512Kx8 SRAM   *PRELIMINARY **

PIN CONFIGURATION
TOP VIEW

```
      A0 ☐ 1  ◯      36 ☐ NC
      A1 ☐ 2          35 ☐ A18
      A2 ☐ 3          34 ☐ A17
      A3 ☐ 4          33 ☐ A16
      A4 ☐ 5          32 ☐ A15
      CS ☐ 6          31 ☐ OE
    I/O0 ☐ 7          30 ☐ I/O7
    I/O1 ☐ 8          29 ☐ I/O6
     Vcc ☐ 9          28 ☐ Vss
     Vss ☐ 10         27 ☐ Vcc
    I/O2 ☐ 11         26 ☐ I/O5
    I/O3 ☐ 12         25 ☐ I/O4
      WE ☐ 13         24 ☐ A14
      A5 ☐ 14         23 ☐ A13
      A6 ☐ 15         22 ☐ A12
      A7 ☐ 16         21 ☐ A11
      A8 ☐ 17         20 ☐ A10
      A9 ☐ 18         19 ☐ NC
```
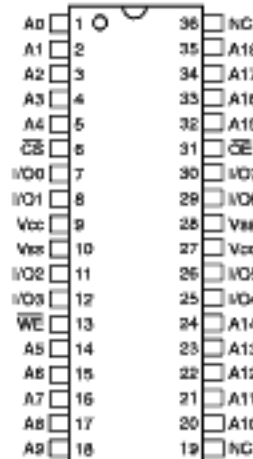
PIN DESCRIPTION

A_{0-18}	Address Inputs
I/O_{0-7}	Data Input/Output
$\overline{CS}$	Chip Select
$\overline{OE}$	Output Enable
$\overline{WE}$	Write Enable
V_{CC}	+5.0V Power
V_{SS}	Ground
NC	No Connect

PLASTIC PLUS™ FEATURES

■ Access Times of 15, 20, 25ns

■ Standard Commercial Off-The-Shelf (COTS) Memory Devices for Extended Temperature Range

■ JEDEC Standard 36 pin Plastic SOJ Package

■ Electrical and Speed Characteristics for:

  • Military Temperature (-55°C to +125°C)

  • Industrial Temperature (-40°C to +85°C)

■ Burn-in and Temperature Cycling Available

■ Organized as 512K x 8

■ Center Power/Ground Pins (Revolutionary)

■ 5 Volt Power Supply

■ Low Power ("L") Version Available

■ Battery Back-Up Operation

■ Reliability Test Data Available:

  • High Temperature Operating Life

  • High Temperature Storage

  • Pressure Cooker Test

  • Wet High Temperature Operating Life

  • Thermal Shock

  • Temperature Cycling

* *This data sheet describes a product under development, not fully characterized, and is subject to change without notice.*

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Operating Temperature (Mil.)	T_A	-55	+125	°C
Operating Temperature (Ind.)	T_A	-40	+85	°C
Storage Temperature	T_{STG}	-65	+150	°C
Signal Voltage Relative to Vss	V_G	-0.5	Vcc + 0.5	V
Supply Voltage	V_{CC}	-0.5	7.0	V

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	4.5	5.5	V
Input High Voltage	V_{IH}	2.2	Vcc + 0.5	V
Input Low Voltage	V_{IL}	-0.3	+0.8	V
Operating Temperature (Mil.)	T_A	-55	+125	°C
Operating Temperature (Ind.)	T_A	-40	+85	°C

TRUTH TABLE

$\overline{CS}$	$\overline{WE}$	$\overline{OE}$	Mode	I/O Pin	V_{CC} Current
H	X	X	Power Down	High-Z	I_{SB}
L	H	H	Out Disable	High-Z	I_{CC}
L	H	L	Read	D_{OUT}	I_{CC}
L	L	X	Write	D_{IN}	I_{CC}

CAPACITANCE
(T_A = +25°C)

Parameter	Symbol	Condition	Max	Unit
Input capacitance	C_{IN}	V_{IN} = 0V, f = 1.0MHz	6	pF
Output capacitance	C_{OUT}	V_{OUT} = 0V, f = 1.0MHz	8	pF

This parameter is guaranteed by design but not tested.

DC CHARACTERISTICS
(V_{CC} = 5V, V_{SS} = 0V, T_A = -55°C to +125°C)

Parameter	Symbol	Conditions	Min	Max	Units
Input Leakage Current	I_{LI}	Vcc = 5.5, V_{IN} = Vss to Vcc		10	μA
Output Leakage Current	I_{LO}	$\overline{CS}$ = V_{IH}, $\overline{OE}$ = V_{IH}, V_{OUT} = Vss to Vcc		10	μA
Operating Supply Current	I_{CC}	$\overline{CS}$ = V_{IL}, $\overline{OE}$ = V_{IH}, f = 5MHz, Vcc = 5.5		180	mA
Standby Current	I_{SB}	$\overline{CS}$ = V_{IH}, $\overline{OE}$ = V_{IH}, f = 5MHz, Vcc = 5.5		15	mA
Output Low Voltage	V_{OL}	I_{OL} = 8.0mA, Vcc = 4.5		0.4	V
Output High Voltage	V_{OH}	I_{OH} = -4.0mA, Vcc = 4.5	2.4		V

NOTE: DC test conditions: V_{IL} = 0.3V, V_{IH} = Vcc -0.3V

DATA RETENTION CHARACTERISTICS
(T_A = -55°C to +125°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Data Retention Supply Voltage	V_{DR}	$\overline{CS} \geq$ Vcc -0.2V	2.0		5.5	V
Data Retention Current	I_{CCDR1}	Vcc = 3V		0.5	8	mA
Low Power Data Retention (L)	I_{CCDR1}	Vcc = 3V		300	800	μA

AC CHARACTERISTICS
(Vcc = 5.0V, Vss = 0V, TA = -55°C to +125°C)

Parameter Read Cycle	Symbol	-15*		-20		-25		Units
		Min	Max	Min	Max	Min	Max	
Read Cycle Time	tRC	15		20		25		ns
Address Access Time	tAA		15		20		25	ns
Output Hold from Address Change	tOH	0		0		0		ns
Chip Select Access Time	tACS		15		20		25	ns
Output Enable to Output Valid	tOE		8		10		12	ns
Chip Select to Output in Low Z	tCLZ¹	3		3		3		ns
Output Enable to Output in Low Z	tOLZ¹	0		0		0		ns
Chip Disable to Output in High Z	tCHZ¹		7		8		10	ns
Output Disable to Output in High Z	tOHZ¹		7		8		10	ns

* 15ns not available in the lower power option.
1. This parameter is guaranteed by design but not tested.

AC CHARACTERISTICS
(Vcc = 5.0V, TA = -55°C to +125°C)

Parameter Write Cycle	Symbol	-15*		-20		-25		Units
		Min	Max	Min	Max	Min	Max	
Write Cycle Time	tWC	15		20		25		ns
Chip Select to End of Write	tCW	12		13		15		ns
Address Valid to End of Write	tAW	12		13		15		ns
Data Valid to End of Write	tDW	8		9		10		ns
Write Pulse Width	tWP	12		13		15		ns
Address Setup Time	tAS	0		0		0		ns
Address Hold Time	tAH	0		0		0		ns
Output Active from End of Write	tOW¹	0		0		0		ns
Write Enable to Output in High Z	tWHZ¹		8		8		10	ns
Data Hold Time	tDH	0		0		0		ns

* 15ns not available in the lower power option.
1. This parameter is guaranteed by design but not tested.

AC TEST CIRCUIT
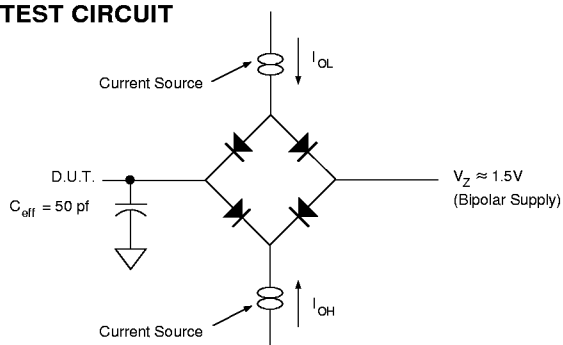
AC TEST CONDITIONS

Parameter	Typ	Unit
Input Pulse Levels	VIL = 0, VIH = 3.0	V
Input Rise and Fall	5	ns
Input and Output Reference Level	1.5	V
Output Timing Reference Level	1.5	V

NOTES:
VZ is programmable from -2V to +7V.
IOL & IOH programmable from 0 to 16mA.
Tester Impedance Z0 = 75 Ω.
VZ is typically the midpoint of VOH and VOL.
IOL & IOH are adjusted to simulate a typical resistive load circuit.
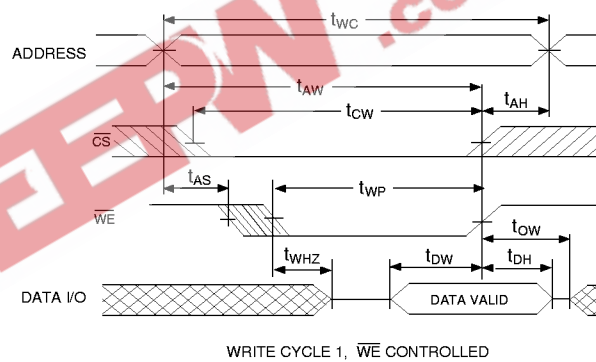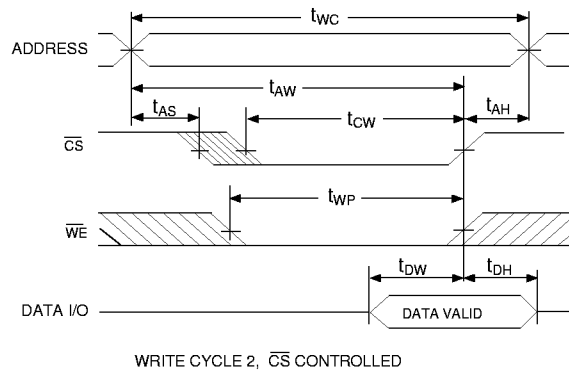ATE tester includes jig capacitance.

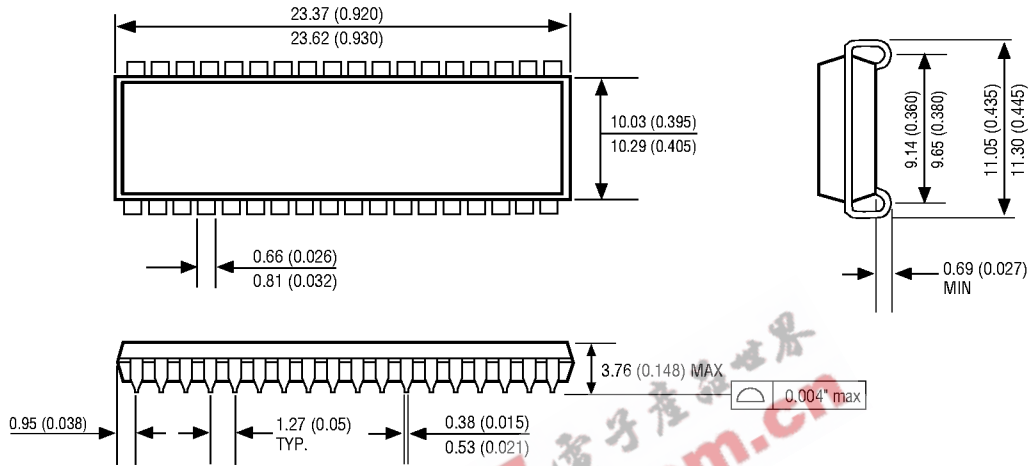## TIMING WAVEFORM - READ CYCLE

READ CYCLE 1　($\overline{CS} = \overline{OE} = V_{IL}$, $\overline{WE} = V_{IH}$)

READ CYCLE 2　($\overline{WE} = V_{IH}$)
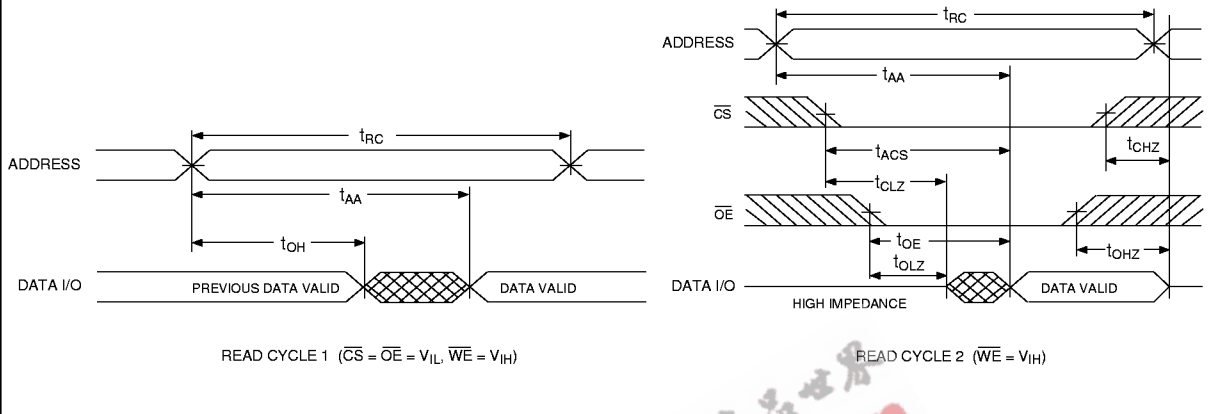
WRITE CYCLE - $\overline{WE}$ CONTROLLED

WRITE CYCLE 1, $\overline{WE}$ CONTROLLED

WRITE CYCLE - $\overline{CS}$ CONTROLLED

WRITE CYCLE 2, $\overline{CS}$ CONTROLLED

PACKAGE DIMENSION

23.37 (0.920)
23.62 (0.930)

10.03 (0.395)
10.29 (0.405)

9.14 (0.360)
9.65 (0.380)

11.05 (0.435)
11.30 (0.445)

0.66 (0.026)
0.81 (0.032)

0.69 (0.027)
MIN

3.76 (0.148) MAX

0.004" max

0.95 (0.038)

1.27 (0.05)
TYP.

0.38 (0.015)
0.53 (0.021)

DIMENSIONS IN MILLIMETERS AND (INCHES)

ORDERING INFORMATION

W P S 512K 8 X X - XXX RJ X X

SPECIAL PROCESS:
Blank = CMOS
B = Bi CMOS

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

PACKAGE:
RJ = Revolutionary SOJ

ACCESS TIME (ns)

IMPROVEMENT MARK
B = Burn-in
T = Temperature Cycling
C = Burn-in and Temperature Cycle

Blank = Standard Power
L = Low Power

ORGANIZATION, 512K x 8

SRAM

PLASTIC PLUS™

WHITE MICROELECTRONICS