



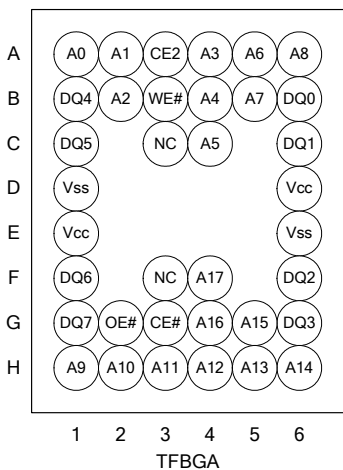
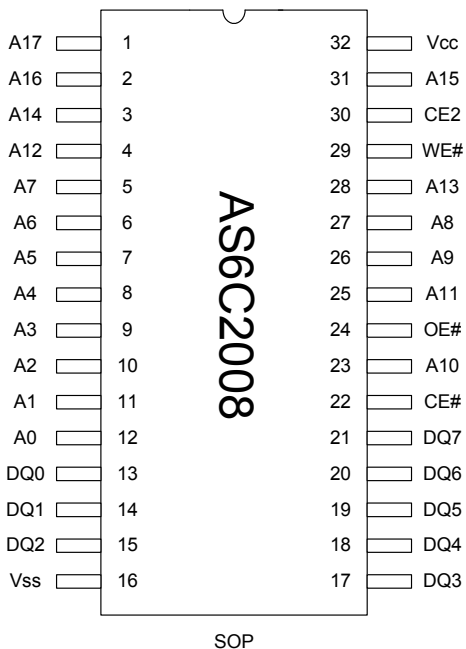
**THE DATASHEET OF  
AS6C2008-55STIN**







**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 4.6	V
Operating Temperature	T <sub>A</sub>		°C
		-40 to 85(I grade)	
Storage Temperature	T <sub>STG</sub>	-65 to 150	°C
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#	CE2	OE#	WE#	I/O OPERATION	SUPPLY CURRENT
Standby	H	X	X	X	High-Z	I <sub>SB</sub> , I <sub>SB1</sub>
	X	L	X	X	High-Z	I <sub>SB</sub> , I <sub>SB1</sub>
Output Disable	L	H	H	H	High-Z	I <sub>CC</sub> , I <sub>CC1</sub>
Read	L	H	L	H	D <sub>OUT</sub>	I <sub>CC</sub> , I <sub>CC1</sub>
Write	L	H	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.

**DC ELECTRICAL CHARACTERISTICS**

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP. <sup>4</sup>	MAX.	UNIT
Supply Voltage	V <sub>CC</sub>		2.7	3.0	3.6	V
Input High Voltage	V <sub>IH</sub> <sup>1</sup>		2.2	-	V <sub>CC</sub> +0.3	V
Input Low Voltage	V <sub>IL</sub> <sup>2</sup>		-0.2	-	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	2.2	2.7	-	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> and CE2 = V <sub>IH</sub> , I <sub>I/O</sub> = 0mA	-55	20	35	mA
	I <sub>CC1</sub>	Cycle time = 1μs CE# ≤ 0.2V and CE2 ≥ V <sub>CC</sub> -0.2V, I <sub>I/O</sub> = 0mA other pins at 0.2V or V <sub>CC</sub> -0.2V	-	4	5	mA
Standby Power Supply Current	I <sub>SB</sub>	CE# = V <sub>IH</sub> or CE2 = V <sub>IL</sub>	-	0.3	0.5	mA
	I <sub>SB1</sub>	CE# ≥ V <sub>CC</sub> -0.2V	-	-	-	-
		or CE2 ≤ 0.2V	-1*	-	1	20 <sup>5</sup>

\*I = Industrial temperature



## Notes:

1.  $V_{IH(max)} = V_{CC} + 3.0V$  for pulse width less than 10ns.
2.  $V_{IL(min)} = V_{SS} - 3.0V$  for pulse width less than 10ns.
3. Over/Undershoot specifications are characterized, not 100% tested.
4. Typical values are included for reference only and are not guaranteed or tested.  
Typical values are measured at  $V_{CC} = V_{CC(TYP.)}$  and  $T_A = 25^\circ C$
5. 10 $\mu A$  for special request

**CAPACITANCE ( $T_A = 25^\circ C, f = 1.0MHz$ )**

PARAMETER	SYMBOL	MIN.	MAX	UNIT
Input Capacitance	$C_{IN}$	-	6	pF
Input/Output Capacitance	$C_{I/O}$	-	8	pF

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

**AC TEST CONDITIONS**

Input Pulse Levels	0.2V to $V_{CC} - 0.2V$
Input Rise and Fall Times	3ns
Input and Output Timing Reference Levels	1.5V
Output Load	$C_L = 30pF + 1TTL, I_{OH}/I_{OL} = -1mA/2mA$

**AC ELECTRICAL CHARACTERISTICS****(1) READ CYCLE**

PARAMETER	SYM	AS6C2008-55		UNIT
		MIN	MAX.	
Read Cycle Time	$t_{RC}$	55	-	ns
Address Access Time	$t_{AA}$	-	55	ns
Chip Enable Access Time	$t_{ACE}$	-	55	ns
Output Enable Access Time	$t_{OE}$	-	30	ns
Chip Enable to Output in Low-Z	$t_{CLZ}^*$	10	-	ns
Output Enable to Output in Low-Z	$t_{OLZ}^*$	5	-	ns
Chip Disable to Output in High-Z	$t_{CHZ}^*$	-	20	ns
Output Disable to Output in High-Z	$t_{OHZ}^*$	-	20	ns
Output Hold from Address Change	$t_{OH}$	10	-	ns

**(2) WRITE CYCLE**

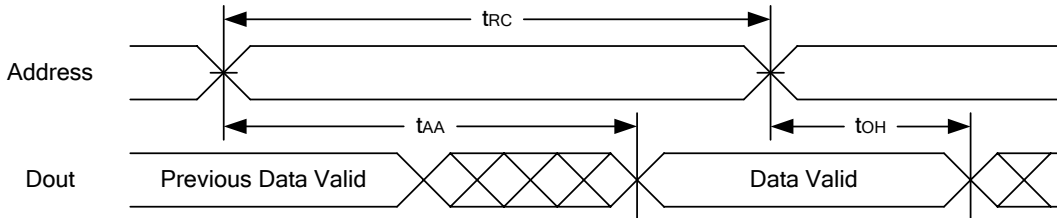
PARAMETER	SYM	AS6C2008-55		UNIT
		MIN	MAX.	
Write Cycle Time	$t_{WC}$	55	-	ns
Address Valid to End of Write	$t_{AW}$	50	-	ns
Chip Enable to End of Write	$t_{CW}$	50	-	ns
Address Set-up Time	$t_{AS}$	0	-	ns
Write Pulse Width	$t_{WP}$	45	-	ns
Write Recovery Time	$t_{WR}$	0	-	ns
Data to Write Time Overlap	$t_{DW}$	25	-	ns
Data Hold from End of Write Time	$t_{DH}$	0	-	ns
Output Active from End of Write	$t_{OW}^*$	5	-	ns
Write to Output in High-Z	$t_{WHZ}^*$	-	20	ns

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

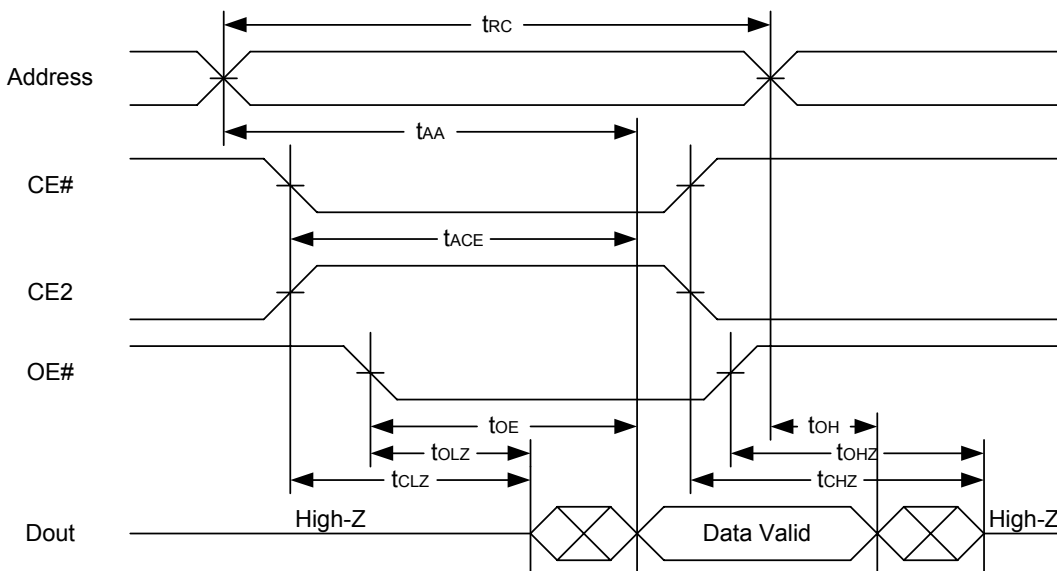


**TIMING WAVEFORMS**

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



**READ CYCLE 2 (CE# and CE2 and OE# Controlled) (1,3,4,5)**

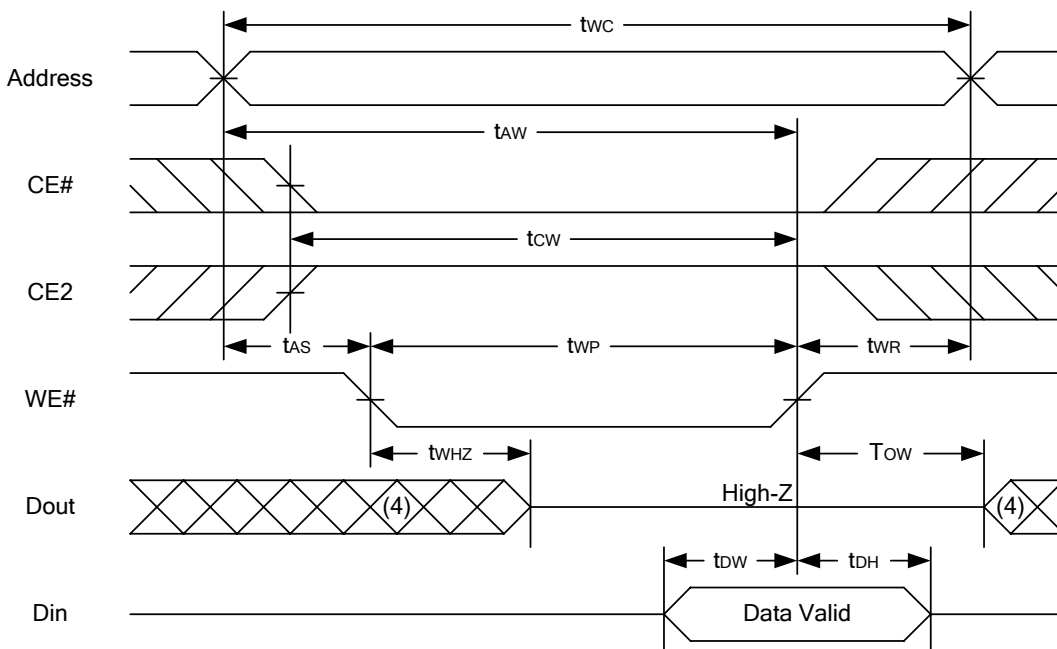


Notes :

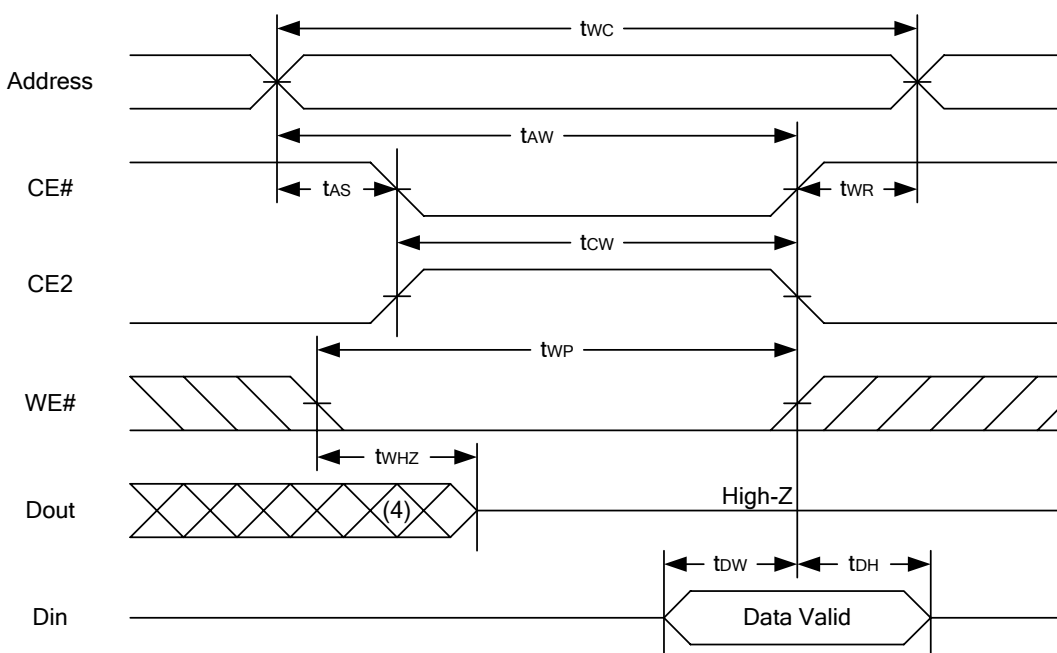
1. WE# is high for read cycle.
2. Device is continuously selected OE# = low, CE# = low, CE2 = high.
3. Address must be valid prior to or coincident with CE# = low, CE2 = high; otherwise  $t_{AA}$  is the limiting parameter.
4.  $t_{CLZ}$ ,  $t_{OLZ}$ ,  $t_{CHZ}$  and  $t_{OHZ}$  are specified with  $C_L = 5pF$ . Transition is measured  $\pm 500mV$  from steady state.
5. At any given temperature and voltage condition,  $t_{CHZ}$  is less than  $t_{CLZ}$ ,  $t_{OHZ}$  is less than  $t_{OLZ}$ .



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



**WRITE CYCLE 2 (CE# and CE2 Controlled) (1,2,5,6)**



Notes :

1. WE#, CE# must be high or CE2 must be low during all address transitions.
2. A write occurs during the overlap of a low CE#, high CE2, low WE#.
3. During a WE#-controlled write cycle with OE# low, twp must be greater than twhz + tdw 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 and CE2 high transition occurs simultaneously with or after WE# low transition, the outputs remain in a high impedance state.
6. tow and twhz are specified with CL = 5pF. Transition is measured ±500mV from steady state.



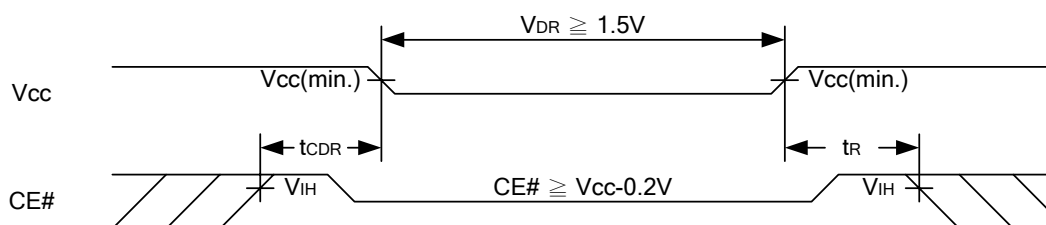
**DATA RETENTION CHARACTERISTICS**

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Vcc for Data Retention	V <sub>DR</sub>	CE# ≥ V <sub>CC</sub> - 0.2V or CE2 ≤ 0.2V	1.5	-	3.6	V
Data Retention Current	I <sub>IDR</sub>	V <sub>CC</sub> = 1.5V	-	-	-	-
		CE# ≥ V <sub>CC</sub> - 0.2V or CE2 ≤ 0.2V	-I*	0.5	10	μA
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

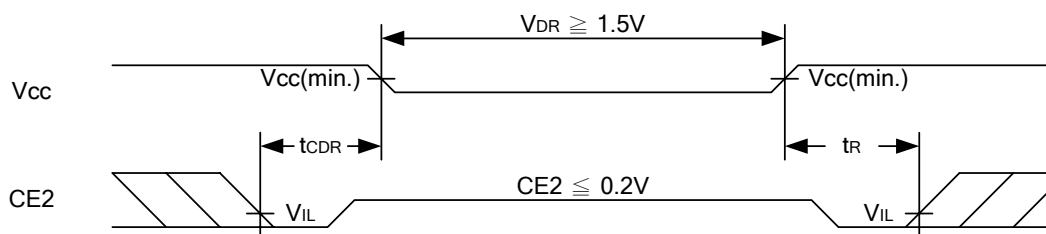
t<sub>RC</sub>\* = Read Cycle Time \*\*I= Industrial temperature

**DATA RETENTION WAVEFORM**

**Low Vcc Data Retention Waveform (1) (CE# controlled)**

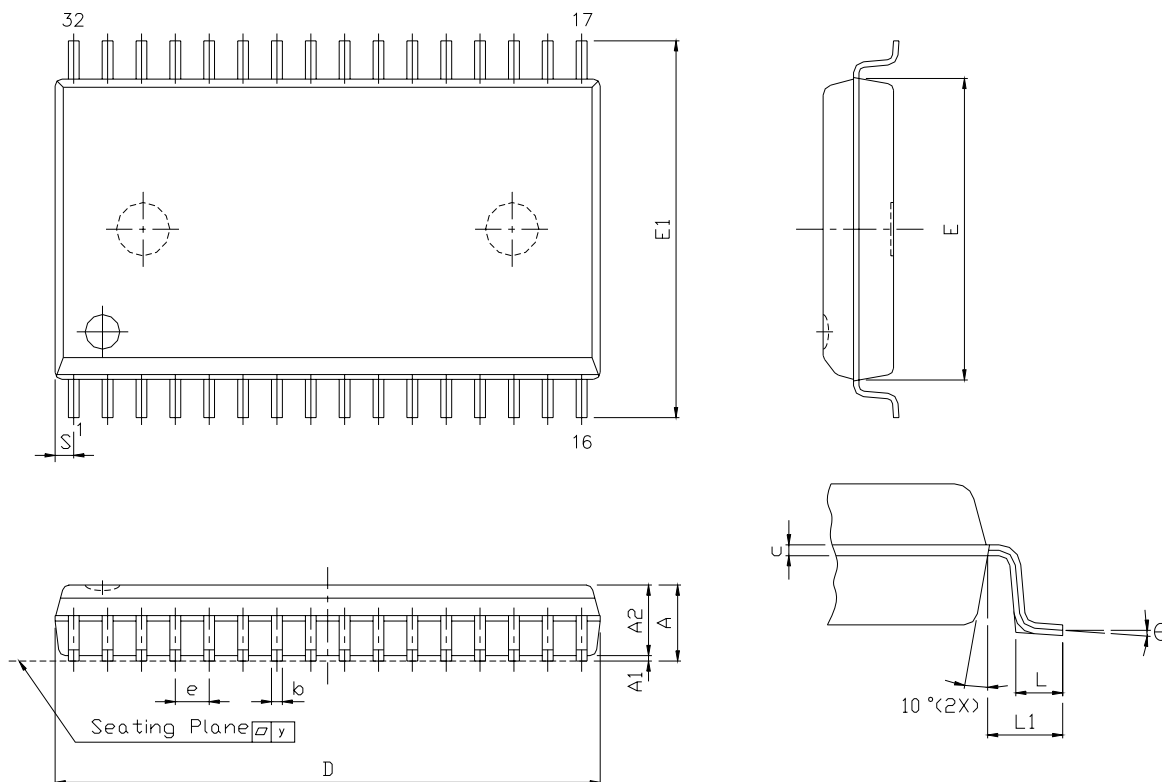


**Low Vcc Data Retention Waveform (2) (CE2 controlled)**



**PACKAGE OUTLINE DIMENSION**

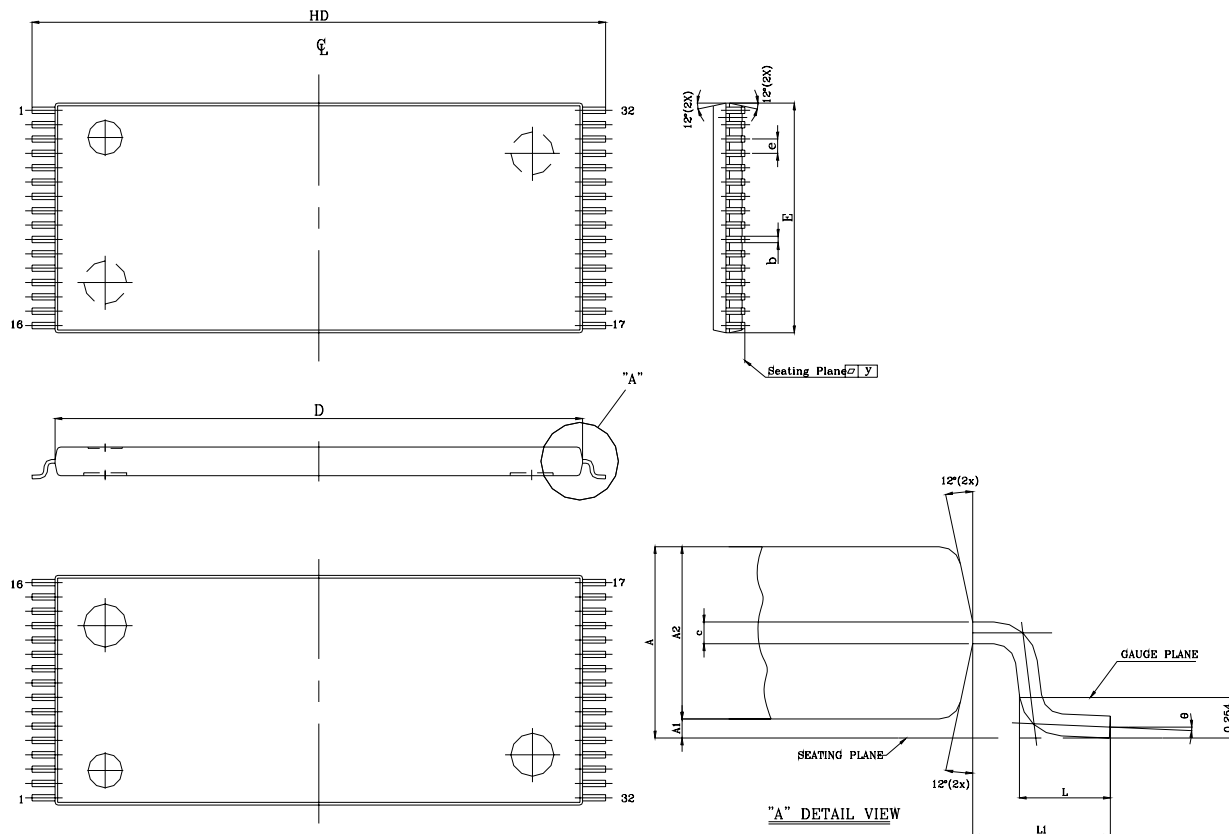
**32 pin 450 mil SOP Package Outline Dimension**



SYM.	UNIT	INCH.(BASE)	MM(REF)
A		0.118 (MAX)	2.997 (MAX)
A1		0.004(MIN)	0.102(MIN)
A2		0.111(MAX)	2.82(MAX)
b		0.016(TYP)	0.406(TYP)
c		0.008(TYP)	0.203(TYP)
D		0.817(MAX)	20.75(MAX)
E		0.445 ±0.005	11.303 ±0.127
E1		0.555 ±0.012	14.097 ±0.305
e		0.050(TYP)	1.270(TYP)
L		0.0347 ±0.008	0.881 ±0.203
L1		0.055 ±0.008	1.397 ±0.203
S		0.026(MAX)	0.660 (MAX)
y		0.004(MAX)	0.101(MAX)
θ		0° -10°	0° -10°



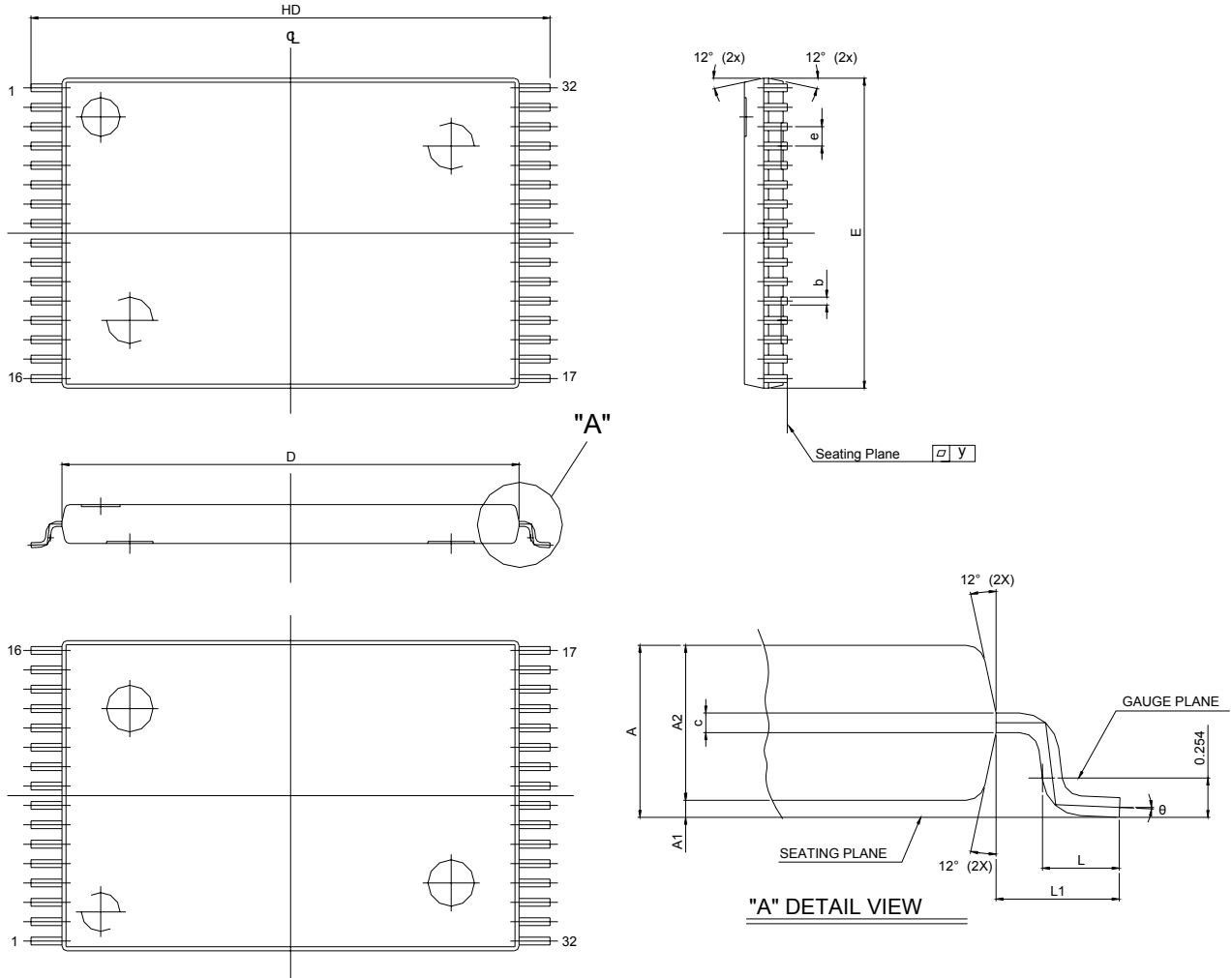
32 pin 8mm x 20mm TSOP-I Package Outline Dimension



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		0.008 + 0.002 - 0.001	0.20 + 0.05 - 0.03
c		0.005 (TYP)	0.127 (TYP)
D		0.724 ±0.004	18.40 ±0.10
E		0.315 ±0.004	8.00 ±0.10
e		0.020 (TYP)	0.50 (TYP)
HD		0.787 ±0.008	20.00 ±0.20
L		0.0197 ±0.004	0.50 ±0.10
L1		0.0315 ±0.004	0.08 ±0.10
y		0.003 (MAX)	0.076 (MAX)
θ		0°~5°	0°~5°



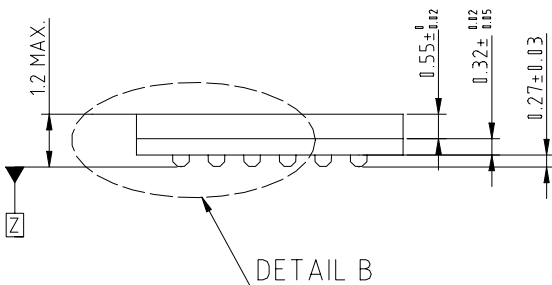
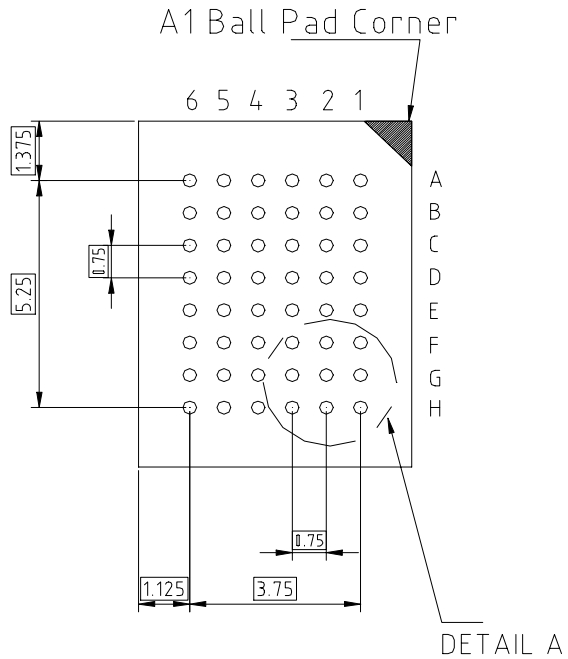
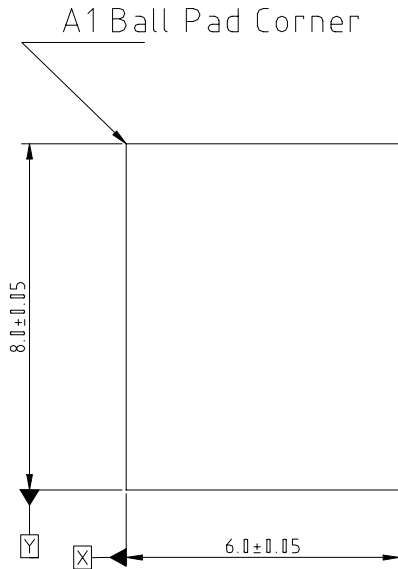
32 pin 8mm x 13.4mm sTSSOP Package Outline Dimension



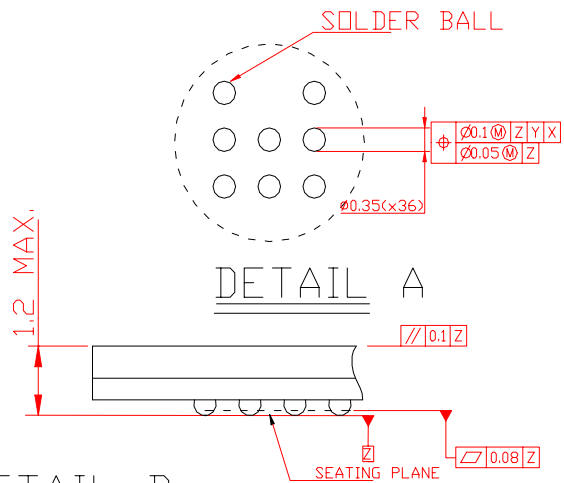
SYM.	UNIT	INCH(BASE)	MM(REF)
A		0.049 (MAX)	1.25 (MAX)
A1		0.005 ±0.002	0.130 ±0.05
A2		0.039 ±0.002	1.00 ±0.05
b		0.008 ±0.01	0.20±0.025
c		0.005 (TYP)	0.127 (TYP)
D		0.465 ±0.004	11.80 ±0.10
E		0.315 ±0.004	8.00 ±0.10
e		0.020 (TYP)	0.50 (TYP)
HD		0.528±0.008	13.40 ±0.20.
L		0.0197 ±0.004	0.50 ±0.10
L1		0.0315 ±0.004	0.8 ±0.10
y		0.003 (MAX)	0.076 (MAX)
θ		0°~5°	0°~5°



36 ball 6mm x 8mm TFBGA Package Outline Dimension



SIDE VIEW



DETAIL B



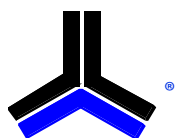
**ORDERING INFORMATION**

Ordering Codes

Alliance	Organization	VCC range	Package	Operating Temp	Speed ns
AS6C2008-55SIN	256K X 8	2.7-3.6V	32pin 450mil SOP	Industrial ~ -40°C to 85° C	55
AS6C2008-55TIN	256K X 8	2.7-3.6V	32pin TSOP-I (8 x 20 mm)	Industrial ~ -40°C to 85° C	55
AS6C2008-55STIN	256K X 8	2.7-3.6V	32pin sTSOP (8 x 13.4 mm)	Industrial ~ -40°C to 85° C	55
AS6C2008-55BIN	256K X 8	2.7-3.6V	36pin TFBGA (6mm x 8mm)	Industrial ~ -40°C to 85° C	55

Part numbering system

AS6C	2008	- 55	X	X	N
low power SRAM prefix	Device Number 20 = 2M 08 = by 8	Access Time	Package Options: S = 32 pin 450 mil SOP T = 32 pin TSOP 1 (8mm x 20 mm) ST = 32 pin sTSOP (8 x 13.4 mm) B = 36 ball 6 x 8mm TFBGA	Temperature Range: I = Industrial (-40° to +85° C)	N = Lead Free ROHS Compliant Part



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)

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