



## 32K X 8 BIT LOW POWER CMOS SRAM

### FEATURES

- Access time : 55ns
- Low power consumption:  
Operation current :  
15mA (TYP.),  $V_{CC} = 3.0V$   
Standby current :  
1 $\mu$ A (TYP.),  $V_{CC} = 3.0V$
- Wide range power supply : 2.7 ~ 5.5V
- Fully Compatible with all Competitors 5V product
- Fully Compatible with all Competitors 3.3V product
- All inputs and outputs TTL compatible
- Fully static operation
- Tri-state output
- Data retention voltage : 2.0V (MIN.)
- **All products ROHS Compliant**
- Package : 28-pin 600 mil PDIP  
28-pin 330 mil SOP  
28-pin 8mm x 13.4mm sTSOP

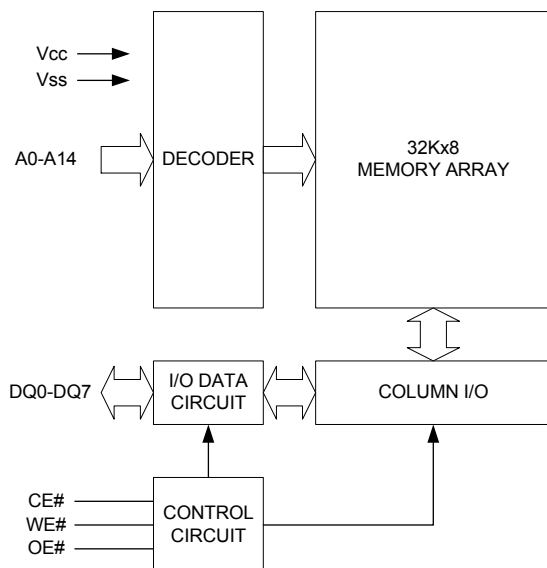
### GENERAL DESCRIPTION

The AS6C62256 is a 262,144-bit low power CMOS static random access memory organized as 32,768 words by 8 bits. It is fabricated using very high performance, high reliability CMOS technology. Its standby current is stable within the range of operating temperature.

The AS6C62256 is well designed for low power application, and particularly well suited for battery back-up nonvolatile memory application.

The AS6C62256 operates with wide range power supply 2.7 ~ 5.5V

### FUNCTIONAL BLOCK DIAGRAM



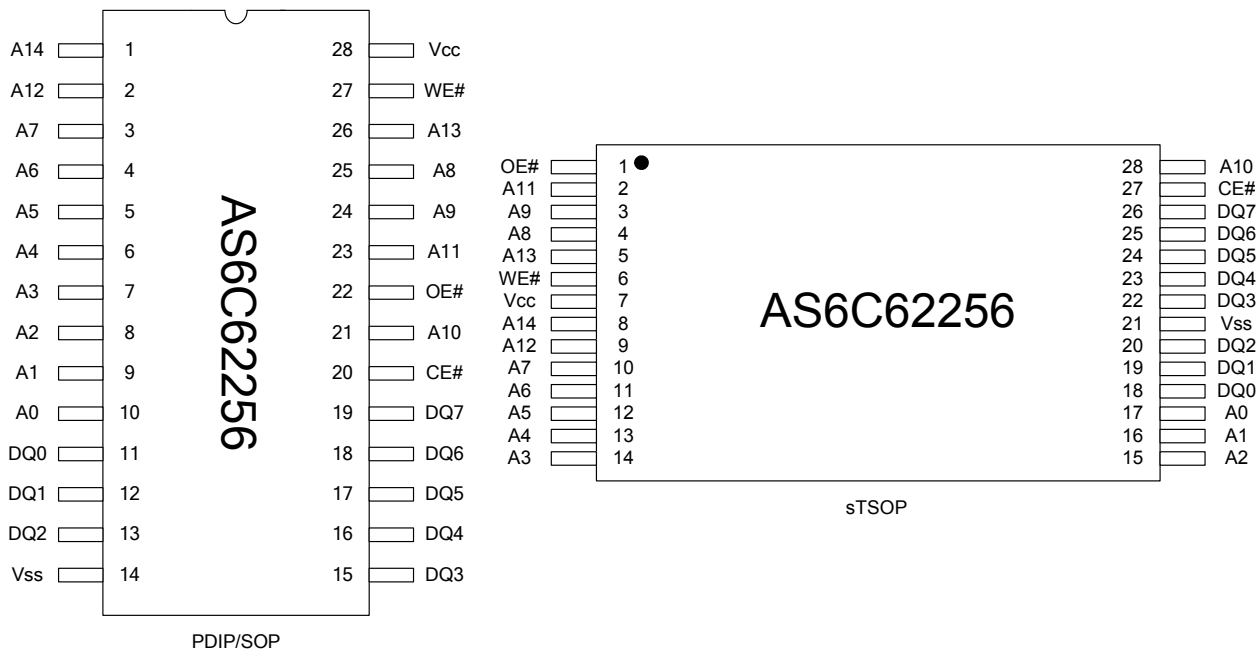
### PIN DESCRIPTION

SYMBOL	DESCRIPTION
A0 - A14	Address Inputs
DQ0 - DQ7	Data Inputs/Outputs
CE#	Chip Enable Input
WE#	Write Enable Input
OE#	Output Enable Input
Vcc	Power Supply
Vss	Ground



32K X 8 BIT LOW POWER CMOS SRAM

**PIN CONFIGURATION**



**ABSOLUTE MAXIMUM RATINGS\***

PARAMETER	SYMBOL	RATING	UNIT
Terminal Voltage with Respect to V <sub>SS</sub>	V <sub>TERM</sub>	-0.5 to 7.0	V
Operating Temperature	T <sub>A</sub>	0 to 70(C grade)	°C
		-40 to 85(I grade)	°C
Storage Temperature	T <sub>STG</sub>	-65 to 150	
Power Dissipation	P <sub>D</sub>	1	W
DC Output Current	I <sub>OUT</sub>	50	mA
Soldering Temperature (under 10 sec)	T <sub>SOLDER</sub>	260	°C

\*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 or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to the absolute maximum rating conditions for extended period may affect device reliability.

**TRUTH TABLE**

MODE	CE#	OE#	WE#	I/O OPERATION	SUPPLY CURRENT
Standby	H	X	X	High-Z	I <sub>SB</sub> , I <sub>SB1</sub>
Output Disable	L	H	H	High-Z	I <sub>CC</sub> , I <sub>CC1</sub>
Read	L	L	H	D <sub>OUT</sub>	I <sub>CC</sub> , I <sub>CC1</sub>
Write	L	X	L	D <sub>IN</sub>	I <sub>CC</sub> , I <sub>CC1</sub>

Note: H = V<sub>IH</sub>, L = V<sub>IL</sub>, X = Don't care.



## 32K X 8 BIT LOW POWER CMOS SRAM

### DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP. <sup>5</sup>	MAX.	UNIT
Supply Voltage	V <sub>CC</sub>		2.7	3.3	5.5	V
Input High Voltage	V <sub>IH</sub> <sup>1</sup>		2.4 V	-	V <sub>CC</sub> +0.5	V
Input Low Voltage	V <sub>IL</sub> <sup>2</sup>		-0.5	-	0.6	V
Input Leakage Current	I <sub>LI</sub>	V <sub>CC</sub> ≥ V <sub>IN</sub> ≥ V <sub>SS</sub>	-1	-	1	μA
Output Leakage Current	I <sub>LO</sub>	V <sub>CC</sub> ≥ V <sub>OUT</sub> ≥ V <sub>SS</sub> , Output Disabled	-1	-	1	μA
Output High Voltage	V <sub>OH</sub>	I <sub>OH</sub> = -1mA	2.4	3.0	-	V
Output Low Voltage	V <sub>OL</sub>	I <sub>OL</sub> = 2mA	-	-	0.4	V
Average Operating Power supply Current	I <sub>CC</sub>	Cycle time = Min. CE# = V <sub>IL</sub> , I <sub>I/O</sub> = 0mA	-55	15	45	mA
		Cycle time = 1μs CE# ≤ 0.2V and I <sub>I/O</sub> = 0mA other pins at 0.2V or V <sub>CC</sub> -0.2V	-	3	10	mA
Standby Power Supply Current	I <sub>SB</sub>	CE# = V <sub>IH</sub>	-	1	3	mA
	I <sub>SB1</sub>	CE# ≥ V <sub>CC</sub> - 0.2V	-C	-	1	50 <sup>4</sup>
-I			-	1	80 <sup>4</sup>	μA

Notes: C = Commercial Temperature I = Industrial Temperature

- V<sub>IH</sub>(max) = V<sub>CC</sub> + 3.0V for pulse width less than 10ns.
- V<sub>IL</sub>(min) = V<sub>SS</sub> - 3.0V for pulse width less than 10ns.
- Over/Undershoot specifications are characterized, not 100% tested.
- 10μA for special request
- Typical values are included for reference only and are not guaranteed or tested.  
Typical values are measured at V<sub>CC</sub> = V<sub>CC</sub>(TYP.) and T<sub>A</sub> = 25°C

### CAPACITANCE (T<sub>A</sub> = 25°C, f = 1.0MHz)

PARAMETER	SYMBOL	MIN.	MAX	UNIT
Input Capacitance	C <sub>IN</sub>	-	6	pF
Input/Output Capacitance	C <sub>I/O</sub>	-	8	pF

Note : These parameters are guaranteed by device characterization, but not production tested.

### AC TEST CONDITIONS

Input Pulse Levels	0.2V to V <sub>CC</sub> - 0.2V
Input Rise and Fall Times	3ns
Input and Output Timing Reference Levels	1.5V
Output Load	C <sub>L</sub> = 50pF + 1TTL, I <sub>OH</sub> /I <sub>OL</sub> = -1mA/2mA



## AC ELECTRICAL CHARACTERISTICS

### (1) READ CYCLE

PARAMETER	SYM	AS6C62256-55		UNIT
		MIN	MAX.	
Read Cycle Time	t <sub>RC</sub>	55	-	ns
Address Access Time	t <sub>AA</sub>	-	55	ns
Chip Enable Access Time	t <sub>ACE</sub>	-	55	ns
Output Enable Access Time	t <sub>OE</sub>	-	30	ns
Chip Enable to Output in Low-Z	t <sub>CLZ</sub> *	10	-	ns
Output Enable to Output in Low-Z	t <sub>OLZ</sub> *	5	-	ns
Chip Disable to Output in High-Z	t <sub>CHZ</sub> *	-	20	ns
Output Disable to Output in High-Z	t <sub>OHZ</sub> *	-	20	ns
Output Hold from Address Change	t <sub>OH</sub>	10	-	ns

### (2) WRITE CYCLE

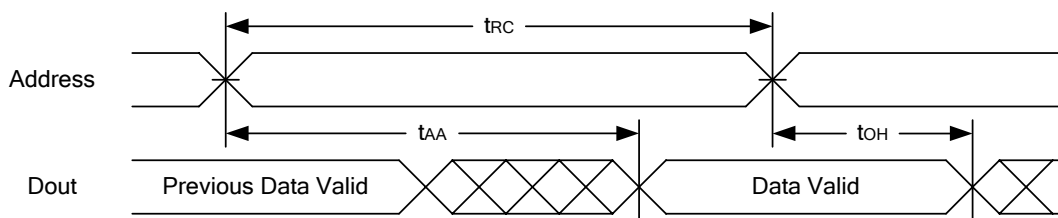
PARAMETER	SYM	AS6C62256-55		UNIT
		MIN.	MAX.	
Write Cycle Time	t <sub>WC</sub>	55	-	ns
Address Valid to End of Write	t <sub>AW</sub>	50	-	ns
Chip Enable to End of Write	t <sub>CW</sub>	50	-	ns
Address Set-up Time	t <sub>AS</sub>	0	-	ns
Write Pulse Width	t <sub>WP</sub>	45	-	ns
Write Recovery Time	t <sub>WR</sub>	0	-	ns
Data to Write Time Overlap	t <sub>DW</sub>	25	-	ns
Data Hold from End of Write Time	t <sub>DH</sub>	0	-	ns
Output Active from End of Write	t <sub>OW</sub> *	5	-	ns
Write to Output in High-Z	t <sub>WHZ</sub> *	-	20	ns

\*These parameters are guaranteed by device characterization, but not production tested.

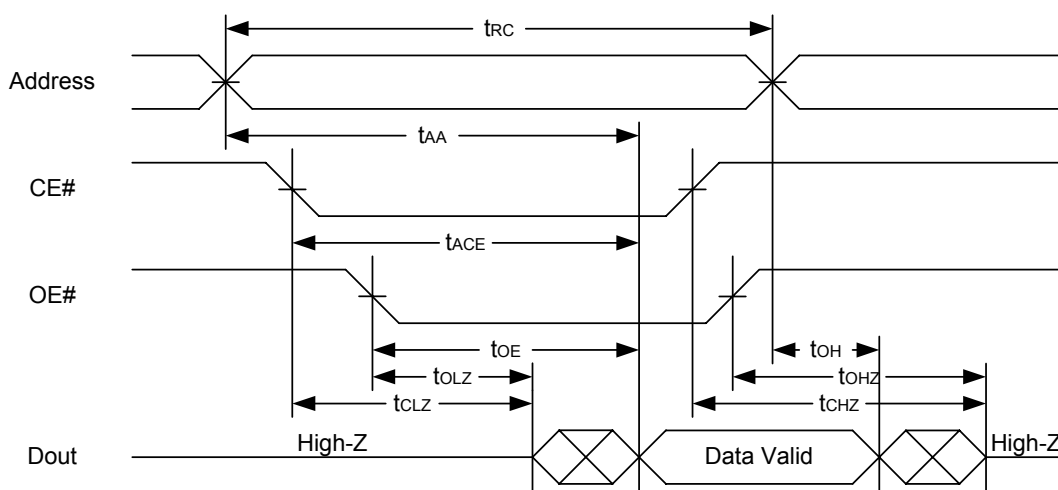


## TIMING WAVEFORMS

### READ CYCLE 1 (Address Controlled) (1,2)



### READ CYCLE 2 (CE# and OE# Controlled) (1,3,4,5)



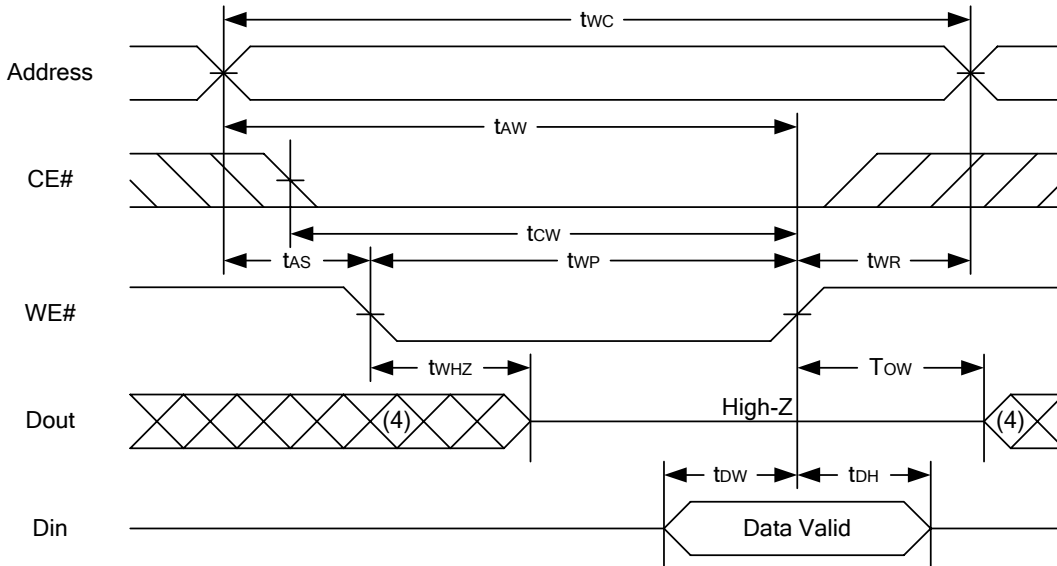
#### Notes :

1. WE# is high for read cycle.
2. Device is continuously selected OE# = low, CE# = low.
3. Address must be valid prior to or coincident with CE# = low,; otherwise  $t_{AA}$  is the limiting parameter.
4.  $t_{CLZ}$ ,  $t_{OLZ}$ ,  $t_{OCHZ}$  and  $t_{OHZ}$  are specified with  $C_L = 5\text{pF}$ . Transition is measured  $\pm 500\text{mV}$  from steady state.
5. At any given temperature and voltage condition,  $t_{OCHZ}$  is less than  $t_{CLZ}$ ,  $t_{OHZ}$  is less than  $t_{OLZ}$ .

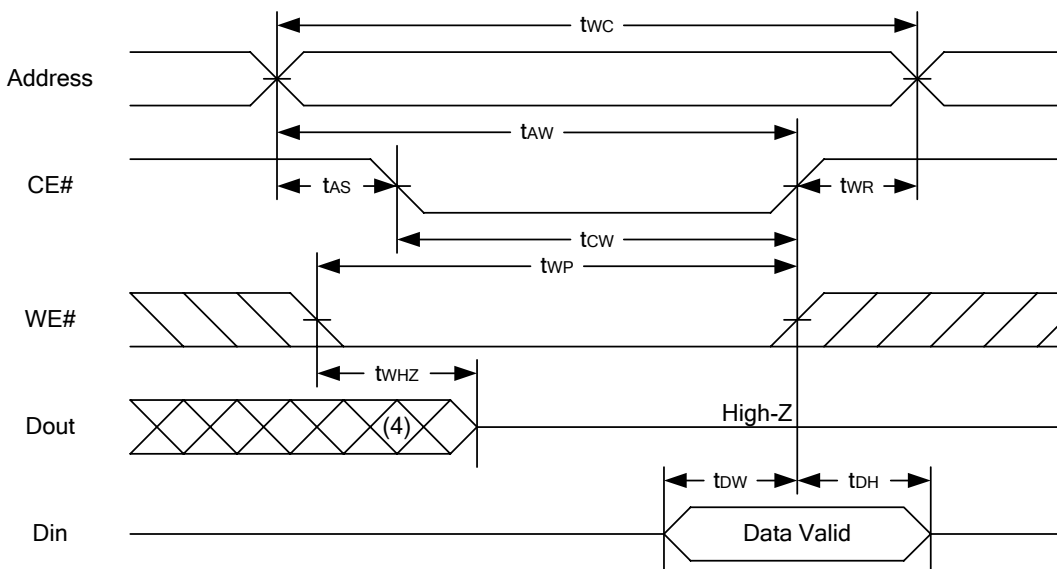


32K X 8 BIT LOW POWER CMOS SRAM

**WRITE CYCLE 1 (WE# Controlled) (1,2,3,5,6)**



**WRITE CYCLE 2 (CE# Controlled) (1,2,5,6)**



Notes :

1. WE#, CE# must be high during all address transitions.
2. A write occurs during the overlap of a low CE#, low WE#.
3. During a WE# controlled write cycle with OE# low,  $t_{WP}$  must be greater than  $t_{WHZ} + t_{DW}$  to allow the drivers to turn off and data to be placed on the bus.
4. During this period, I/O pins are in the output state, and input signals must not be applied.
5. If the CE# low transition occurs simultaneously with or after WE# low transition, the outputs remain in a high impedance state.
6.  $t_{OW}$  and  $t_{WHZ}$  are specified with  $C_L = 5pF$ . Transition is measured  $\pm 500mV$  from steady state.

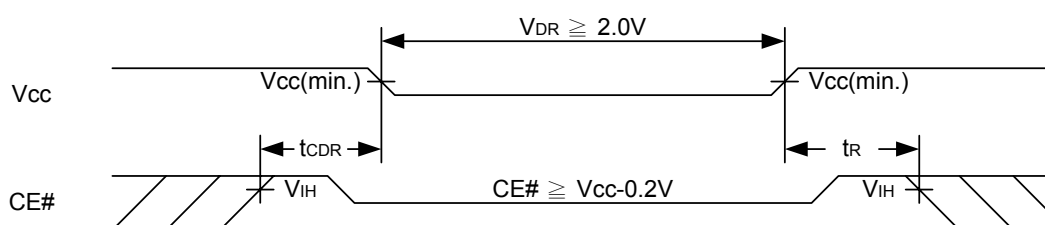


## 32K X 8 BIT LOW POWER CMOS SRAM

**DATA RETENTION CHARACTERISTICS**

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
V <sub>CC</sub> for Data Retention	V <sub>DR</sub>	CE# $\geq$ V <sub>CC</sub> - 0.2V	2.0	-	5.5	V
Data Retention Current	I <sub>DR</sub>	V <sub>CC</sub> = 2.0V CE# $\geq$ V <sub>CC</sub> - 0.2V	-	0.5	20	$\mu$ A
Chip Disable to Data Retention Time	t <sub>CDR</sub>	See Data Retention Waveforms (below)	0	-	-	ns
Recovery Time	t <sub>R</sub>		t <sub>RC</sub> *	-	-	ns

\*t<sub>RC</sub> = Read Cycle Time

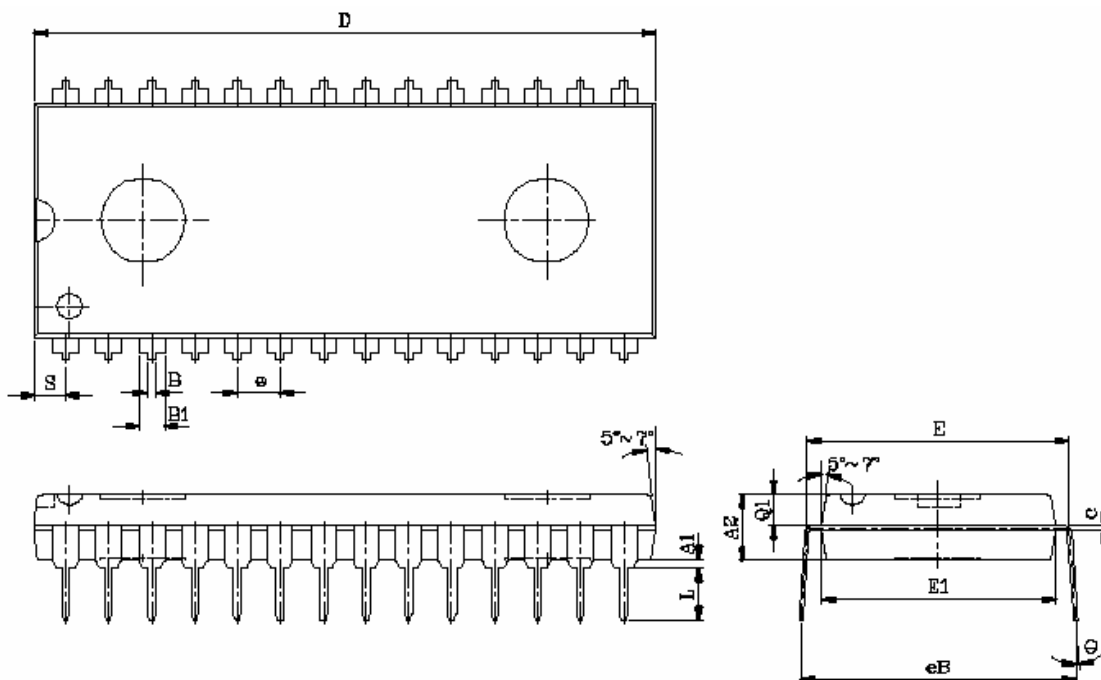
**DATA RETENTION WAVEFORM**



**32K X 8 BIT LOW POWER CMOS SRAM**

**PACKAGE OUTLINE DIMENSION**

28 pin 600 mil PDIP Package Outline Dimension



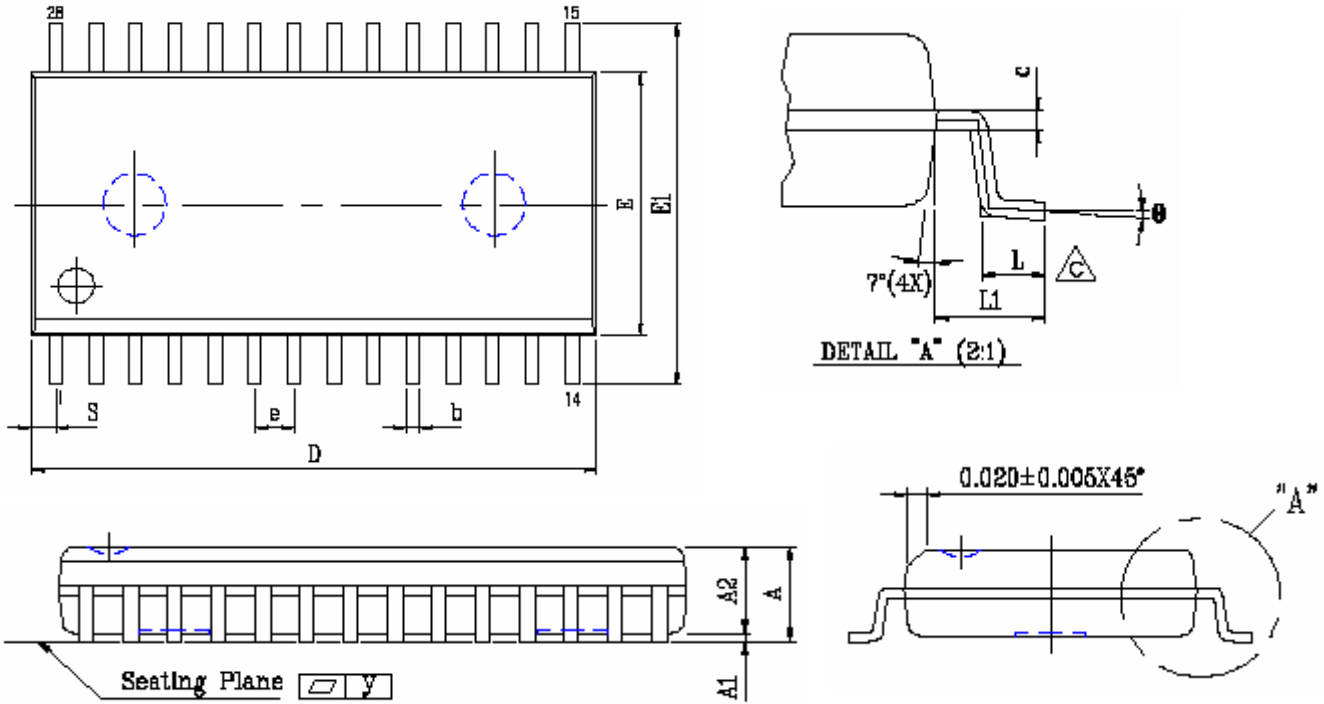
SYM.	UNIT	INCH.(BASE)	MM(REF)
A1		0.010 (MIN)	0.254 (MIN)
A2		0.150±0.005	3.810±0.127
B		0.020 (MAX)	0.508(MAX)
B1		0.055 (MAX)	1.397(MAX)
c		0.012 (MAX)	0.304 (MAX)
D		1.430 (MAX)	36.322 (MAX)
E		0.6 (TYP)	15.24 (TYP)
E1		0.52 (MAX)	13.208 (MAX)
e		0.100 (TYP)	2.540(TYP)
eB		0.625 (MAX)	15.87 (MAX)
L		0.180(MAX)	4.572(MAX)
S		0.06 (MAX)	1.524 (MAX)
Q1		0.08(MAX)	2.032(MAX)
Θ		15°(MAX)	15°(MAX)





32K X 8 BIT LOW POWER CMOS SRAM

28 pin 330 mil SOP Package Outline Dimension

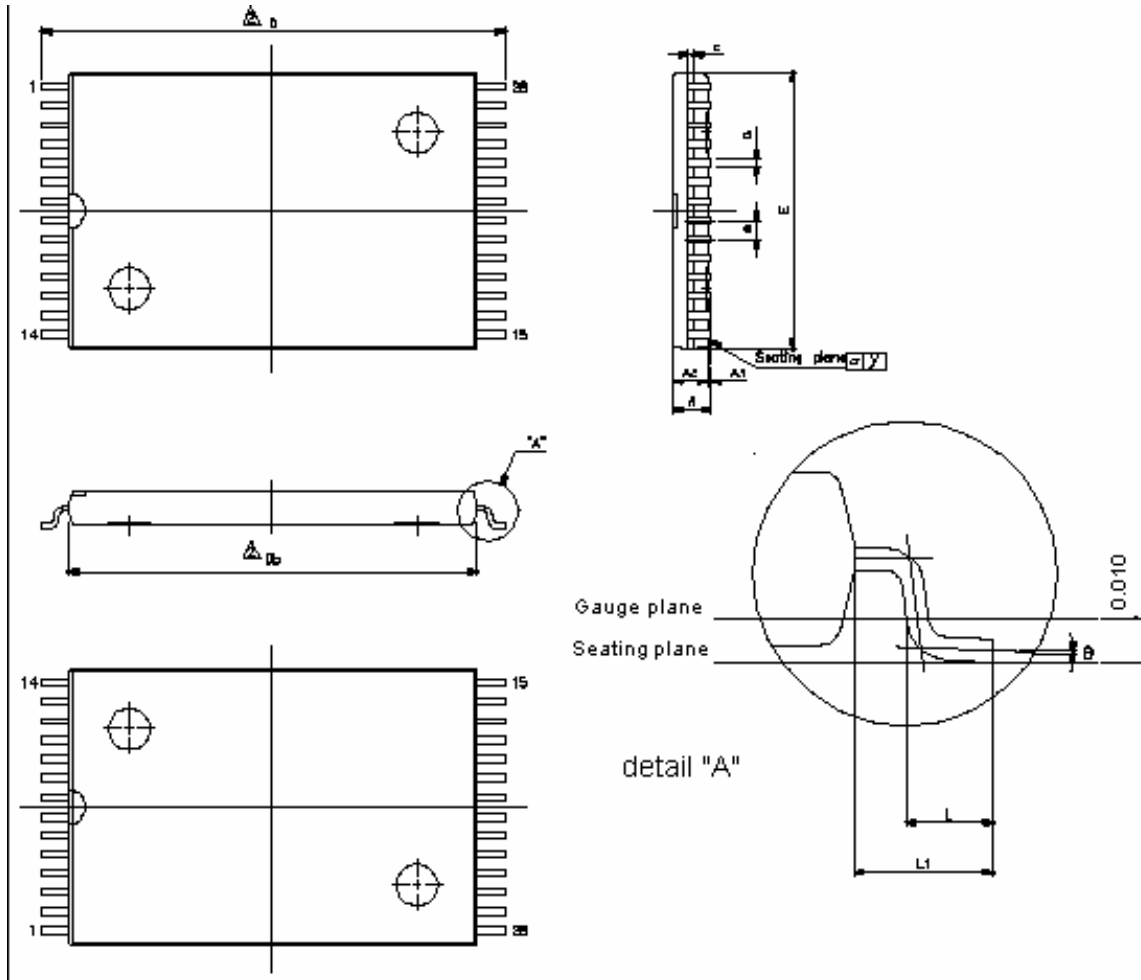


SYM.	UNIT	INCH(BASE)	MM(REF)
A		0.120 (MAX)	3.048 (MAX)
A1		0.002(MIN)	0.05(MIN)
A2		0.098±0.005	2.489±0.127
b		0.016 (TYP)	0.406(TYP)
c		0.010 (TYP)	0.254(TYP)
D		0.728 (MAX)	18.491 (MAX)
E		0.340 (MAX)	8.636 (MAX)
E1		0.465±0.012	11.811±0.305
e		0.050 (TYP)	1.270(TYP)
L		0.05 (MAX)	1.270 (MAX)
L1		0.067±0.008	1.702 ±0.203
S		0.047 (MAX)	1.194 (MAX)
y		0.003(MAX)	0.076(MAX)
θ		0°~10°	0°~10°



32K X 8 BIT LOW POWER CMOS SRAM

28 pin 8mm x 13.4mm sTSSOP Package Outline Dimension



SYM.	UNIT	INCH(BASE)	MM(REF)
A		0.047 (MAX)	1.20 (MAX)
A1		0.004±0.002	0.10±0.05
A2		0.039±0.002	1.00±0.05
b		0.006 (TYP)	0.15(TYP)
c		0.010 (TYP)	0.254(TYP)
Db		0.465±0.004	11.80±0.10
E		0.315±0.004	8.00±0.10
e		0.022 (TYP)	0.55(TYP)
D		0.528±0.008	13.40±0.20
L		0.020±0.004	0.50±0.10
L1		0.0315±0.004	0.80±0.10
y		0.08(MAX)	0.003(MAX)
Θ		0°~5°	0°~5°

Note : E dimension is not including end flash. The total of both sides' end flash is not above 0.3mm.



## 32K X 8 BIT LOW POWER CMOS SRAM

### ORDERING INFORMATION

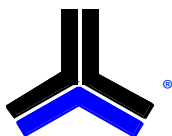
#### Ordering Codes

Alliance	Organization	VCC range	Package	Operating Temp	Speed ns
AS6C62256-55PCN	32k x 8	2.7-5.5V	28pin 600mil PDIP	Commercial ~ 0° C to 70° C	55
AS6C62256-55SCN	32k x 8	2.7-5.5V	28pin 330mil SOP	Commercial ~ 0° C to 70° C	55
AS6C62256-55SIN	32k x 8	2.7-5.5V	28pin 330mil SOP	Industrial ~ -40° C to 85° C	55
AS6C62256-55STCN	32k x 8	2.7-5.5V	28pin sTSOP (8 x 13.4 mm)	Commercial ~ 0° C to 70° C	55
AS6C62256-55STIN	32k x 8	2.7-5.5V	28pin sTSOP (8 x 13.4 mm)	Industrial ~ -40° C to 85° C	55

#### Part numbering system

AS6C	62256	- 55	X	X	N
low power SRAM prefix	Device Number 62256	Access Time	Package Options: P = 28 pin 600 mil P-DIP S = 28 pin 330 mil SOP ST = 28 pin sTSOP (8mm x 13.4 mm)	Temperature Range: C = Commercial (0°C to +70° C) I = Industrial (-40° to +85° C)	N = Lead Free ROHS Compliant Part

Rev 1



Alliance Memory, Inc.  
1116 South Amphlett, #2,  
San Mateo, CA 94402  
Tel: 650-525-3737  
Fax: 650-525-0449

[www.alliancememory.com](http://www.alliancememory.com)

Copyright © Alliance Memory

All Rights Reserved

Part Number: AS6C62256

Document Version: v. 1.0

© Copyright 2003 Alliance Memory, Inc. All rights reserved. Our three-point logo, our name and Intelliwatt are trademarks or registered trademarks of Alliance. All other brand and product names may be the trademarks of their respective companies. Alliance reserves the right to make changes to this document and its products at any time without notice. Alliance assumes no responsibility for any errors that may appear in this document. The data contained herein represents Alliance's best data and/or estimates at the time of issuance. Alliance reserves the right to change or correct this data at any time, without notice. If the product described herein is under development, significant changes to these specifications are possible. The information in this product data sheet is intended to be general descriptive information for potential customers and users, and is not intended to operate as, or provide, any guarantee or warranty to any user or customer. Alliance does not assume any responsibility or liability arising out of the application or use of any product described herein, and disclaims any express or implied warranties related to the sale and/or use of Alliance products including liability or warranties related to fitness for a particular purpose, merchantability, or infringement of any intellectual property rights, except as expressly agreed to in Alliance's Terms and Conditions of Sale (which are available from Alliance). All sales of Alliance products are made exclusively according to Alliance's Terms and Conditions of Sale. The purchase of products from Alliance does not convey a license under any patent rights, copyrights; mask works rights, trademarks, or any other intellectual property rights of Alliance or third parties. Alliance does not authorize its products for use as critical components in life-supporting systems where a malfunction or failure may reasonably be expected to result in significant injury to the user, and the inclusion of Alliance products in such life-supporting systems implies that the manufacturer assumes all risk of such use and agrees to indemnify Alliance against all claims arising from such use.

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Alliance Memory:

[AS6C62256-55SCN](#) [AS6C62256-55PCN](#) [AS6C62256-55SIN](#) [AS6C62256-55SINTR](#) [AS6C62256-55SCNTR](#)  
[AS6C62256-55STCN](#)