZCE</sub> is less than t<sub>LZCE</sub>, t<sub>HZOE</sub> is less than t<sub>LZOE</sub>, and t<sub>HZWE</sub> is less than t<sub>LZWE</sub> for any given device.
- t<sub>HZOE</sub>, t<sub>HZCE</sub>, and t<sub>HZWE</sub> are specified with C<sub>L</sub> = 5 pF as in part (b) of AC Test Loads. Transition is measured ±200 mV from steady-state voltage.
- The internal write time of the memory is defined by the overlap of CE<sub>1</sub> LOW, CE<sub>2</sub> HIGH, and WE LOW. CE<sub>1</sub> and WE signals must be LOW and CE<sub>2</sub> HIGH to initiate a write and either signal can terminate a write by going HIGH. The data input set-up and hold timing should be referenced to the rising edge of the signal that terminates the write.
- The minimum write cycle time for write cycle #3 (WE controlled, OE LOW) is the sum of t<sub>HZWE</sub> and t<sub>SD</sub>.

## Switching Waveforms

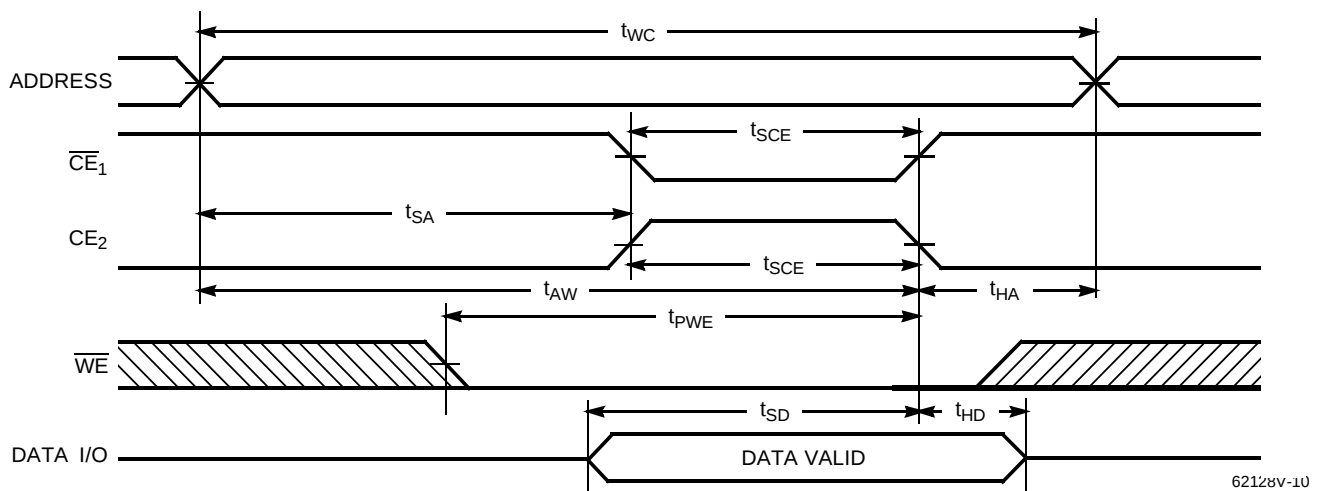
### Read Cycle No. 1<sup>[10, 11]</sup>



### Read Cycle No. 2 ( $\overline{OE}$ Controlled)<sup>[11, 12]</sup>

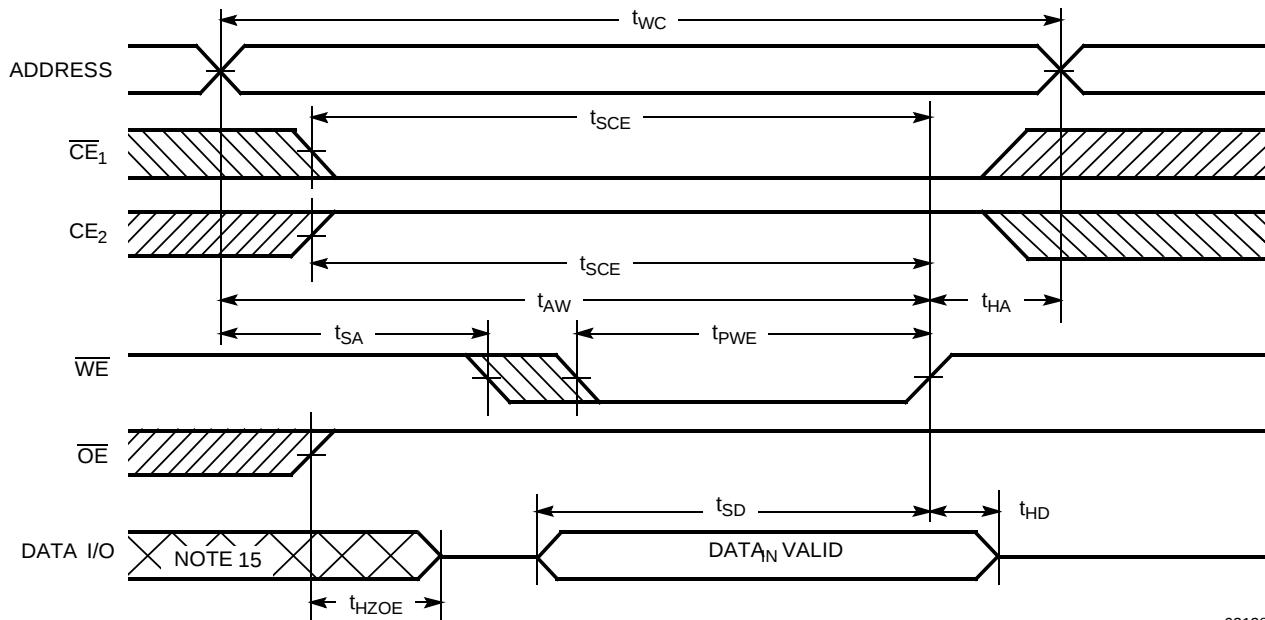


### Write Cycle No. 1 ( $\overline{CE}_1$ or $CE_2$ Controlled)<sup>[13, 14]</sup>



#### Notes:

10. Device is continuously selected.  $\overline{OE}$ ,  $\overline{CE}_1$ ,  $CE_2 = V_{IH}$ .
11.  $\overline{WE}$  is HIGH for read cycle.
12. Address valid prior to or coincident with  $\overline{CE}_1$  transition LOW and  $CE_2$  transition HIGH.
13. Data I/O is high impedance if  $\overline{OE} = V_{IH}$ .
14. If  $\overline{CE}_1$  goes HIGH or  $CE_2$  goes LOW simultaneously with  $\overline{WE}$  HIGH, the output remains in a high-impedance state.

**Switching Waveforms (continued)**
**Write Cycle No. 2 ( $\overline{WE}$  Controlled,  $\overline{OE}$  HIGH During Write)<sup>[13, 14]</sup>**


62128V-11

**Note:**

15. During this period, the I/Os are in output state and input signals should not be applied.

**Truth Table**

| $\overline{CE}_1$ | $CE_2$ | $\overline{OE}$ | $\overline{WE}$ | I/O <sub>0</sub> –I/O <sub>7</sub> | Mode                       | Power                |
|-------------------|--------|-----------------|-----------------|------------------------------------|----------------------------|----------------------|
| H                 | X      | X               | X               | High Z                             | Power-Down                 | Standby ( $I_{SB}$ ) |
| X                 | L      | X               | X               | High Z                             | Power-Down                 | Standby ( $I_{SB}$ ) |
| L                 | H      | L               | H               | Data Out                           | Read                       | Active ( $I_{CC}$ )  |
| L                 | H      | X               | L               | Data In                            | Write                      | Active ( $I_{CC}$ )  |
| L                 | H      | H               | H               | High Z                             | Selected, Outputs Disabled | Active ( $I_{CC}$ )  |

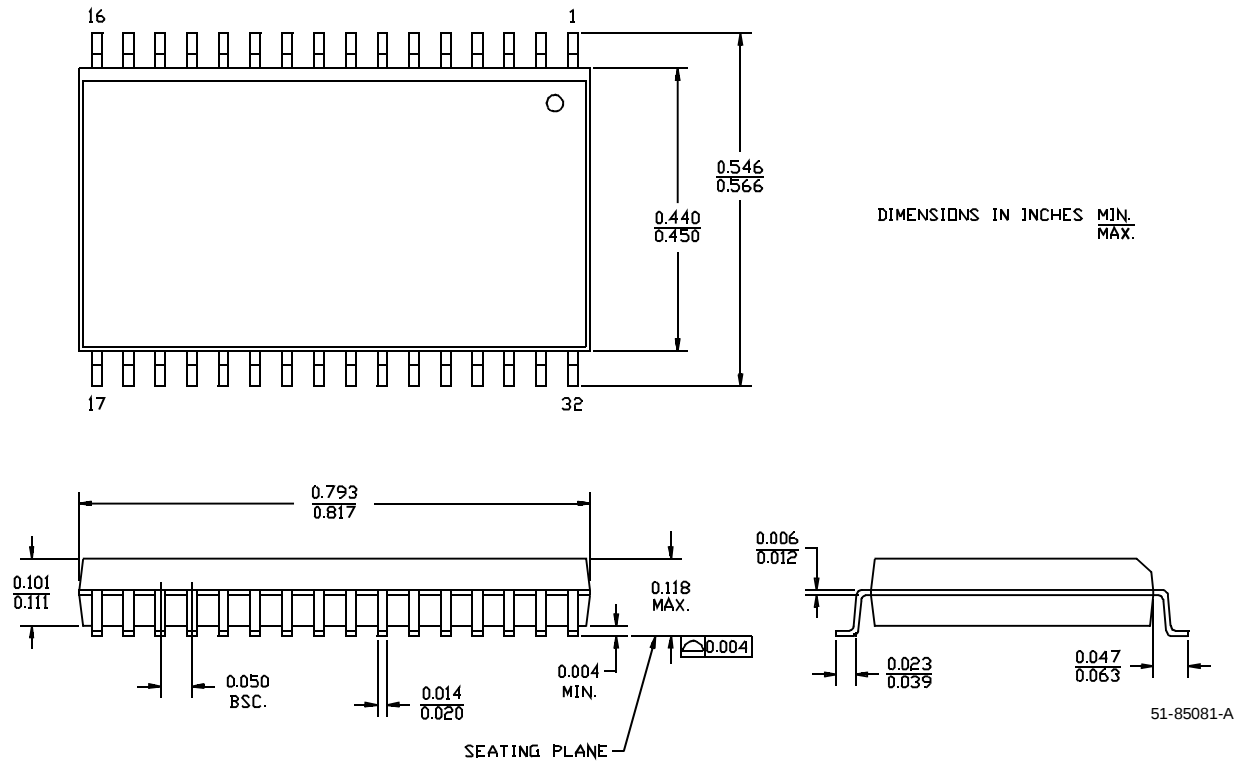
**Ordering Information**

| Speed (ns) | Ordering Code       | Package Name | Package Type           | Operating Range |
|------------|---------------------|--------------|------------------------|-----------------|
| 55         | CY62128VLL-55ZAI    | ZA32         | 32-Lead STSOP Type 1   | Industrial      |
| 70         | CY62128VL-70SC      | S34          | 32-Lead 450-Mil SOIC   | Commercial      |
|            | CY62128VLL-70SC     | S34          |                        |                 |
|            | CY62128VL-70ZC      | Z32          | 32-Lead TSOP Type 1    |                 |
|            | CY62128VLL-70ZC     | Z32          |                        |                 |
|            | CY62128VXL-70ZC     | Z32          |                        |                 |
|            | CY62128VL-70ZAC     | ZA32         | 32-Lead STSOP Type 1   |                 |
|            | CY62128VLL-70ZAC    | ZA32         |                        |                 |
|            | CY62128VL-70ZRC     | ZR32         | 32-Lead Reverse TSOP 1 |                 |
|            | CY62128VLL-70ZRC    | ZR32         |                        |                 |
| 70         | CY62128VL-70SI      | S34          | 32-Lead 450-Mil SOIC   | Industrial      |
|            | CY62128VLL-70SI     | S34          |                        |                 |
|            | CY62128VL-70ZI      | Z32          | 32-Lead TSOP Type 1    |                 |
|            | CY62128VLL-70ZI     | Z32          |                        |                 |
|            | CY62128VL-70ZAI     | ZA32         | 32-Lead STSOP Type 1   |                 |
|            | CY62128VLL-70ZAI    | ZA32         |                        |                 |
|            | CY62128VL-70ZRI     | ZR32         | 32-Lead Reverse TSOP 1 |                 |
|            | CY62128VLL-70ZRI    | ZR32         |                        |                 |
| 100        | CY62128V25L-100SC   | S34          | 32-Lead 450-Mil SOIC   | Commercial      |
|            | CY62128V25LL-100SC  | S34          |                        |                 |
|            | CY62128V25L-100ZC   | Z32          | 32-Lead TSOP Type 1    |                 |
|            | CY62128V25LL-100ZC  | Z32          |                        |                 |
|            | CY62128V25L-100ZAC  | ZA32         | 32-Lead STSOP Type 1   |                 |
|            | CY62128V25LL-100ZAC | ZA32         |                        |                 |
|            | CY62128V25L-100ZRC  | ZR32         | 32-Lead Reverse TSOP 1 |                 |
|            | CY62128V25LL-100ZRC | ZR32         |                        |                 |
| 100        | CY62128V25L-100SI   | S34          | 32-Lead 450-Mil SOIC   | Industrial      |
|            | CY62128V25LL-100SI  | S34          |                        |                 |
|            | CY62128V25L-100ZI   | Z32          | 32-Lead TSOP Type 1    |                 |
|            | CY62128V25LL-100ZI  | Z32          |                        |                 |
|            | CY62128V25L-100ZAI  | ZA32         | 32-Lead STSOP Type 1   |                 |
|            | CY62128V25LL-100ZAI | ZA32         |                        |                 |
|            | CY62128V25L-100ZRI  | ZR32         | 32-Lead Reverse TSOP 1 |                 |
|            | CY62128V25LL-100ZRI | ZR32         |                        |                 |
| 200        | CY62128V18L-200SC   | S34          | 32-Lead 450-Mil SOIC   | Commercial      |
|            | CY62128V18LL-200SC  | S34          |                        |                 |
|            | CY62128V18L-200ZC   | Z32          | 32-Lead TSOP Type 1    |                 |
|            | CY62128V18LL-200ZC  | Z32          |                        |                 |
|            | CY62128V18L-200ZAC  | ZA32         | 32-Lead STSOP Type 1   |                 |
|            | CY62128V18LL-200ZAC | ZA32         |                        |                 |
|            | CY62128V18L-200ZRC  | ZR32         | 32-Lead Reverse TSOP 1 |                 |
|            | CY62128V18LL-200ZRC | ZR32         |                        |                 |

**Ordering Information** (continued)

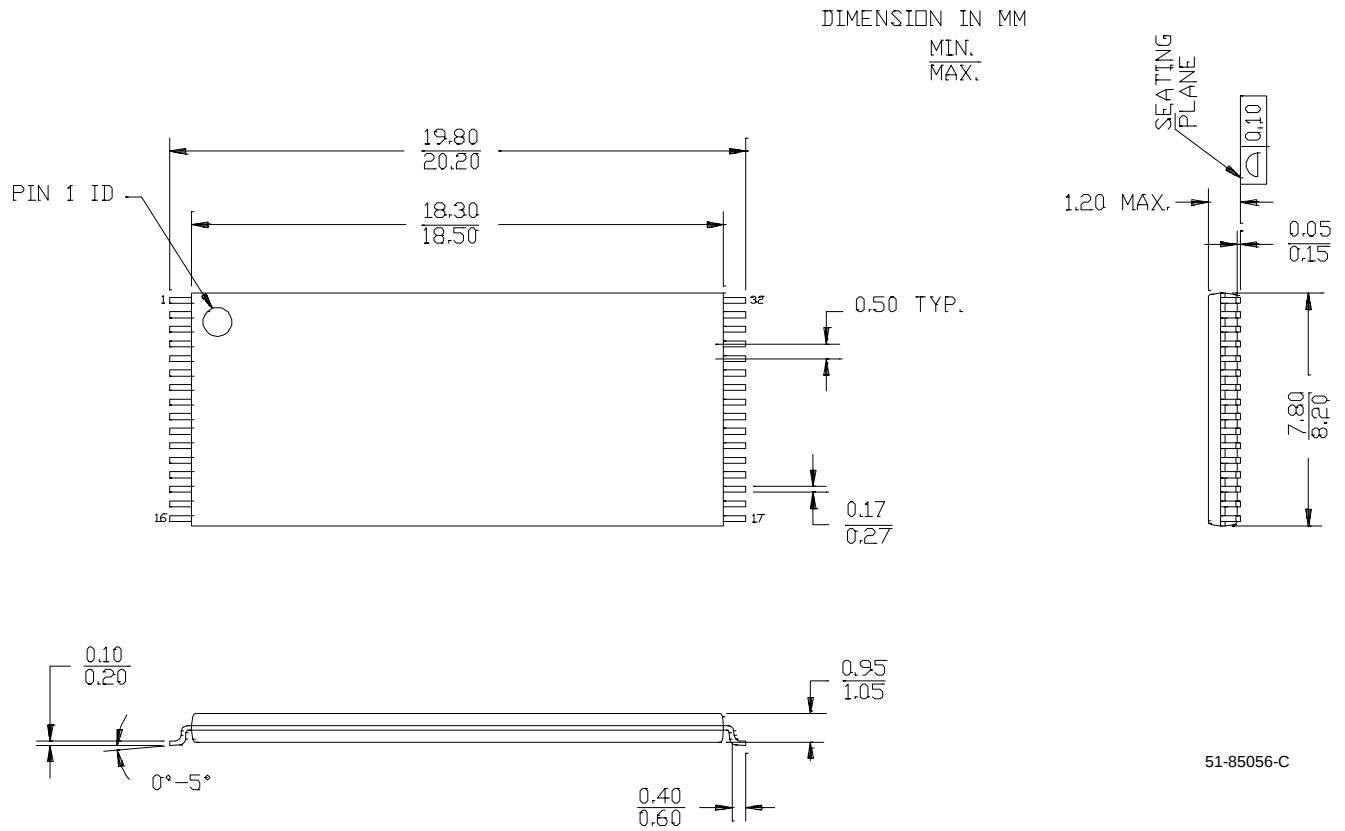
| Speed (ns) | Ordering Code       | Package Name | Package Type           | Operating Range |
|------------|---------------------|--------------|------------------------|-----------------|
| 200        | CY62128V18L-200SI   | S34          | 32-Lead 450-Mil SOIC   | Industrial      |
|            | CY62128V18LL-200SI  | S34          |                        |                 |
|            | CY62128V18L-200ZI   | Z32          | 32-Lead TSOP Type 1    |                 |
|            | CY62128V18LL-200ZI  | Z32          |                        |                 |
|            | CY62128V18L-200ZAI  | ZA32         | 32-Lead STSOP Type 1   |                 |
|            | CY62128V18LL-200ZAI | ZA32         |                        |                 |
|            | CY62128V18L-200ZRI  | ZR32         | 32-Lead Reverse TSOP 1 |                 |
|            | CY62128V18LL-200ZRI | ZR32         |                        |                 |

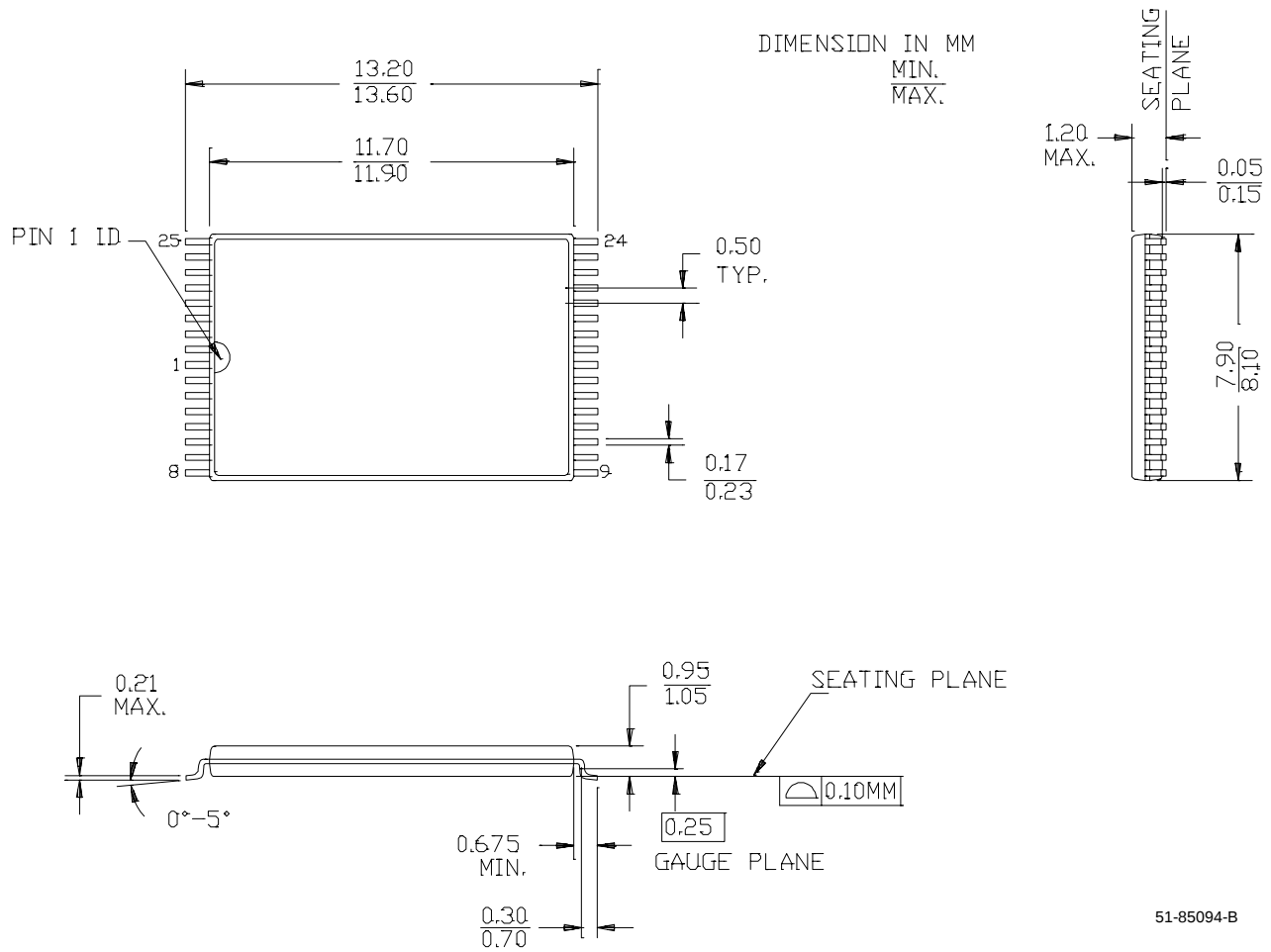
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**Package Diagrams**
**32-Lead (450 MIL) Molded SOIC S34**


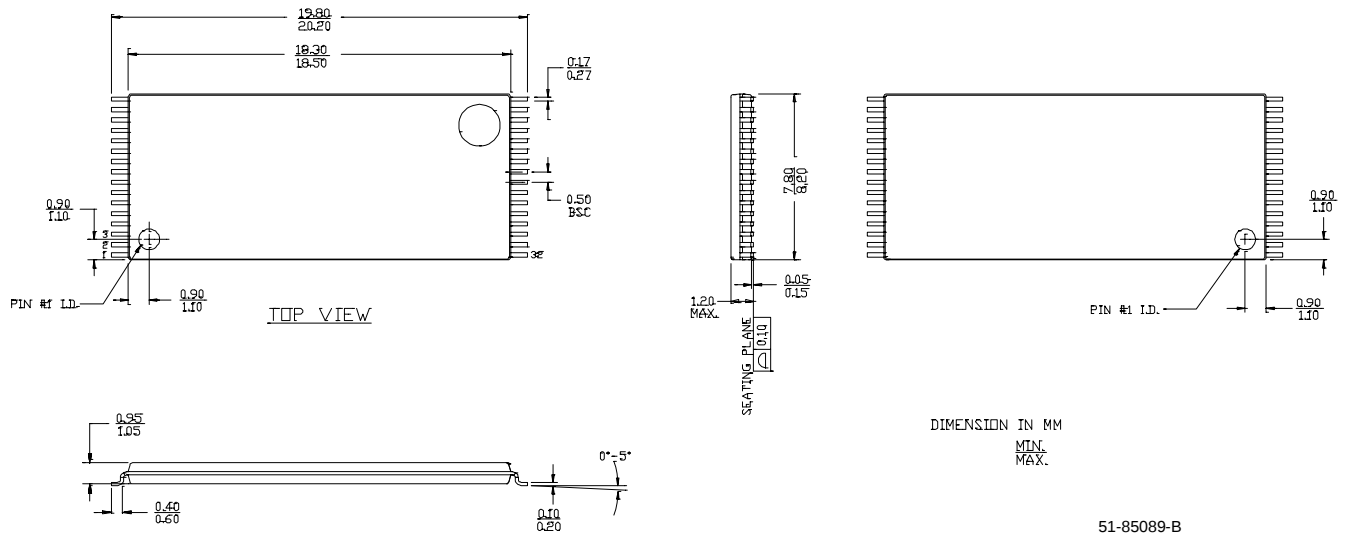
**Package Diagrams** (continued)

**32-Lead Thin Small Outline Package Z32**



**Package Diagrams (continued)**
**32-Lead Shrunk Thin Small Outline Package ZA32**


51-85094-B

**Package Diagrams (continued)**
**32-Lead Reverse Thin Small Outline Package ZR32**


51-85089-B