512Kx8 SRAM MODULE, SMD 5962-92078

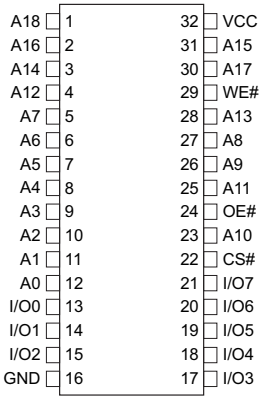
FEATURES

- Access Times 20, 25, 35, 45ns
- Standard Microcircuit Drawing, 5962-92078
- MIL-STD-883 Compliant Devices Available
- Rad Tolerant Devices Available
- JEDEC Standard 32 pin, Hermetic Ceramic DIP (Package 300)
- Commercial, Industrial and Military Temperature Range

  (-55°C to +125°C)
- Organized as 512K x 8
- 5V Power Supply
- Low Power CMOS
- TTL Compatible Inputs and Outputs
- Battery Back-Up Operation

FIGURE 1 – PIN CONFIGURATION

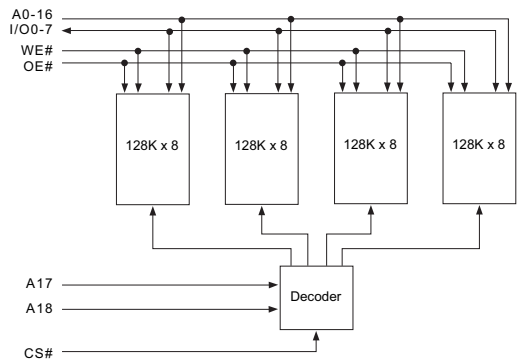
TOP VIEW



PIN DESCRIPTION

A0-18	Address Inputs
I/O 0-7	Data Input/Output
CS#	Chip Select
OE#	Output Enable
WE#	Write Enable
Vcc	+5.0V Power
GND	Ground

BLOCK DIAGRAM



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

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}	-0.5	+0.8	V
Operating Temp. (Mil.)	T_A	-55	+125	°C

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

CAPACITANCE

(T_A = +25°C)

Parameter	Symbol	Condition	Max	Unit
Input capacitance	C_{IN}	V_{IN} = 0V, f = 1.0MHz	45	pF
Output capicitance	C_{OUT}	V_{OUT} = 0V, f = 1.0MHz	45	pF

This parameter is guaranteed by design but not tested.

DC CHARACTERISTICS

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

Parameter	Symbol	Conditions	-20		-25		-35		-45		Units
			Min	Max	Min	Max	Min	Max	Min	Max	
Input Leakage Current	I_{LI}	V_{CC} = 5.5, V_{IN} = GND to V_{CC}		10		10		10		10	µA
Output Leakage Current	I_{LO}	CS# = V_{IH}, OE# = V_{IH}, V_{OUT} = GND to V_{CC}		10		10		10		10	µA
Operating Supply Current	I_{CC}	CS# = V_{IL}, OE# = V_{IH}, f = 5MHz, V_{CC} = 5.5		210		210		210		210	mA
Standby Current	I_{SB}	CS# = V_{IH}, OE# = V_{IH}, f = 5MHz		80		60		60		55	mA
Output Low Voltage	V_{OL}	I_{OL} = 8mA, V_{CC} = 4.5		0.4		0.4		0.4		0.4	V
Output High Voltage	V_{OH}	I_{OH} = -4.0mA, V_{CC} = 4.5	2.4		2.4		2.4		2.4		V

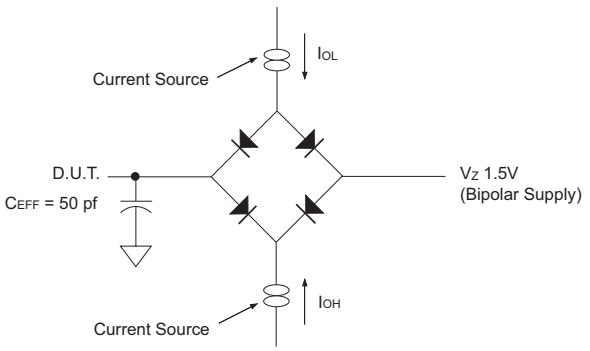
NOTE: DC test conditions: V_{IH} = V_{CC} -0.3V, V_{IL} = 0.3V

DATA RETENTION CHARACTERISTICS FOR LOW POWER "L" VERSION

(-55°C ≤ TA ≤ 125°C)

Parameter	Symbol	Conditions	-20			-25			-35			-45			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Data Retention Supply Voltage	V_{DR}	CS# • V_{CC} -0.2V	2.0		5.5	2.0		5.5	2.0		5.5	2.0		5.5	V
Data Retention Current	$I_{CCDR}1$	V_{CC} = 3V		8.0	12.8		8.0	12.8		8.0	12.8		8.0	12.8	mA

FIGURE 2 – 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.

AC CHARACTERISTICS

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

Parameter Read Cycle	Symbol	-20		-25		-35		-45		Units
		Min	Max	Min	Max	Min	Max	Min	Max	
Read Cycle Time	t_{RC}	20		25		35		45		ns
Address Access Time	t_{AA}		20		25		35		45	ns
Output Hold from Address Change	t_{OH}	3		3		3		3		ns
Chip Select Access Time	t_{ACS}		20		25		35		45	ns
Output Enable to Output Valid	t_{OE}		10		10		25		35	ns
Chip Select to Output in Low Z	t_{CLZ}[1]	3		3		3		3		ns
Output Enable to Output in Low Z	t_{OLZ}[1]	0		0		0		0		ns
Chip Disable to Output in High Z	t_{CHZ}[1]		15		17		20		30	ns
Output Disable to Output in High Z	t_{OHZ}[1]		12		15		20		25	ns

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

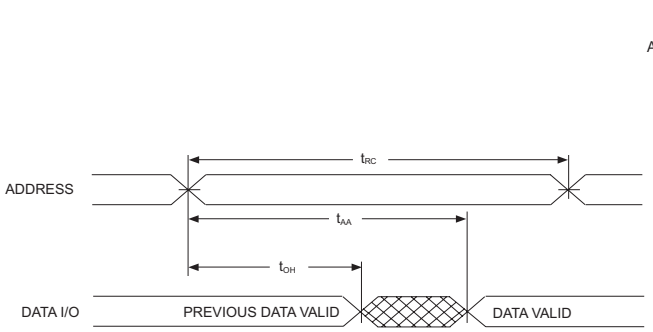
AC CHARACTERISTICS

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

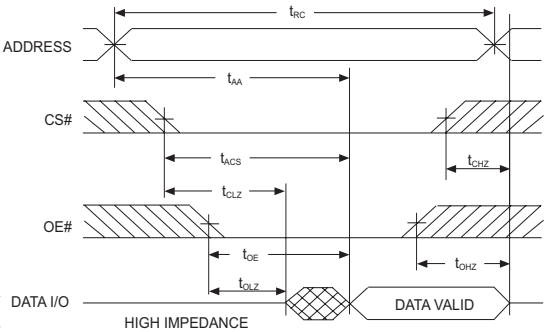
Parameter Write Cycle	Symbol	-20		-25		-35		-45		Units
		Min	Max	Min	Max	Min	Max	Min	Max	
Write Cycle Time	t_{WC}	20		25		35		45		ns
Chip Select to End of Write	t_{CW}	16		20		25		30		ns
Address Valid to End of Write	t_{AW}	16		20		25		30		ns
Data Valid to End of Write	t_{DW}	15		15		20		25		ns
Write Pulse Width	t_{WP}	16		20		25		30		ns
Address Setup Time	t_{AS}	2		2		2		2		ns
Address Hold Time	t_{AH}	2		2		2		2		ns
Output Active from End of Write	t_{OW}[1]	4		5		5		5		ns
Write Enable to Output in High Z	t_{WHZ}[1]		10	0	15	0	20	0	25	ns
Data Hold Time	t_{DH}	1		1		1		1		ns

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

FIGURE 3 – TIMING WAVEFORM - READ CYCLE

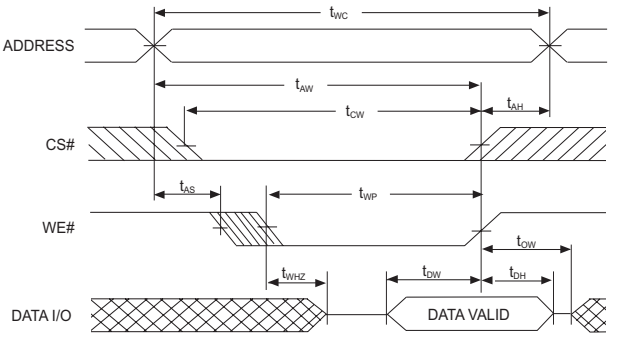


READ CYCLE 1 (CS# = OE# = V_{IL}, WE# = V_{IH})



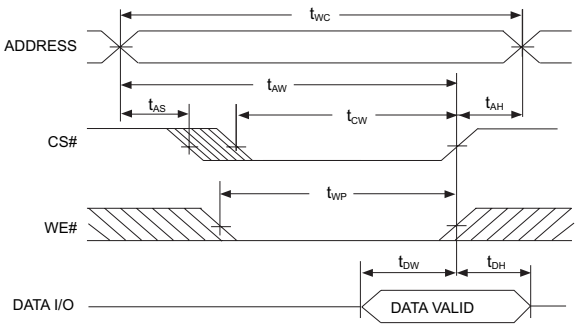
READ CYCLE 2 (WE# = V_{IH})

FIGURE 4 – WRITE CYCLE - WE# CONTROLLED



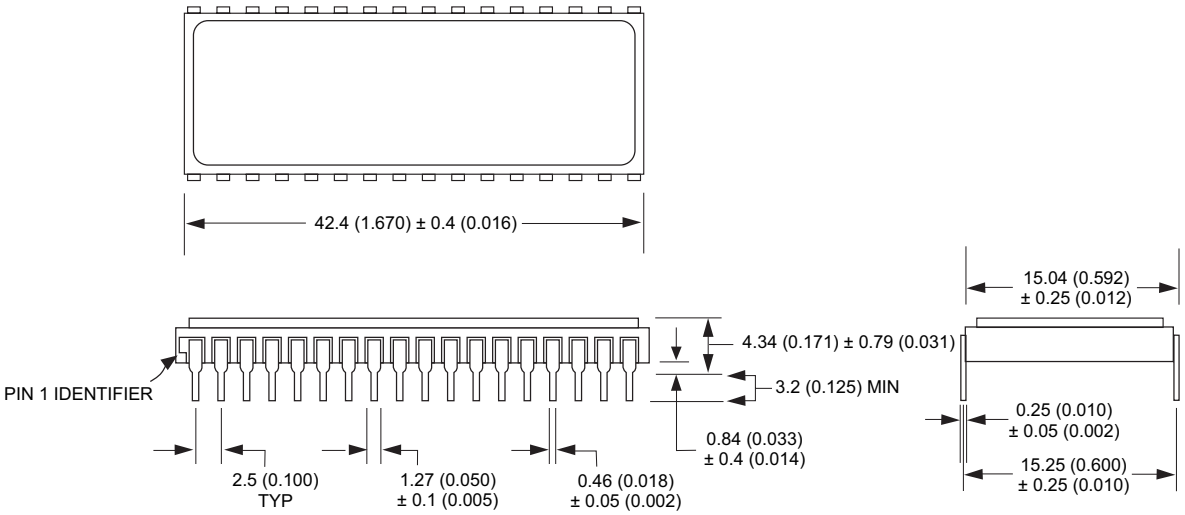
WRITE CYCLE 1, WE# CONTROLLED

FIGURE 5 – WRITE CYCLE - CS# CONTROLLED



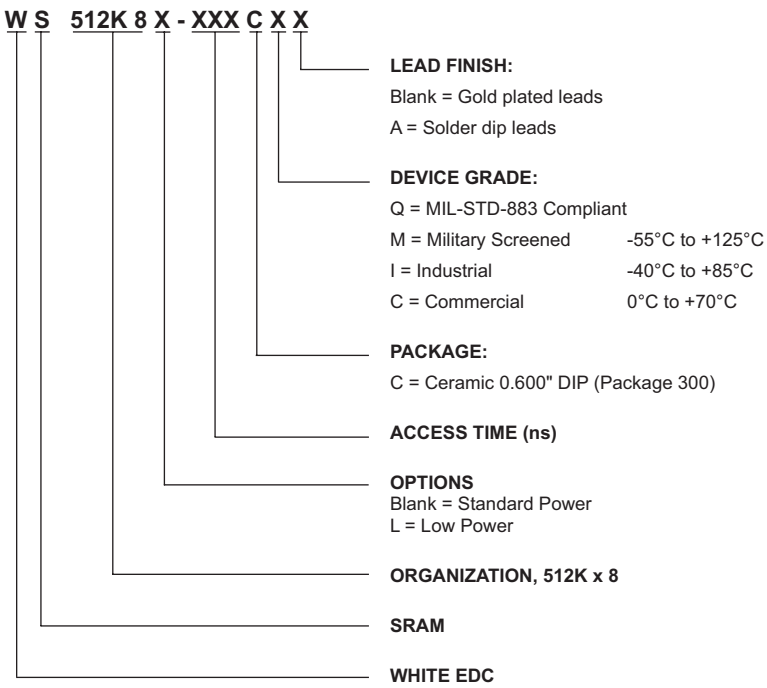
WRITE CYCLE 2, CS# CONTROLLED

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



ALL LINEAR DIMENSIONS ARE MILLIMETERS AND PARENTHETICALLY IN INCHES

ORDERING INFORMATION



DEVICE TYPE	SPEED	PACKAGE	SMD NO.
512K x 8 SRAM	45ns	32 pin DIP	5962-92078 06HTX
512K x 8 SRAM	35ns	32 pin DIP	5962-92078 07HTX
512K x 8 SRAM	25ns	32 pin DIP	5962-92078 08HTX
512K x 8 SRAM	20ns	32 pin DIP	5962-92078 09HTX