

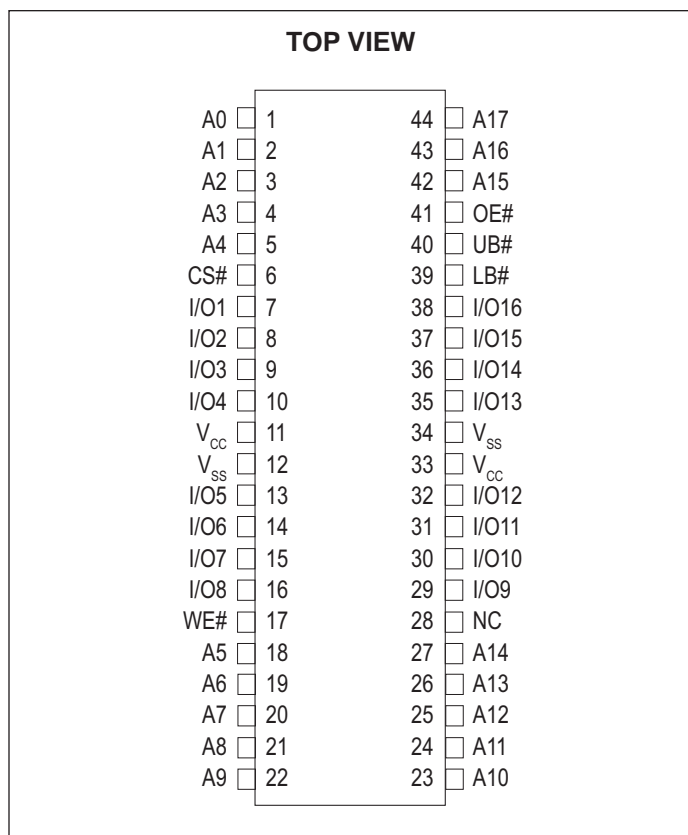
## 256Kx16 PLASTIC SRAM

### PLASTIC PLUS® FEATURES

- Access Times of 15, 17, 20, 25ns
- Standard Commercial Off-The-Shelf (COTS) Memory Devices for Extended Temperature Range
- Industry Standard 44 Lead Plastic SOJ Package
- Electrical and Speed Characteristics for:
  - Military Temperature (-55°C to +125°C)
  - Industrial Temperature (-40°C to +85°C)
  - Commercial Temperature (0°C to +70°C)
- Burn-in and Temperature Cycling Available
- Organized as 256K x 16
- Center Power/Ground Pins (Revolutionary)
- Data Byte Control:
  - Lower Byte (LB) = I/O<sub>1-8</sub>
  - Upper Byte (UB) = I/O<sub>9-16</sub>
- 5 Volt Power Supply
- Low Power Dissipation CMOS
- Battery Back-Up Operation
- RoHS Compliant

\* This product is subject to change without notice.

### PIN CONFIGURATION FOR WPS256K16X-XLJXG



### PIN DESCRIPTION

A <sub>0-17</sub>	Address Inputs
LB#	Lower-Byte Control (I/O <sub>1-8</sub> )
UB#	Upper-Byte Control (I/O <sub>9-16</sub> )
I/O <sub>A1-16</sub>	Data Input/Output
WE#	Chip Select
CS#	Output Enable
OE#	Write Enable
V <sub>cc</sub>	+5.0V Power
V <sub>ss</sub>	Ground
NC	Not Connected

**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 V <sub>SS</sub>	V <sub>G</sub>	-0.5	V <sub>CC</sub> + 0.5	V
Supply Voltage	V <sub>CC</sub>	-0.5	7.0	V

**NOTE:**

Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a Stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**RECOMMENDED OPERATING CONDITIONS**

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V <sub>CC</sub>	4.5	5.5	V
Input High Voltage	V <sub>IH</sub>	2.2	V <sub>CC</sub> + 0.5	V
Input Low Voltage	V <sub>IL</sub>	-0.3	+0.8	V
Operating Temp. (Mil.)	T <sub>A</sub>	-55	+125	°C
Operating Temp. (Ind.)	T <sub>A</sub>	-40	+85	°C

**CAPACITANCE**

 T<sub>A</sub> = +25°C

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

This parameter is guaranteed by design but not tested.

**TRUTH TABLE**

CS	WE#	OE#	LB#	UB#	Mode	Data I/O		Power
						I/O <sub>1-8</sub>	I/O <sub>9-16</sub>	
H	X	X	X		Not Select	High-Z	High-Z	Standby
L	H	H	X		Out Disable	High-Z	High-Z	Active
L	H	H	H					
L	H	L	L	H	Read	Data Out	High Z	Active
			H	L		High Z	Data Out	
			L	L		Data Out	Data Out	
L	L	X	L	H	Write	Data In	High Z	Active
			H	L		High Z	Data In	
			L	L		Data In	Data In	

**DC CHARACTERISTICS**

 V<sub>CC</sub> = 5.0V, V<sub>SS</sub> = 0V, T<sub>A</sub> = -55 +125°C

Parameter	Symbol	Conditions	Min	Max	Unit
Input Leakage Current	I <sub>LI</sub>	V <sub>CC</sub> = 5.5, V <sub>IN</sub> = V <sub>SS</sub> 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> = V <sub>SS</sub> to V <sub>CC</sub>		10	μA
V <sub>CC</sub> Read Current (1, 2)	I <sub>CC</sub>	CS = V <sub>IL</sub> , OE = V <sub>IH</sub> , f = 5MHz, V <sub>CC</sub> = 5.5		275	mA
V <sub>CC</sub> Standby Current (2, 5)	I <sub>BS</sub>	CS = V <sub>IH</sub> , OE = V <sub>IH</sub> , f = 5MHz, V <sub>CC</sub> = 5.5		17	mA
Output Low Voltage	V <sub>OL</sub>	I <sub>OL</sub> = 8.0mA, V <sub>CC</sub> = 4.5		0.4	V
Output High Voltage	V <sub>OH</sub>	I <sub>OH</sub> = -4.0mA, V <sub>CC</sub> = 4.5	2.4		V

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

**Data Retention Characteristics**

(TA = -55°C TO +125°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Data Retention Supply Voltage	I <sub>LI</sub>	V <sub>CC</sub> = 5.5, V <sub>IN</sub> = V <sub>SS</sub> to V <sub>CC</sub>	2.0		5.5	V
Low Power Data Retention	I <sub>LO</sub>	CS = V <sub>IH</sub> , OE = V <sub>IH</sub> , V <sub>OUT</sub> = V <sub>SS</sub> to V <sub>CC</sub>		1	15	mA

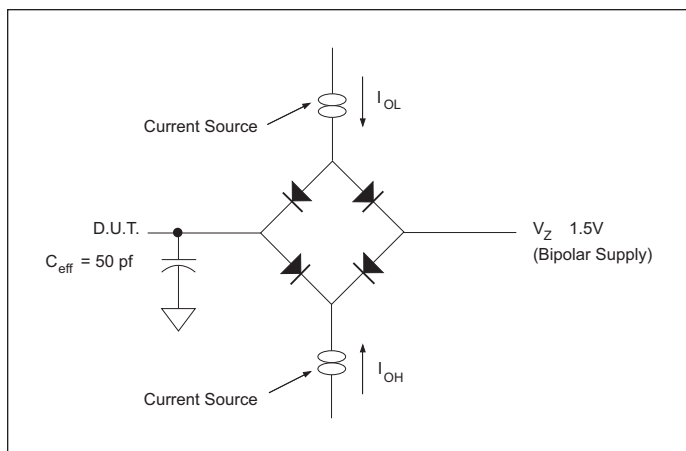
**AC CHARACTERISTICS**

 (V<sub>CC</sub> = 5.0V, V<sub>SS</sub> = 0V, TA = -55°C TO +125°C)

Parameter	Symbol	-15		-17		-20		-25		Unit
		Min	Max	Min	Max	Min	Max	Min	Max	
Read Cycle Time	t <sub>RC</sub>	15			17	20		25		ns
Address Access Time	t <sub>AA</sub>		15		17		20		25	ns
Output Hold from Address Change	t <sub>OH</sub>	0		0		0		0		ns
Chip Select Access Time	t <sub>ACS</sub>		15		12		20		25	ns
Output Enable to Output Valid	t <sub>OE</sub>		10		10		12		15	ns
Chip Select to Output in Low Z	t <sub>CLZ</sub> <sup>1</sup>	3		3		3		3		ns
Output Enable to Output in Low Z	t <sub>OLZ</sub> <sup>1</sup>	0		0		0		0		ns
Chip Disable to Output in High Z	t <sub>CHZ</sub> <sup>1</sup>		8		10		10		12	ns
Output Disable to Output in High Z	t <sub>OHZ</sub> <sup>1</sup>		8		12		10		12	ns
LB#, UB# Access Time	t <sub>BA</sub>		10		12		12		14	ns
LB#, UB# Enable to Low Z Output	t <sub>BLZ</sub> <sup>1</sup>	0		0		0		0		ns
LB#, UB# Disable to High Z Output	t <sub>BHZ</sub> <sup>1</sup>		8		10		10		12	ns

NOTE:

1. This parameter is guaranteed by design but not tested

**AC TEST CONDITIONS**

**AC TEST CONDITIONS**

Parameter	Typ	Unit
Input Pulse Levels	V <sub>IL</sub> = 0, V <sub>IH</sub> = 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:

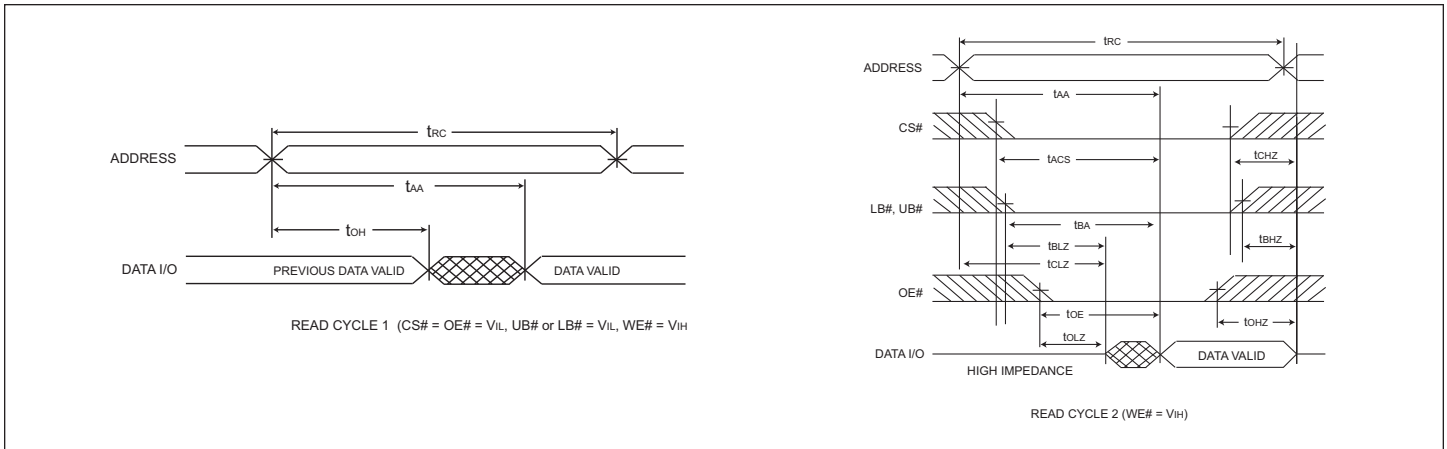
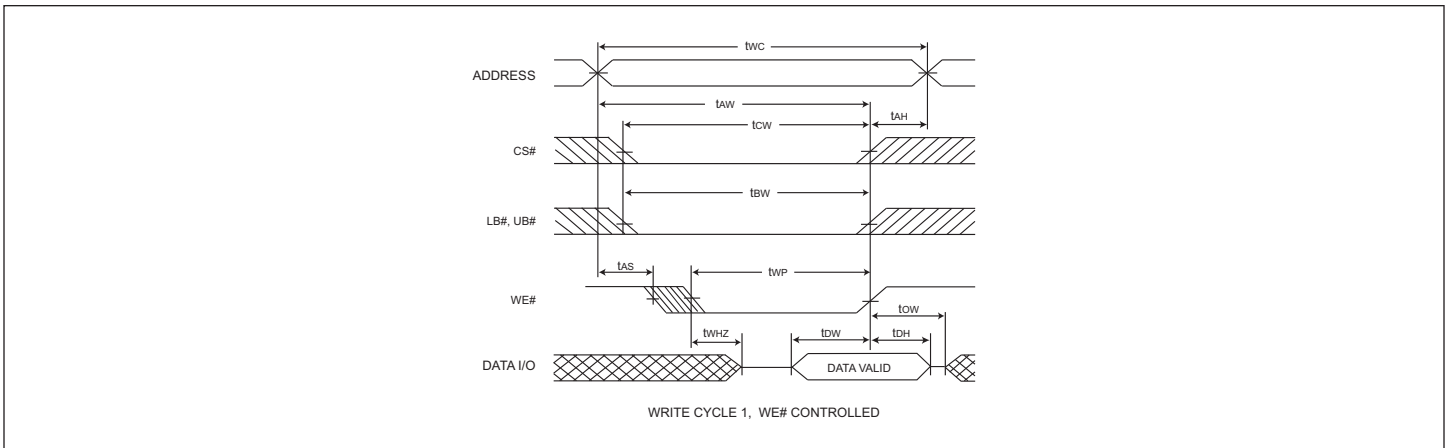
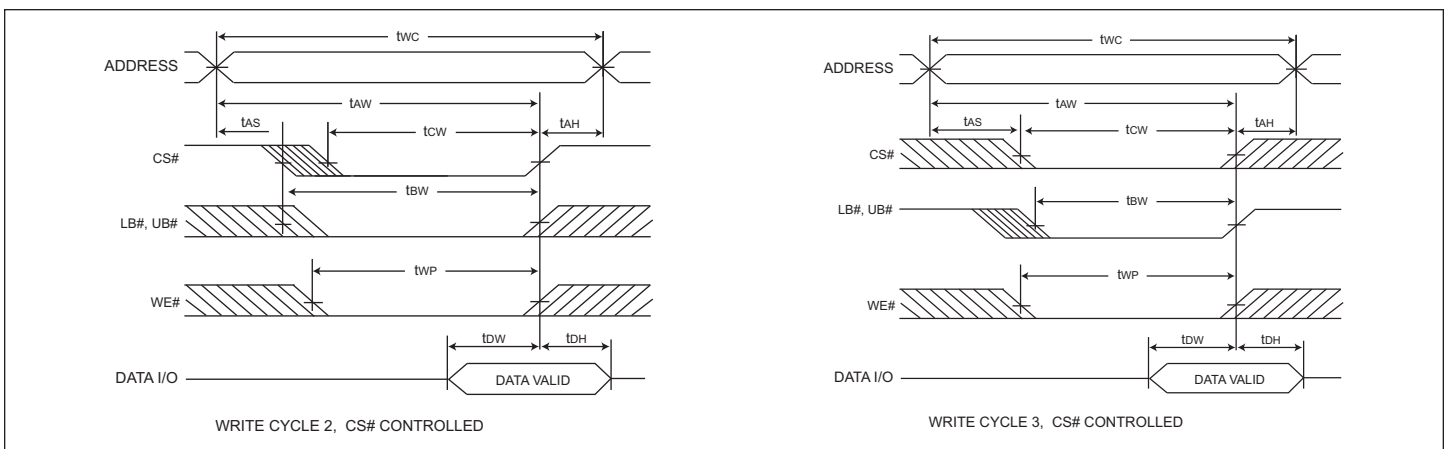
- V<sub>Z</sub> is programmable from -2V to +7V.
- I<sub>OL</sub> & I<sub>OH</sub> programmable from 0 to 16mA.
- Tester Impedance Z<sub>0</sub> = 75 Ω.
- V<sub>Z</sub> is typically the midpoint of V<sub>OH</sub> and V<sub>OL</sub>.
- I<sub>OL</sub> & I<sub>OH</sub> are adjusted to simulate a typical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

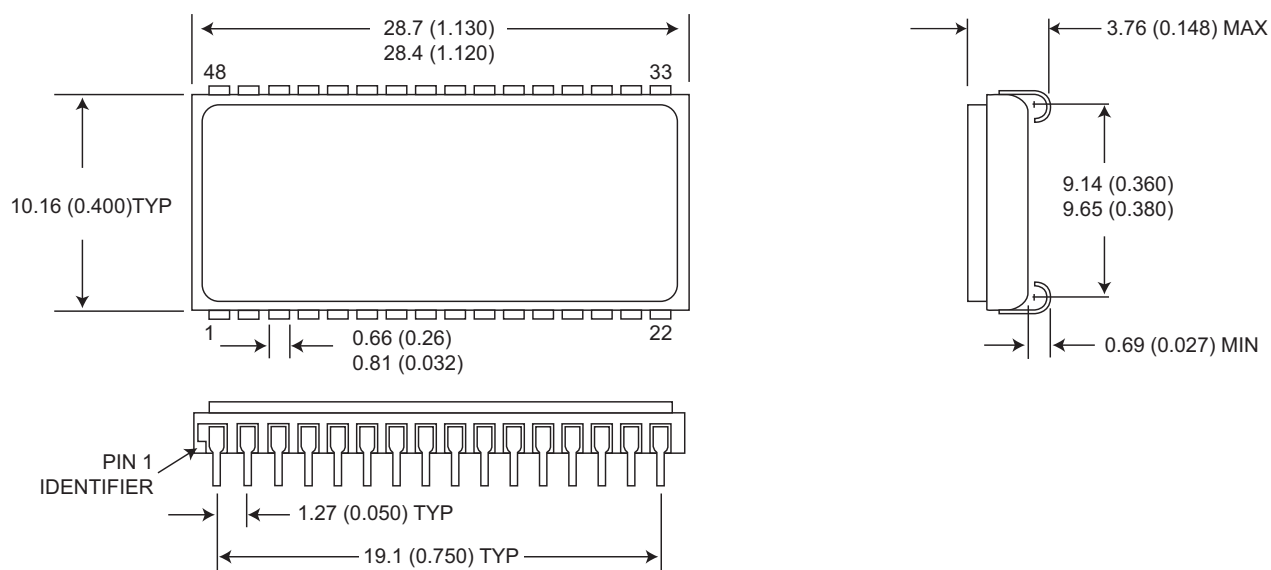
**AC CHARACTERISTICS**
 $V_{CC} = 5.0V, GND = 0V, -55^{\circ}C \leq T_A \leq +125^{\circ}C$ 

Parameter	Symbol	-15		-17		-20		-25		Unit
		Min	Max	Min	Max	Min	Max	Min	Max	
Write Cycle Time	t <sub>WC</sub>	15		17		20		25		ns
Chip Select to End of Write	t <sub>CW</sub>	12		15		17		20		ns
Address Valid to End of Write	t <sub>AW</sub>	12		15		17		20		ns
Data Valid to End of Write	t <sub>DW</sub>	10		12		12		15		ns
Write Pulse Width	t <sub>WP</sub>	12		15		17		20		ns
Address Setup Time	t <sub>AS</sub>	0		0		0		0		ns
Address Hold Time	t <sub>AH</sub>	0		0		0		0		ns
Output Active from End of Write	t <sub>OW</sub> <sup>1</sup>	0		0		0		0		ns
Write Enable to Output in High Z	t <sub>WHZ</sub> <sup>1</sup>		8		10		10		10	ns
Data Hold Time	t <sub>DH</sub>	0		0		0		0		ns
LB#, UB# Valid to End Write	t <sub>BW</sub>	12		15		17		20		ns

## NOTES:

1. This parameter is guaranteed by design but not tested

**TIMING WAVEFORM – READ CYCLE**

**WRITE CYCLE – WE# CONTROLLED**

**WRITE CYCLE – CS# CONTROLLED**


**PACKAGE 101: 44 LEAD, PLASTIC SOJ**


DIMENSIONS IN MILLIMETERS AND (INCHES)



## ORDERING INFORMATION

**W P S 256K16 X - XXX LJ X G A**

**MICROSEMI CORPORATION** \_\_\_\_\_

**PLASTIC PLUS®** \_\_\_\_\_

**SRAM** \_\_\_\_\_

**ORGANIZATION, 256K x 16** \_\_\_\_\_

**IMPROVEMENT MARK:** \_\_\_\_\_

B = Burn-in

T = Temperature Cycling

C = Burn-in and Temperature Cycle

**ACCESS TIME (ns):** \_\_\_\_\_

**PACKAGE:** \_\_\_\_\_

LJ= 44 Lead Plastic SOJ

**DEVICE GRADE:** \_\_\_\_\_

M = Military Temperature      -55°C to +125°C

I = Industrial Temperature      -40°C to +85°C

C = Commercial Temperature      0°C to +70°C

**RoHS COMPLIANT:** \_\_\_\_\_

**SOLDER DIPPED:** \_\_\_\_\_

**ORDERING INFORMATION**
**EDI 8 16 256 CA X X X G A**
**MICROSEMI CORPORATION** \_\_\_\_\_

**SRAM** \_\_\_\_\_

**ORGANIZATION, 256Kx16** \_\_\_\_\_

**TECHNOLOGY:** \_\_\_\_\_

CA = CMOS Standard Power

LPA = Low Power

**ACCESS TIME (ns)** \_\_\_\_\_

**PACKAGE TYPE:** \_\_\_\_\_

M44 = 44 lead Plastic SOJ

**DEVICE GRADE:** \_\_\_\_\_

B = MIL-STD-883 Compliant

M = Military Screened -55°C to +125°C

I = Industrial -40°C to +85°C

C = Commercial 0°C to +70°C

**RoHS** \_\_\_\_\_

**SOLDER DIPPED:** \_\_\_\_\_



**Document Title**

256M x 16 Plastic SRAM

**Revision History**

<b>Rev #</b>	<b>History</b>	<b>Release Date</b>	<b>Status</b>
Rev 0	Initial Release	August 2007	Final
Rev 1	1.1 Add part number EDI816256CA-XM44XG 1.2 Package 101: Add "Dimensions in millimeters and (inches)" 1.3 Ordering information "Add Solder Dipped" option 1.4 Ordering information "Add EDI816256CA-XM44XG"	March 2009	Final
Rev 2	2.1 Change document layout from White Electronic Designs to Microsemi	July 2011	Final