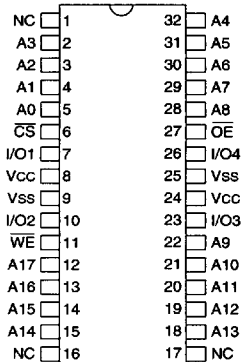


**256Kx4 SRAM**

ADVANCED\*

**PIN CONFIGURATION  
TOP VIEW****PIN DESCRIPTION**

|        |                   |
|--------|-------------------|
| A0-17  | Address Inputs    |
| I/O0-4 | Data Input/Output |
| CS     | Chip Select       |
| OE     | Output Enable     |
| WE     | Write Enable      |
| VCC    | Power Supply      |
| VSS    | Ground            |
| NC     | Not Connected     |

**PLASTIC PLUS™ FEATURES**

- Access Times 15, 17, 20ns
- Low Voltage Operation:
  - 3.3V  $\pm$  10% Power Supply
- Standard Commercial Off-The-Shelf (COTS) Memory Devices for Extended Temperature Range
- JEDEC Standard 32 Lead Plastic SOJ Package, 0.4"
- Electrical and Speed Characteristics for:
  - Military Temperature (-55°C to +125°C)
  - Industrial Temperature (-40°C to +85°C)
- Fully Static Operation
  - No clock or refresh required.
- Three State Outputs
- Burn-in and Temperature Cycling Available
- Organized as 256K x 4
- Center Power/Ground Pins (Revolutionary)
- Low Power CMOS

\* This data sheet describes a product that may or may not be under development and is subject to change or cancellation without notice.

PLASTIC PLUS SRAM



## ABSOLUTE MAXIMUM RATINGS

| Parameter                      | Symbol           | Min  | Max  | Unit |
|--------------------------------|------------------|------|------|------|
| Operating Temperature (Mil.)   | T <sub>A</sub>   | -55  | +125 | °C   |
| Operating Temperature (Ind.)   | T <sub>A</sub>   | -40  | +85  | °C   |
| Storage Temperature            | T <sub>STG</sub> | -65  | +150 | °C   |
| Signal Voltage Relative to GND | V <sub>G</sub>   | -0.5 | 4.6  | V    |
| Supply Voltage                 | V <sub>CC</sub>  | -0.5 | 4.6  | V    |

## TRUTH TABLE

| CS | OE | WE | Mode        | Data I/O | Power   |
|----|----|----|-------------|----------|---------|
| H  | X  | X  | Standby     | High Z   | Standby |
| L  | L  | H  | Read        | Data Out | Active  |
| L  | X  | L  | Write       | Data In  | Active  |
| L  | H  | H  | Out Disable | High Z   | Active  |

## RECOMMENDED OPERATING CONDITIONS

| Parameter                    | Symbol          | Min  | Max                   | Unit |
|------------------------------|-----------------|------|-----------------------|------|
| Supply Voltage               | V <sub>CC</sub> | 3.0  | 3.6                   | V    |
| Input High Voltage           | V <sub>IH</sub> | 2.2  | V <sub>CC</sub> + 0.3 | V    |
| Input Low Voltage            | V <sub>IL</sub> | -0.3 | +0.8                  | V    |
| Operating Temperature (Mil.) | T <sub>A</sub>  | -55  | +125                  | °C   |
| Operating Temperature (Ind.) | T <sub>A</sub>  | -40  | +85                   | °C   |

## CAPACITANCE

(T<sub>A</sub> = +25°C)

| Parameter          | Symbol           | Condition                         | Max | Unit |
|--------------------|------------------|-----------------------------------|-----|------|
| Input capacitance  | C <sub>IN</sub>  | V <sub>IN</sub> = 0V, f = 1.0MHz  | 6   | pF   |
| Output capacitance | C <sub>OUT</sub> | V <sub>OUT</sub> = 0V, f = 1.0MHz | 8   | pF   |

This parameter is guaranteed by design but not tested.

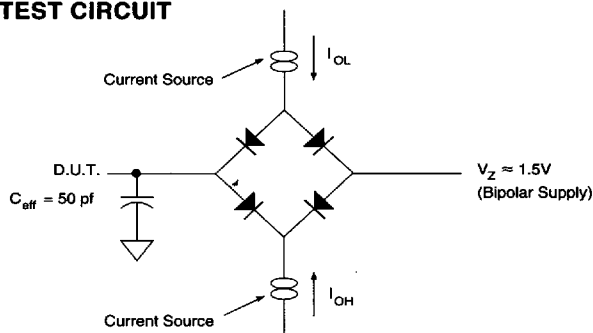
## DC CHARACTERISTICS

(V<sub>CC</sub> = 3.3V, V<sub>SS</sub> = 0V, T<sub>A</sub> = -55°C to +125°C)

| Parameter                | Symbol          | Conditions                                                                              | Min | Max | Units |
|--------------------------|-----------------|-----------------------------------------------------------------------------------------|-----|-----|-------|
| Input Leakage Current    | I <sub>LI</sub> | V <sub>IN</sub> = GND to V <sub>CC</sub>                                                |     | 10  | μA    |
| Output Leakage Current   | I <sub>LO</sub> | CS = V <sub>IH</sub> , OE = V <sub>IH</sub> , V <sub>OUT</sub> = GND to V <sub>CC</sub> |     | 10  | μA    |
| Operating Supply Current | I <sub>CC</sub> | CS = V <sub>IL</sub> , OE = V <sub>IH</sub> , f = 5MHz, V <sub>CC</sub> = 3.6V          |     | 110 | mA    |
| Standby Current          | I <sub>SB</sub> | CS = V <sub>IH</sub> , OE = V <sub>IH</sub> , f = 5MHz, V <sub>CC</sub> = 3.6V          |     | 10  | mA    |
| Output Low Voltage       | V <sub>OL</sub> | I <sub>OL</sub> = 8.0mA                                                                 |     | 0.4 | V     |
| Output High Voltage      | V <sub>OH</sub> | I <sub>OH</sub> = -4.0mA                                                                | 2.4 |     | V     |

NOTE: DC test conditions: V<sub>IL</sub> = 0.3V, V<sub>IH</sub> = V<sub>CC</sub> - 0.3V

## AC TEST CIRCUIT



## AC TEST CONDITIONS

| Parameter                        | Typ                                        | Unit |
|----------------------------------|--------------------------------------------|------|
| Input Pulse Levels               | V <sub>IL</sub> = 0, V <sub>IH</sub> = 2.5 | V    |
| Input Rise and Fall              | 5                                          | ns   |
| Input and Output Reference Level | 1.5                                        | V    |
| Output Timing Reference Level    | 1.5                                        | V    |

## NOTES:

V<sub>Z</sub> is programmable from -2V to +7V.  
I<sub>OL</sub> & I<sub>OH</sub> programmable from 0 to 16mA.  
Tester Impedance Z<sub>0</sub> = 75 Ω.  
V<sub>Z</sub> is typically the midpoint of V<sub>OH</sub> and V<sub>OL</sub>.  
I<sub>OL</sub> & I<sub>OH</sub> are adjusted to simulate a typical resistive load circuit.  
ATE tester includes jig capacitance.

**AC CHARACTERISTICS**

(VCC = 3.3V, VSS = 0V, TA = -55°C to +125°C)

| Parameter<br>Read Cycle            | Symbol | <u>-15</u> |     | <u>-17</u> |     | <u>-20</u> |     | Units |
|------------------------------------|--------|------------|-----|------------|-----|------------|-----|-------|
|                                    |        | Min        | Max | Min        | Max | Min        | Max |       |
| Read Cycle Time                    | tRC    | 15         |     | 17         |     | 20         |     | ns    |
| Address Access Time                | tAA    |            | 15  |            | 17  |            | 20  | ns    |
| Output Hold from Address Change    | tOH    | 0          |     | 0          |     | 0          |     | ns    |
| Chip Select Access Time            | tACS   |            | 15  |            | 17  |            | 20  | ns    |
| Output Enable to Output Valid      | tOE    |            | 8   |            | 9   |            | 10  | ns    |
| Chip Select to Output in Low Z     | tCLZ'  | 4          |     | 4          |     | 4          |     | ns    |
| Output Enable to Output in Low Z   | tOLZ'  | 0          |     | 0          |     | 0          |     | ns    |
| Chip Disable to Output in High Z   | tCHZ'  |            | 8   |            | 9   |            | 10  | ns    |
| Output Disable to Output in High Z | tOHZ'  |            | 8   |            | 9   |            | 10  | ns    |

1. This parameter is guaranteed by design but not tested.

**AC CHARACTERISTICS**

(VCC = 3.3V, TA = -55°C to +125°C)

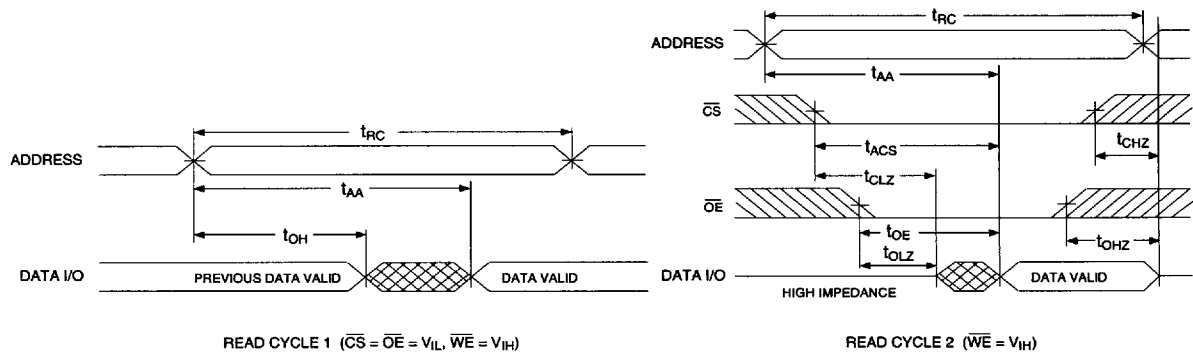
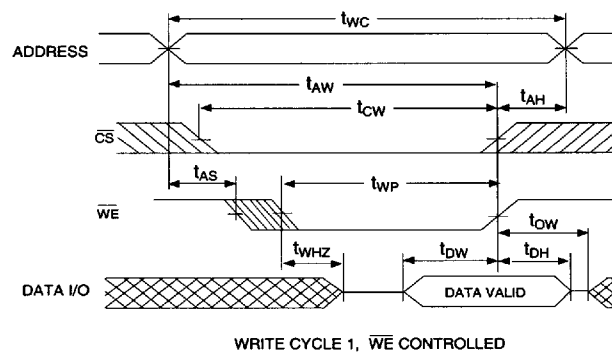
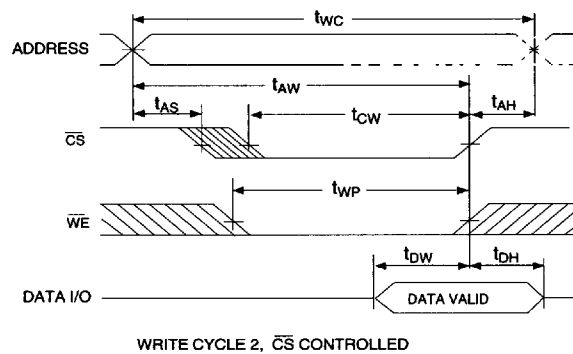
| Parameter<br>Write Cycle         | Symbol | <u>-15</u> |     | <u>-17</u> |     | <u>-20</u> |     | Units |
|----------------------------------|--------|------------|-----|------------|-----|------------|-----|-------|
|                                  |        | Min        | Max | Min        | Max | Min        | Max |       |
| Write Cycle Time                 | tWC    | 15         |     | 17         |     | 20         |     | ns    |
| Chip Select to End of Write      | tCW    | 12         |     | 12         |     | 13         |     | ns    |
| Address Valid to End of Write    | tAW    | 12         |     | 12         |     | 13         |     | ns    |
| Data Valid to End of Write       | tOW    | 8          |     | 9          |     | 10         |     | ns    |
| Write Pulse Width                | tWP    | 12         |     | 12         |     | 13         |     | ns    |
| Address Setup Time               | tAS    | 0          |     | 0          |     | 0          |     | ns    |
| Address Hold Time                | tAH    | 0          |     | 0          |     | 0          |     | ns    |
| Output Active from End of Write  | tOW'   | 3          |     | 3          |     | 3          |     | ns    |
| Write Enable to Output in High Z | tWHZ'  |            | 8   |            | 8   |            | 10  | ns    |
| Data Hold Time                   | tDH    | 0          |     | 0          |     | 0          |     | ns    |

1. This parameter is guaranteed by design but not tested.

**SRAM**



## TIMING WAVEFORM - READ CYCLE

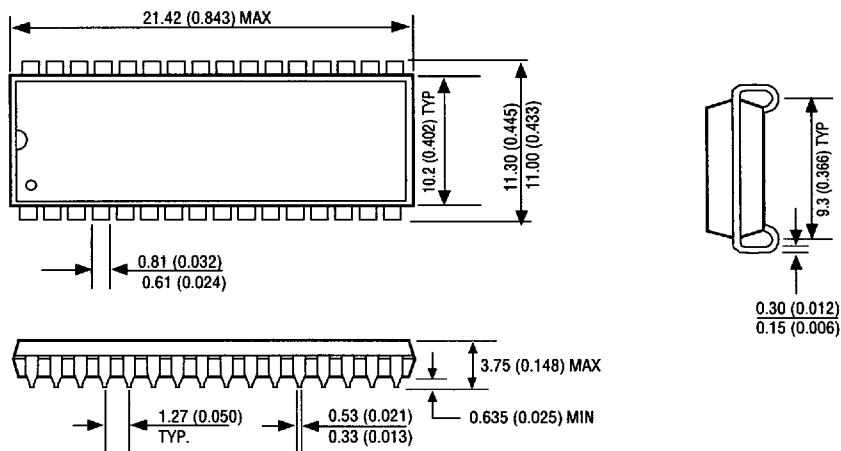
WRITE CYCLE -  $\overline{WE}$  CONTROLLEDWRITE CYCLE -  $\overline{CS}$  CONTROLLED



WHITE MICROELECTRONICS

WPS256K4V-XRJX

**PACKAGE DIMENSION: 32 LEAD, REVOLUTIONARY SOJ**



MAX  
MIN ; millimeter (inch)

**ORDERING INFORMATION**

W P S 256K 4 V X - XXX R J X

**DEVICE GRADE:**

M = Military Temperature -55°C to +125°C  
I = Industrial Temperature -40°C to +85°C

**PACKAGE:**

RJ = 32 Lead Revolutionary SOJ

**ACCESS TIME (ns)**

**IMPROVEMENT MARKS**

B = Burn-in  
T = Temperature Cycling

V = 3.3 ± 10% Power Supply

ORGANIZATION, 256K x 4

SRAM

PLASTIC PLUS™

WHITE MICROELECTRONICS

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