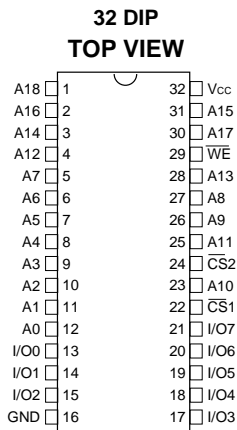




2x512Kx8 DUALITHIC™ SRAM PRELIMINARY*

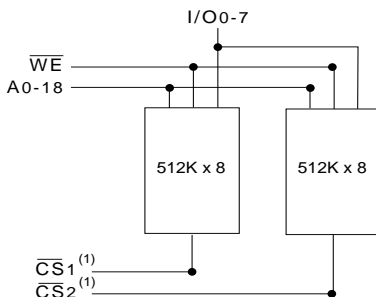
PIN CONFIGURATION FOR WS1M8-XCX



PIN DESCRIPTION

A0-18	Address Inputs
I/O0-7	Data Input/Output
$\overline{CS}1-2$	Chip Selects
\overline{WE}	Write Enable
Vcc	+5.0V Power
GND	Ground

BLOCK DIAGRAM



NOTE:

1. $\overline{CS}1$ and $\overline{CS}2$ are used to select the lower and upper 512Kx8 of the device. $\overline{CS}1$ and $\overline{CS}2$ must not be enabled at the same time.

FEATURES

- Access Times 70, 85, 100ns
- Evolutionary, Corner Power/Ground Pinout
- Packaging:
 - 32 pin, Hermetic Ceramic DIP (Package 300)
- Organized as two banks of 512Kx8
- Commercial, Industrial and Military Temperature Ranges
- 5 Volt Power Supply
- Low Power CMOS
- TTL Compatible Inputs and Outputs
- Output Enable Internally tied to GND.

* 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	T _A	-55	+125	°C
Storage Temperature	T _{STG}	-65	+150	°C
Signal Voltage Relative to GND	V _G	-0.5	V _{CC} +0.5	V
Junction Temperature	T _J		150	°C
Supply Voltage	V _{CC}	-0.5	7.0	V

TRUTH TABLE

\overline{CS}	\overline{WE}	Mode	Data I/O	Power
H	X	Standby	High Z	Standby
L	H	Read	Data Out	Active
L	L	Write	Data In	Active

NOTE: \overline{OE} is internally tied to GND.

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V _{CC}	4.5	5.5	V
Input High Voltage	V _{IH}	2.2	V _{CC} + 0.3	V
Input Low Voltage	V _{IL}	-0.3	+0.8	V
Operating Temp. (Mil.)	T _A	-55	+125	°C

CAPACITANCE

(T_A = +25°C)

Parameter	Symbol	Condition	Max	Unit
Input capacitance	C _{IN}	V _{IN} = 0V, f = 1.0MHz	28	pF
Output capacitance	C _{OUT}	V _{OUT} = 0V, f = 1.0MHz	28	pF

This parameter is guaranteed by design but not tested.

DC CHARACTERISTICS

(V_{CC} = 5.0V, GND = 0V, T_A = -55°C to +125°C)

Parameter	Sym	Conditions			Units
			Min	Max	
Input Leakage Current	I _{LI}	V _{CC} = 5.5, V _{IN} = GND to V _{CC}		10	µA
Output Leakage Current	I _{LO} ¹	\overline{CS} = V _{IH} , V _{OUT} = GND to V _{CC}		10	µA
Operating Supply Current	I _{CC} ¹	\overline{CS} = V _{IL} , f = 5MHz, V _{CC} = 5.5		55	mA
Standby Current	I _{SB} ¹	\overline{CS} = V _{IH} , f = 5MHz, V _{CC} = 5.5		2	mA
Output Low Voltage	V _{OL}	I _{OL} = 2.1mA		0.4	V
Output High Voltage	V _{OH}	I _{OH} = -1.0mA	2.4		V

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

1. OE is internally tied to GND.

DATA RETENTION CHARACTERISTICS

(T_A = -55°C to +125°C)

Parameter	Symbol	Conditions				Units
			Min	Typ	Max	
Data Retention Supply Voltage	V _{DR}	$\overline{CS} \geq V_{CC} - 0.2V$	2.0		5.5	V
Data Retention Current	I _{CCDR1}	V _{CC} = 3V		150	800*	µA

* Also available in Low Power version. Please call factory for information.



AC CHARACTERISTICS

(V_{CC} = 5.0V, GND = 0V, T_A = -55°C to +125°C)

Parameter	Symbol	-70		-85		-100		Units
		Min	Max	Min	Max	Min	Max	
Read Cycle Time	t _{RC}	70		85		100		ns
Address Access Time	t _{AA}		70		85		100	ns
Output Hold from Address Change	t _{OH}	5		5		5		ns
Chip Select Access Time	t _{ACS}		70		85		100	ns
Chip Select to Output in Low Z	t _{CLZ} ¹	5		5		5		ns
Chip Disable to Output in High Z	t _{CHZ} ¹		25		25		25	ns

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

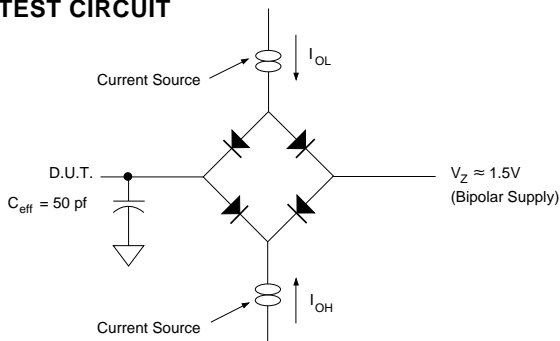
AC CHARACTERISTICS

(V_{CC} = 5.0V, GND = 0V, T_A = -55°C to +125°C)

Parameter	Symbol	-70		-85		-100		Units
		Min	Max	Min	Max	Min	Max	
Write Cycle Time	t _{WC}	70		85		100		ns
Chip Select to End of Write	t _{CW}	60		75		80		ns
Address Valid to End of Write	t _{AW}	60		75		80		ns
Data Valid to End of Write	t _{DW}	30		30		40		ns
Write Pulse Width	t _{WP}	50		50		60		ns
Address Setup Time	t _{AS}	0		0		0		ns
Address Hold Time	t _{AH}	5		5		5		ns
Output Active from End of Write	t _{OW} ¹	5		5		5		ns
Write Enable to Output in High Z	t _{WHZ} ¹		25		25		35	ns
Data Hold Time	t _{DH}	0		0		0		ns

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

AC TEST CIRCUIT



AC TEST CONDITIONS

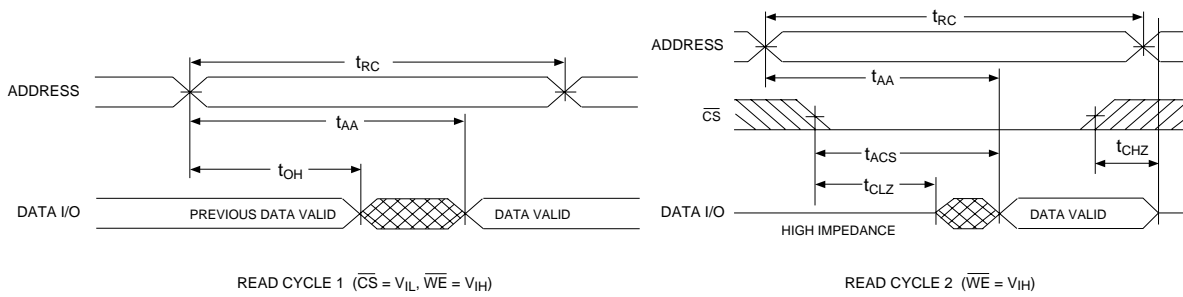
Parameter	Typ	Unit
Input Pulse Levels	V _{IL} = 0, V _{IH} = 3.0	V
Input Rise and Fall	5	ns
Input and Output Reference Level	1.5	V
Output Timing Reference Level	1.5	V

NOTES:

V_Z is programmable from -2V to +7V.
I_{OL} & I_{OH} programmable from 0 to 16mA.
Tester Impedance Z₀ = 75 Ω.
V_Z is typically the midpoint of V_{OH} and V_{OL}.
I_{OL} & I_{OH} are adjusted to simulate a typical resistive load circuit.
ATE tester includes jig capacitance.

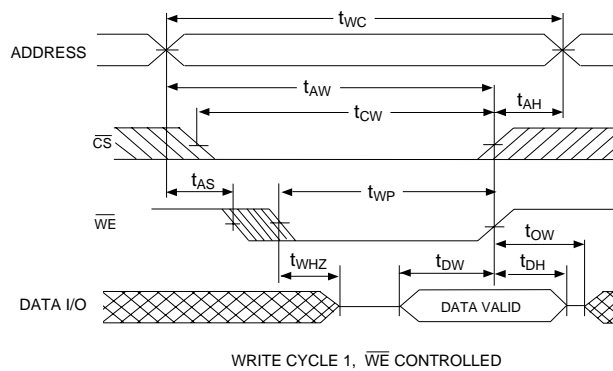


TIMING WAVEFORM - READ CYCLE

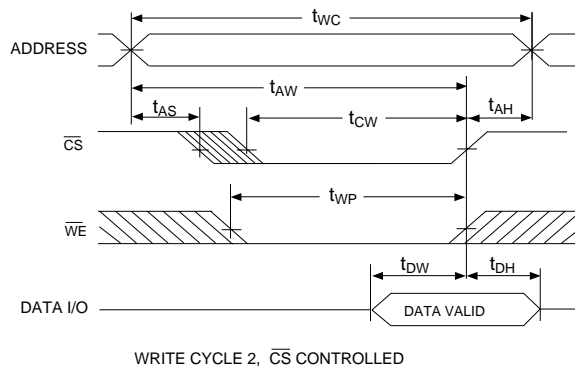


NOTE: \overline{OE} is internally tied to GND.

WRITE CYCLE - \overline{WE} CONTROLLED

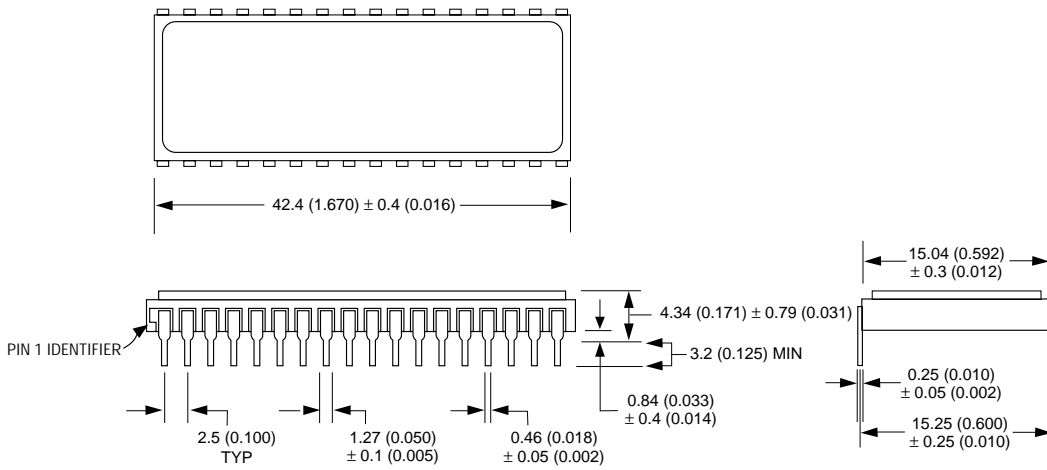


WRITE CYCLE - \overline{CS} CONTROLLED





PACKAGE 300: 32 PIN, CERAMIC DIP, SINGLE CAVITY SIDE BRAZED



ALL LINEAR DIMENSIONS ARE MILLIMETERS AND PARENTHETICALLY IN INCHES

ORDERING INFORMATION

WS 1M8 - XXX C X X

LEAD FINISH:

- Blank = Gold plated leads
- A = Solder dip leads

DEVICE GRADE:

- M = Military Screened -55°C to +125°C
- I = Industrial -40°C to +85°C
- C = Commercial 0°C to +70°C

PACKAGE:

- C = Ceramic 0.600" DIP (Package 300)

ACCESS TIME (ns)

ORGANIZATION, two banks of 512K x 8

SRAM

WHITE MICROELECTRONICS