128K x 8 SRAM
RUGGEDIZED PLASTIC HIGH SPEED SRAM

FEATURES

- Access times of 15, 20, 25 and 35 ns
- Fast output enable (t_{AOE}) for cache applications
- Low active power
- Low standby power
- Fully static operation, no clock or refresh required
- TTL Compatible Inputs and Outputs
- Single +5V power supply
- Package in Industry-standard 32-pin SOJ

OPTIONS — MARKING

- Timing
  - 15ns access — -15
  - 20ns access — -20
  - 25ns access — -25
  - 35ns access — -35
- Package
  - Plastic SOJ* — DJ No. 905
- Operating Temperature Ranges
  - -Military (-55°C to +125°C) — XT
  - -Industrial (-40°C to +85°C) — IT

GENERAL DESCRIPTION

The AS5C1008 is a high speed, low power, 128K by 8-bit ruggedized plastic (COTS) CMOS Static RAM. It is fabricated using high performance, CMOS technology. This highly reliable process coupled with innovative circuit design techniques, yields access times as fast as 15ns (Max) over the military and industrial temperature ranges.

When Chip Enable (CE\) is HIGH, the device assumes a standby mode at which the power dissipation can be reduced down to 125mW (max) at CMOS input levels.

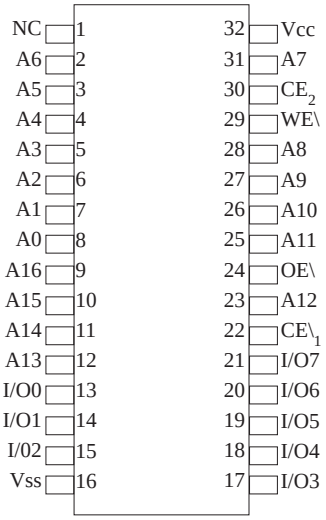
Easy memory expansion is provided by using asserted LOW CE\ and asserted HIGH CE2, and asserted LOW write enable (WE\) controls both writing and reading of the memory.

TheAS5C1008 is pin-compatible with other 128K x 8 SRAM's in the SOJ package.

For ceramic versions of this product, please see the MT5C1008 datasheet.

PIN ASSIGNMENT
(Top View)

32-Pin Plastic SOJ (DJ)



PIN FUNCTIONS

A0 - A16	Address Inputs
WE\	Write Enable
$CE\backslash_1$, CE_2	Chip Enable
OE\	Output Enable
I/O_0 - I/O_7	Data Inputs/Outputs
V_{CC}	Power
V_{SS}	Ground
NC	No Connection

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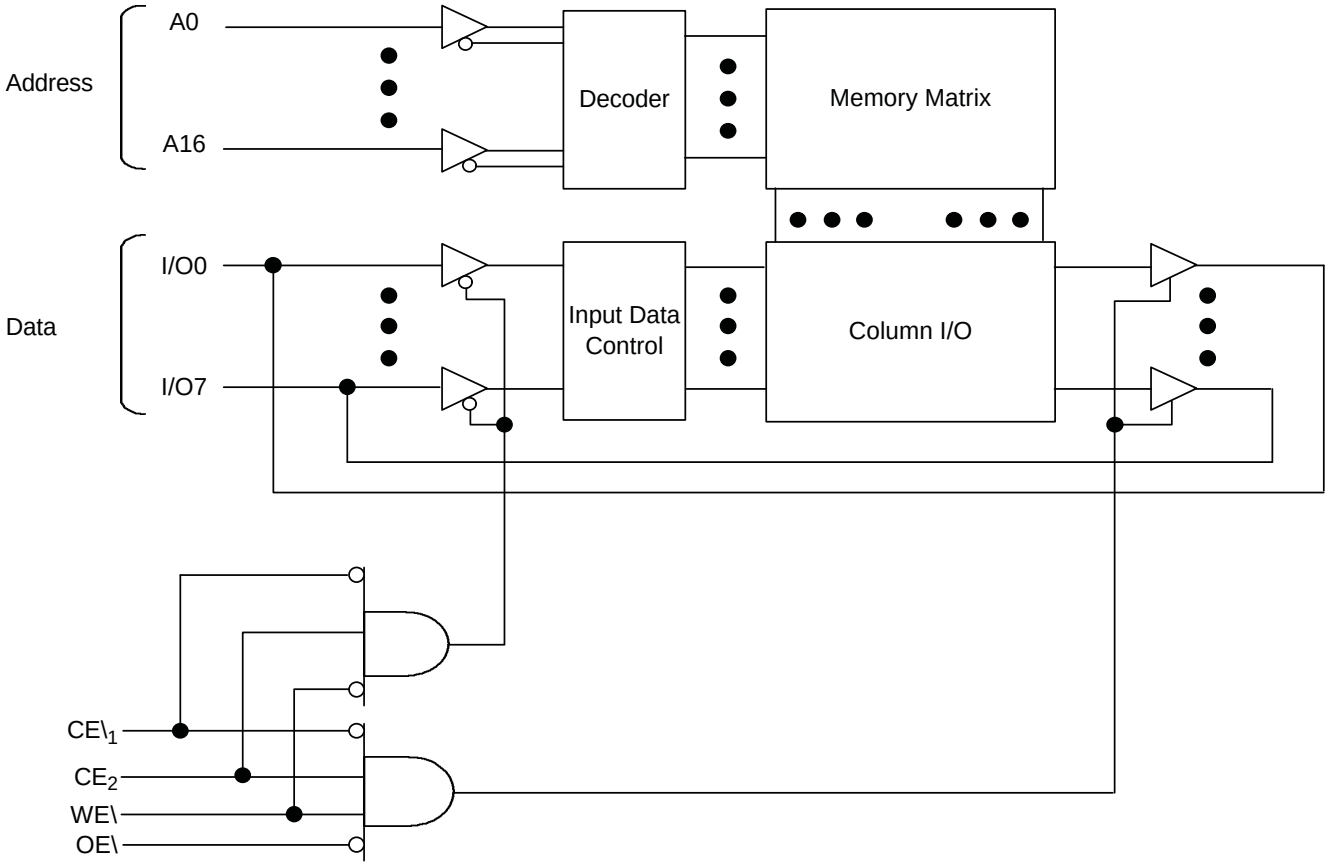
ABSOLUTE MAXIMUM RATINGS*

Vcc Supply Relative to GND.....-0.5V to +7.0V
Voltage on any pin Relative to GND.....-0.5V to Vcc +7.0V
Storage Temperature .....-65°C to +150°C
Ambient Temperature with Power Applied.....-55°C to +125°C
Short Circuit Output Current.....260°C
Power Dissipation.....1.0W

*Stresses greater than 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 operation section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

FUNCTIONAL BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS AND RECOMMENDED DC OPERATING CONDITIONS

($-55^oC \leq T_A \leq +125^oC$ or -40^oC to $+85^oC$; Vcc = 5V±10%)

			-15		-20		-25		-35		
PARAMETER	CONDITIONS	SYMBOL	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	UNITS
Dynamic Operating Current	Vcc=MAX, I_{OUT} = 0mA, $CE_1 = V_{IL}$ and $CE_2 = V_{IH}$, f = fmax	I_{CC1}		180		150		140		125	mA
TTL Standby Current - TTL Inputs	Vcc=MAX, $V_{IN} = V_{IH}$ or V_{IL}, $CE\backslash_1 \geq V_{IH}$ and $CE_2 \geq V_{IL}$, f = fmax	I_{SB1}		90		75		70		60	mA
CMOS Standby Current - CMOS Inputs	Vcc=MAX, $CE\backslash_1 \geq$ Vcc -0.2V, or $CE_2 \leq 0.2V$, $V_{IN} \geq$ Vcc -0.2V and $V_{IN} \leq 0.2V$, f = 0	I_{SB2}		10		10		10		10	mA
Input Leakage Current	GND $\leq V_{IN} \leq$ Vcc	I_{LI}	-10	10	-10	10	-10	10	-10	10	µA
Output Leakage Current	GND $\leq V_{OUT} \leq$ Vcc Output Disabled	I_{LO}	-10	10	-10	10	-10	10	-10	10	µA
Output High Voltage	Vcc = MIN, I_{OH} = -4.0 mA	V_{OH}	2.4		2.4		2.4		2.4		V
Output Low Voltage	Vcc = MIN, I_{OL} = 8.0 mA	V_{OL}		0.4		0.4		0.4		0.4	V
Input High Voltage		V_{IH}	2.2	Vcc +0.5	2.2	Vcc +0.5	2.2	Vcc +0.5	2.2	Vcc +0.5	V
Input Low Voltage		V_{IL}	-0.5	0.8	-0.5	0.8	-0.5	0.8	-0.5	0.8	V

PIN DESCRIPTIONS

A0 - A16: Address Inputs

These 17 address inputs select one of the 131,072 8-bit words in the RAM.

$CE\backslash_1$: Chip Enable 1 Input

$CE\backslash_1$ is asserted LOW to read from or write to the device. If Chip Enable 1 is deasserted, the device is deselected and is in standby power mode. The I/O pins will be in the high-impedance state when the device is deselected.

CE_2: Chip Enable 2 Input

CE_2 is asserted HIGH to read from or write to the device. If Chip Enable 2 is deasserted, the device is deselected and is in standby power mode. The I/O pins will be in the high-impedance state when the device is deselected.

OE\: Output Enable Input

The Output Enable Input is asserted LOW. If asserted LOW while $CE\backslash_1$ is asserted (LOW) and CE_2 is asserted (HIGH) and WE\ is deasserted (HIGH), data from the SRAM will be present on the I/O pins. The I/O pins will be in the high-impedance state when OE\ is deasserted.

WE\: Write Enable Input

The Write Enable input is asserted LOW and controls read and write operations. When $CE\backslash_1$ and WE\ are both asserted (LOW) and CE_2 is asserted (HIGH) input data present on the I/O pins will be written into the selected memory location.

ELECTRICAL CHARACTERISTICS AND RECOMMENDED AC OPERATING CONDITIONS

(-55°C≤T_A≤+125°C or -40°C to +85°C; Vcc = 5V±10%)

		-15		-20		-25		-35		
DESCRIPTION	**SYMBOL[1]**	**MIN**	**MAX**	**MIN**	**MAX**	**MIN**	**MAX**	**MIN**	**MAX**	**UNIT**
READ CYCLE										
Read Cycle Time	t_{RC}	15		20		25		35		ns
Address Access Time	t_{AA}		15		20		25		35	ns
Chip Enable Access Time	t_{ACE}		15		20		25		35	ns
Output Hold from Address Change	t_{OH}	3		3		3		3		ns
Chip Enable to Output in Low-Z	t_{LZCE}	3		3		3		3		ns
Chip Disable to Output in High-Z	t_{HZCE}		7		8		10		15	ns
Output Enable Access Time	t_{AOE}		7		7		10		15	ns
Output Enable to Output in Low-Z	t_{LZOE}	0		0		0		0		ns
Output Disable to Output in High-Z	t_{HZOE}		7		8		10		15	ns
WRITE CYCLE										
Write Cycle Time	t_{WC}	15		20		25		35		ns
Chip Enable to End of Write	t_{CW}	12		15		20		25		ns
Address Valid to End of Write	t_{AW}	12		15		20		25		ns
Address Set-up Time	t_{AS}	0		0		0		0		ns
Address Hold from End of Write	t_{AH}	0		0		0		0		ns
Write Pulse Width (OE\ ≥ V_{IH})	t_{WP}	12		15		20		30		ns
Data Set-up Time	t_{DS}	8		10		15		20		ns
Data Hold Time	t_{DH}	0		0		0		0		ns
Write Disable to Output in Low-Z	t_{LZWE}	5		5		5		5		ns
Write Enable to Output in High-Z	t_{HZWE}		7		9		10		15	ns

NOTE: 1. t_{LZCE}, t_{LZWE}, t_{HZCE}, t_{LZOE}, and t_{HZOE} are simulated values.

CAPACITANCE (T_A = +25°C, f = 1.0 MHz)

PARAMETER	CONDITION	SYMBOL	MAX	UNIT
Input Capacitance	V_{IN} = 0V	C_{IN}	6	pF
Output Capacitance	V_{OUT} = 0V	C_{OUT}	8	pF

AC TEST CONDITIONS

Input Pulse Levels	GND to 3.0V
Input Rise and Fall Times	3ns
Input Timing Reference Levels	1.5V
Output Reference Levels	1.5V
Output Load	See Figure 1

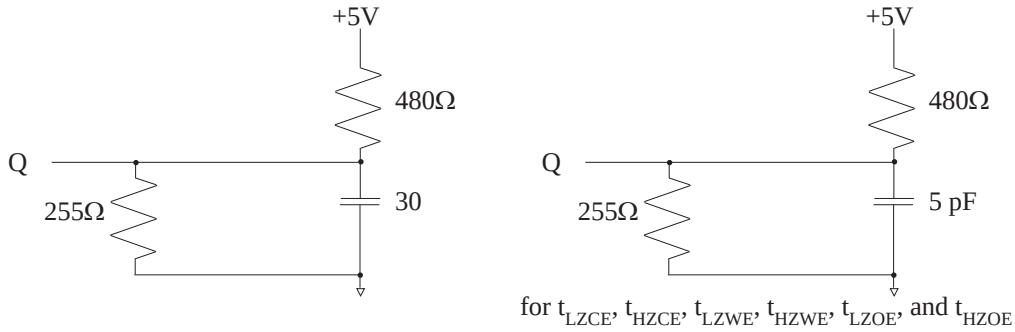
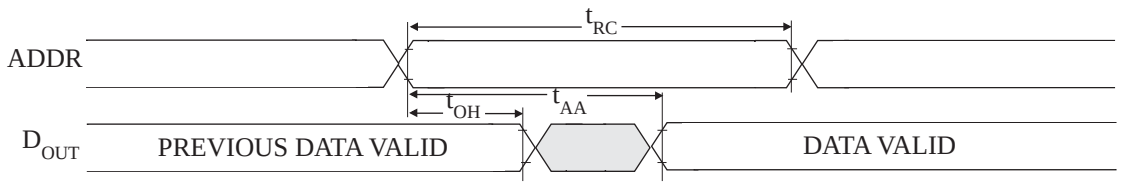


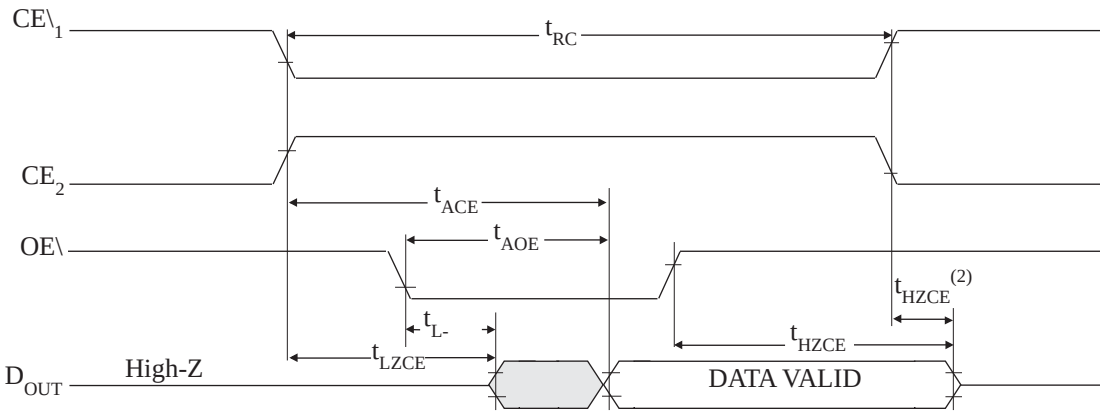
Fig. 1 OUTPUT LOAD EQUIVALENT

READ CYCLE TIMING 1[1]



NOTE: 1. CE\ is HIGH for READ cycle.

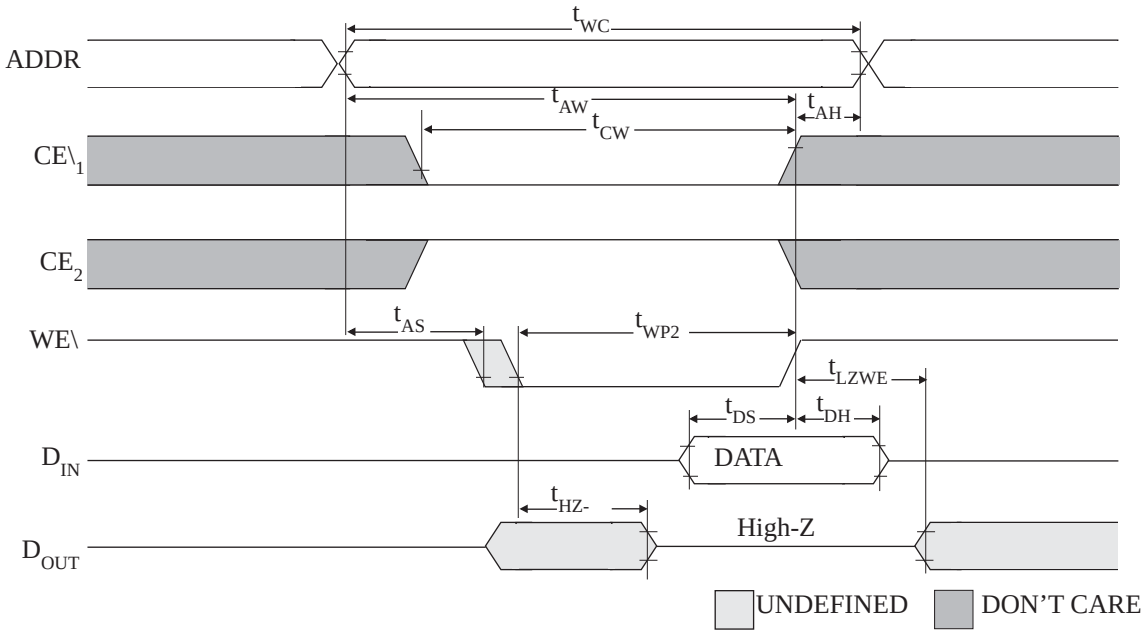
READ CYCLE TIMING 2 [1]



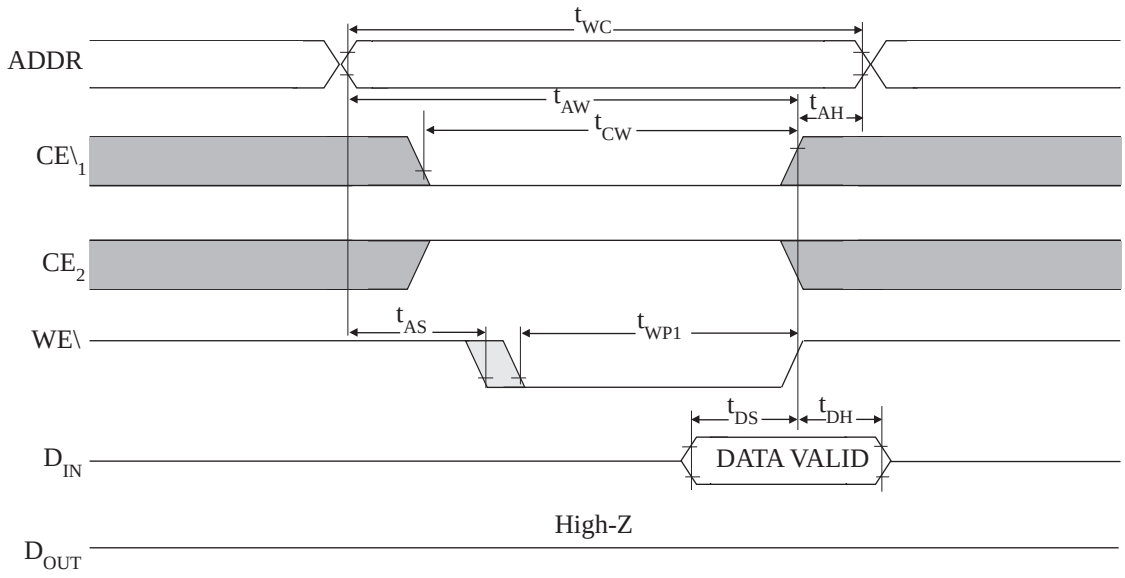
NOTES: 1. CE\ is HIGH for READ cycle.

2. At any given temperature and voltage condition, t_{HZCE} is less than t_{LZCE}.

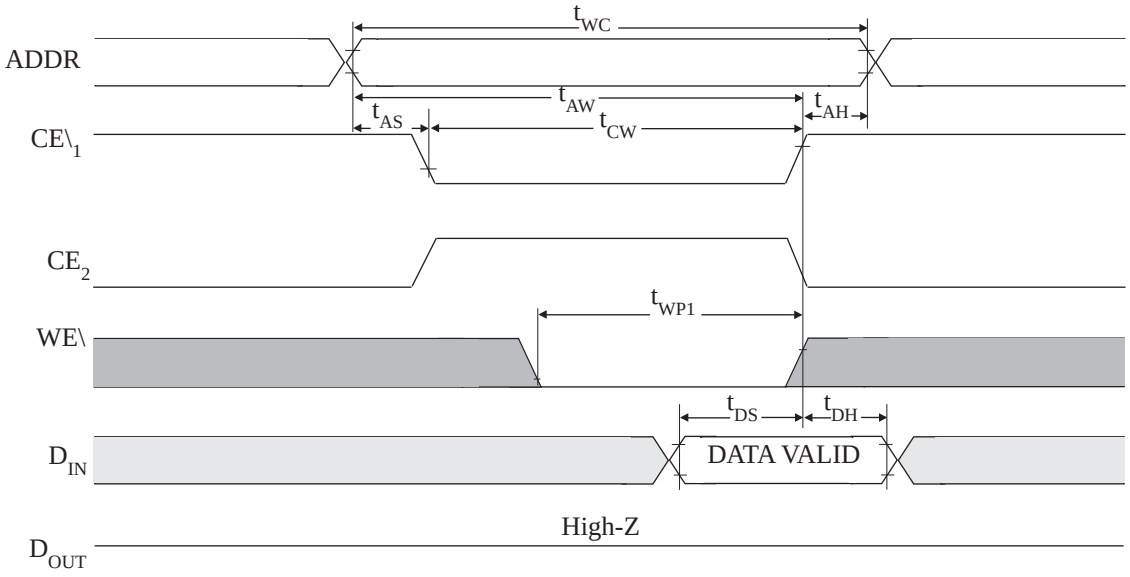
WRITE CYCLE TIMING (WE\ CONTROLLED, OE\ = LOW)



WRITE CYCLE TIMING ($CE\backslash_1$ CONTROLLED, $OE\backslash$ = LOW)



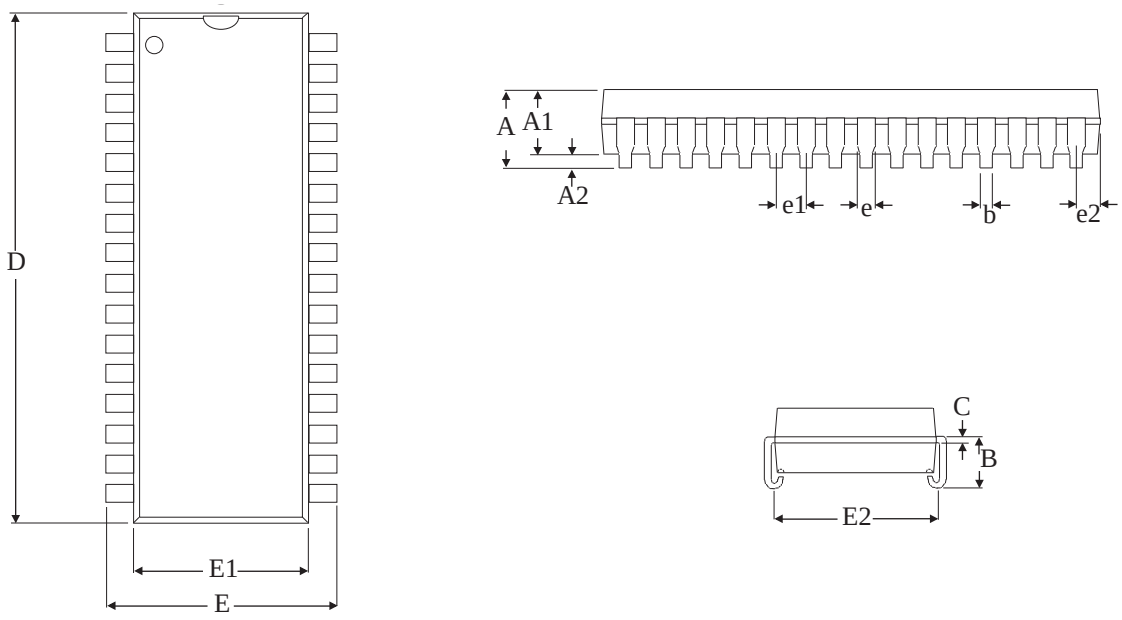
WRITE CYCLE TIMING (CE_2 CONTROLLED, $OE\backslash$ = LOW)



UNDEFINED DON'T CARE

MECHANICAL DEFINITION*

Micross Case #905 (Package Designator DJ)



SYMBOL	MICROSS PACKAGE SPECIFICATIONS	
	MIN	MAX
A	0.140 BSC	
A1	0.105	0.115
A2	0.027 TYP	
B	0.082	---
b	0.018 TYP	
C	0.010 TYP	
D	0.820	0.880
E	0.430	0.445
E1	0.395	0.405
E2	0.360	0.380
e	0.025	0.032
e1	0.050 TYP	
e2	---	0.045

**** All measurements are in inches.***

ORDERING INFORMATION

EXAMPLE: AS5C1008DJ-25/XT

Device Number	Package Type	Speed ns	Process
AS5C1008	DJ	-15	/*
AS5C1008	DJ	-20	/*
AS5C1008	DJ	-25	/*
AS5C1008	DJ	-35	/*

***AVAILABLE PROCESSES**

IT = Industrial Temperature Range -40°C to +85°C
XT = Extended Temperature Range -55°C to +125°C

DOCUMENT TITLE
128K x 8 SRAM RUGGEDIZED PLASTIC HIGH SPEED SRAM

REVISION HISTORY

Rev #	History	Release Date	Status
3.7	Updated AC & DC Specs	March 2009	Release
3.8	Updated Micross Information	January 2010	Release
3.9	Updated Order Chart	October 2010	Release