SONY CXK5863AP/AJ -20/25/30

8192 word × 8-bit High Speed CMOS Static RAM

Description

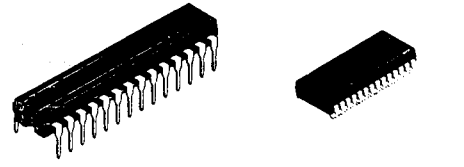
CXK5863AP/AJ are 65,536 bits high speed CMOS static RAMS organized as 8,192 words by 8-bits and operate from a single 5V supply. These devices are suitable for use in high speed applications such as cash memory.

Features

- Fast access time 20ns/25ns/30ns (Max.)
- Low power operation 250mW (Typ.)
- Single + 5V supply : 5V ± 10%
- Fully static memory ··· No clock or timing strobe required.
- Equal access and cycle time.
- Common data input and output three state output.
- Directly TTL compatible all inputs and outputs.
- Full CMOS.
- Compatible with various types of packages
  CXK5863AP 300mil 28pin DIP package
  CXK5863AJ 300mil 28pin SOJ package

CXK5863AP
28 pin DIP (Plastic)

CXK5863AJ
28 pin SOJ (Plastic)



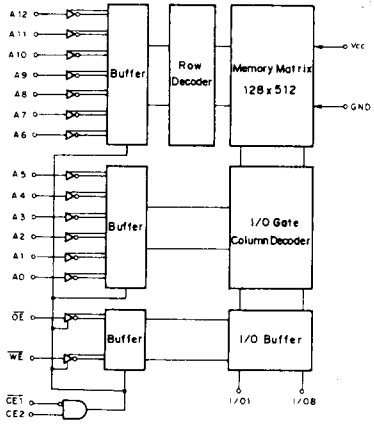
Structure

Silicon gate CMOS IC

Function

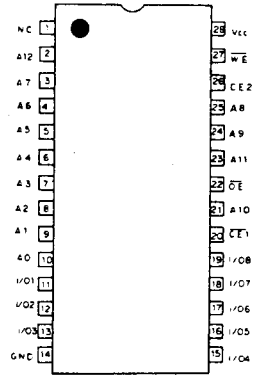
8192 word × 8-bit static RAM

Block Diagram



Pin Configuration

(Top View)



Pin Description

Symbol	Description
A0 to A12	Address input
I/O1 to I/O8	Data input output
$\overline{CE1}$, CE2	Chip enable 1, 2 input
$\overline{WE}$	Write enable input
$\overline{OE}$	Output enable input
Vcc	+5V Power supply
GND	Ground
NC	Non connection

E89704A02 - ST

Absolute Maximum Ratings (Ta = 25°C, GND = 0V)

Item	Symbol	Rating	Unit
Supply voltage	V_{CC}	− 0.5* to + 7.0	V
Input voltage	V_{IN}	− 0.5* to V_{CC} + 0.5	V
Input and output voltage	$V_{I/O}$	− 0.5* to V_{CC} + 0.5	V
Allowable power dissipation	P_D	1.0	W
Operating temperature	Topr	0 to + 70	°C
Storage temperature	Tstg	− 55 to + 150	°C
Soldering temperature • time	Tsolder	260 • 10	°C • sec

* V_{CC}, V_{IN}, $V_{I/O}$ = − 3.5V Min. for pulse width less than 20ns.

Truth Table

$\overline{CE1}$	CE2	$\overline{OE}$	$\overline{WE}$	Mode	I/O1 to I/O8	V_{CC} Current
H	×	×	×	Not selected	High Z	I_{SB1}, I_{SB2}
×	L	×	×	Not selected	High Z	I_{SB1}, I_{SB2}
L	H	H	H	Output disable	High Z	I_{CC1}, I_{CC2}
L	H	L	H	Read	Data out	I_{CC1}, I_{CC2}
L	H	×	L	Write	Data in	I_{CC1}, I_{CC2}

× : "H" or "L"

DC Recommended Operating Conditions (Ta = 0 to + 70°C, GND = 0V)

Item	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{CC}	4.5	5.0	5.5	V
Input high voltage	V_{IH}	2.2	—	V_{CC} + 0.3	V
Input low voltage	V_{IL}	− 0.3*	—	0.8	V

* V_{IL} = − 3.0V Min. for pulse width less than 20ns.

5

Electrical Characteristics

DC and operating characteristics

(V_{CC} = 5V ± 10%, GND = 0V, Ta = 0 to +70°C)

Item	Symbol	Test condition	−20			−25/−30			Unit
			Min.	Typ.*	Max.	Min.	Typ.*	Max.	
Input leakage current	I_{LI}	V_{IN} = GND to V_{CC}	−1	—	1	−1	—	−1	μA
Output leakage current	I_{LO}	$V_{I/O}$ = GND to V_{CC}, $\overline{CE1}$ = V_{IH} or CE2 = V_{IL} or $\overline{OE}$ = V_{IH} or $\overline{WE}$ = V_{IL}	−1	—	1	−1	—	1	μA
Operating power supply current	I_{CC1}	$\overline{CE1}$ = V_{IL}, CE2 = V_{IH}, V_{IN} = V_{IH} or V_{IL}, I_{OUT} = 0mA	—	50	80	—	50	80	mA
Average operating current	I_{CC2}	Cycle = Min, Duty = 100%, I_{OUT} = 0mA	—	95	130	—	70	90	mA
Standby current	I_{SB1}	$\overline{CE1}$ ≧ V_{CC} − 0.2V or CE2 ≦ 0.2V V_{IN} ≧ V_{CC} − 0.2V or V_{IN} ≦ 0.2V	—	—	1	—	—	1	mA
	I_{SB2}	$\overline{CE1}$ = V_{IH} or CE2 = V_{IL}, V_{IN} = V_{IL} or V_{IH}	—	10	25	—	10	25	mA
Output high voltage	V_{OH}	I_{OH} = −4.0mA	2.4	—	—	2.4	—	—	V
Output low voltage	V_{OL}	I_{OL} = 8.0mA	—	—	0.4	—	—	0.4	V

* V_{CC} = 5V, Ta = 25°C

I/O capacitance

(Ta = 25°C, f = 1MHz)

Item	Symbol	Test conditions	Min.	Max.	Unit
Input capacitance	C_{IN}	V_{IN} = 0V	—	7	pF
I/O capacitance	$C_{I/O}$	$V_{I/O}$ = 0V	—	7	pF

Note) This parameter is sampled and is not 100% tested.

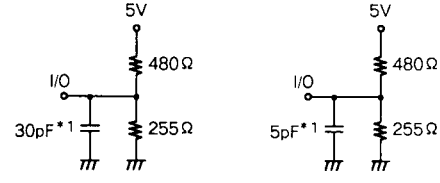
AC characteristics

● **AC test conditions**

(V_{CC} = 5V ± 10%, Ta = 0 to +70°C)

Item	Conditions
Input pulse high level	V_{IH} = 3.0V
Input pulse low level	V_{IL} = 0V
Input rise time	tr = 5ns
Input fall time	tf = 5ns
Input and output reference level	1.5V
Output load conditions	Fig. 1

Output Load (1) **Output Load (2)** *2



*1 including scope and jig capacitance
*2 for t_{LZ1}, t_{LZ2}, t_{OLZ}, t_{HZ1}, t_{HZ2}, t_{OHZ}, t_{OW}, t_{WHZ}

Fig. 1

1) Read cycle

Item	Symbol	−20		−25		−30		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	
Read cycle time	t_{RC}	20	—	25	—	30	—	ns
Address access time	t_{AA}	—	20	—	25	—	30	ns
Chip enable access time ($\overline{CE1}$)	t_{CO1}	—	20	—	25	—	30	ns
Chip enable access time (CE2)	t_{CO2}	—	20	—	25	—	30	ns
Output enable to output valid	t_{OE}	—	10	—	12	—	12	ns
Output hold from address change	t_{OH}	5	—	5	—	5	—	ns
Chip enable to output in low Z ($\overline{CE1}$, CE2)	t_{LZ1}*, t_{LZ2}*	5	—	5	—	5	—	ns
Output enable to output in low Z ($\overline{OE}$)	t_{OLZ}*	0	—	0	—	0	—	ns
Chip disable to output in high Z ($\overline{CE1}$, CE2)	t_{HZ1}*, t_{HZ2}*	0	10	0	12	0	12	ns
Chip disable to output in high Z ($\overline{OE}$)	t_{OHZ}*	0	8	0	10	0	10	ns
Chip enable to power up time ($\overline{CE1}$, CE2)	t_{PU}	0	—	0	—	0	—	ns
Chip disable to power down time ($\overline{CE1}$, CE2)	t_{PD}	—	20	—	20	—	20	ns

2) Write cycle

Item	Symbol	−20		−25		−30		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	
Write cycle time	t_{WC}	20	—	25	—	30	—	ns
Address valid to end of write	t_{AW}	15	—	20	—	20	—	ns
Chip enable to end of write	t_{CW}	15	—	20	—	20	—	ns
Data to write time overlap	t_{DW}	10	—	12	—	12	—	ns
Data hold from write time	t_{DH}	0	—	0	—	0	—	ns
Write pulse width	t_{WP}	15	—	20	—	20	—	ns
Address set up time	t_{AS}	0	—	0	—	0	—	ns
Write recovery time ($\overline{WE}$)	t_{WR}	0	—	0	—	0	—	ns
Write recovery time ($\overline{CE1}$, CE2)	t_{WR1}	0	—	0	—	0	—	ns
Output active from end of write	t_{OW}*	5	—	5	—	5	—	ns
Write to output in high Z	t_{WHZ}*	0	10	0	12	0	12	ns

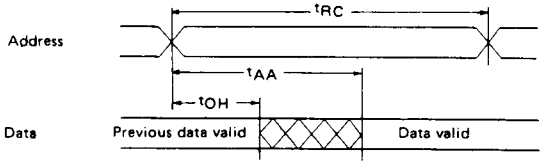
* Transition is measured ±500mV from steady voltage with specified loading in Fig. 1-(2). This parameter is sampled and is not 100% tested.

5

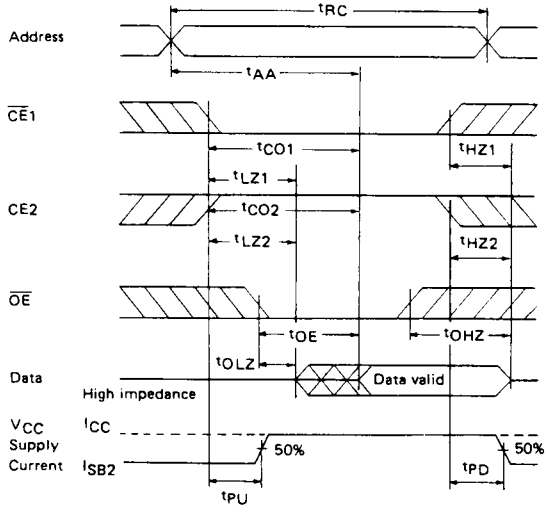
Timing Waveform

1) Read cycle

- Read cycle (1) : $\overline{CE1} = \overline{OE} = V_{IL}$, $CE2 = V_{IH}$, $\overline{WE} = V_{IH}$

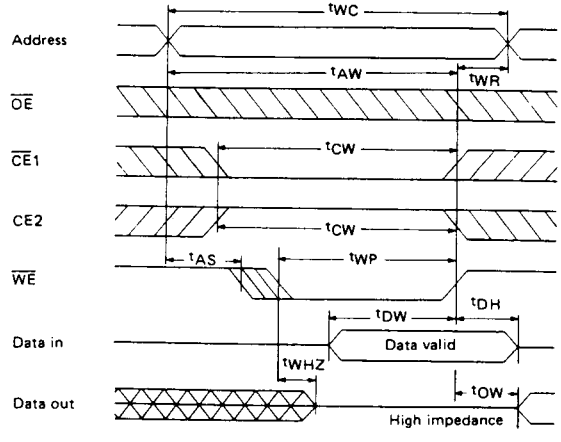


- Read cycle (2) : $\overline{WE} = V_{IH}$

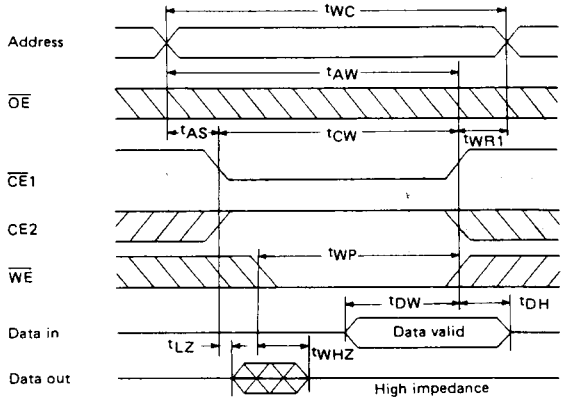


2) Write cycle

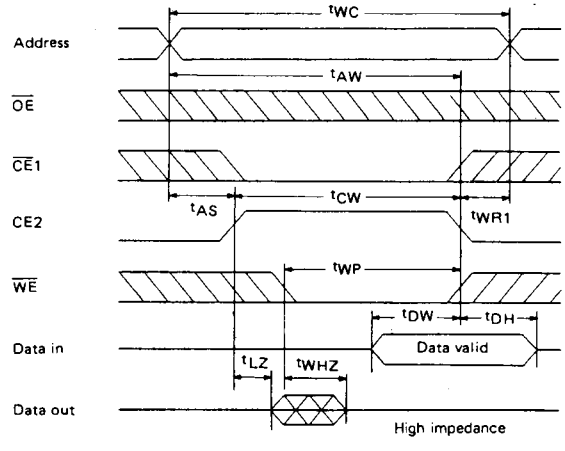
- Write cycle (1) : $\overline{WE}$ control



• Write cycle (2) : $\overline{CE1}$ control



• Write cycle (3) : CE2 control

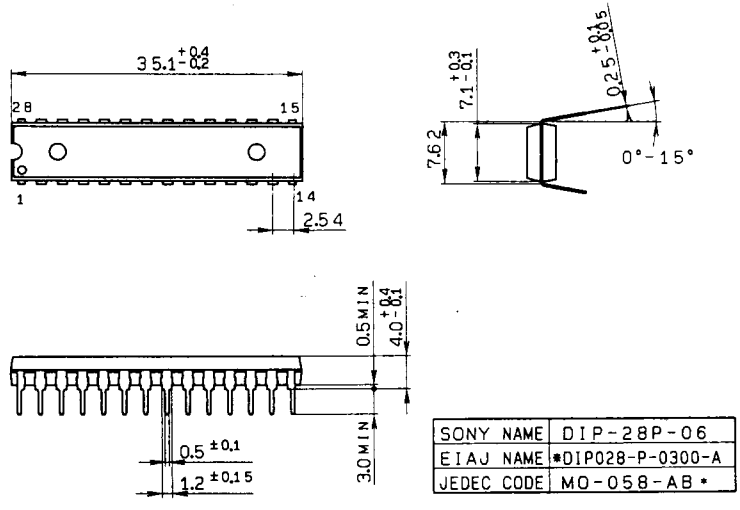


During I/O pins are in the output state, the data input signals of opposite phase to the output must not be applied.

5

Package Outline Unit : mm

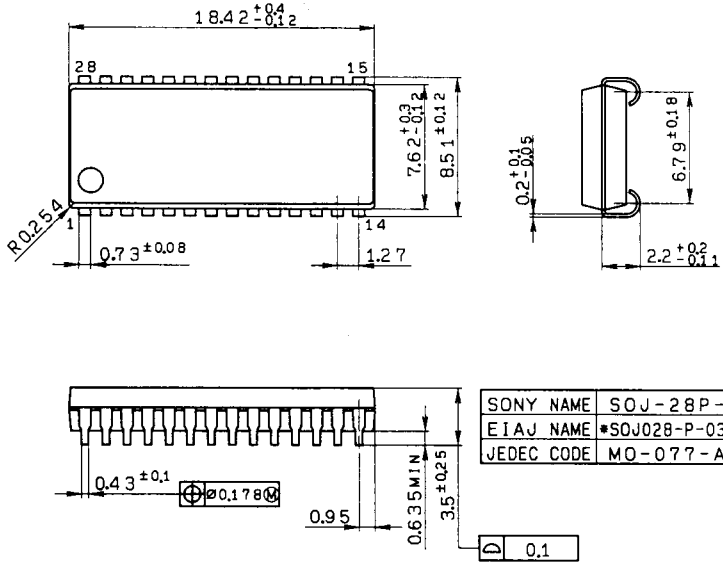
CXK5863AP 28pin DIP (Plastic) 300mil 2.0g



SONY NAME	DIP-28P-06
EIAJ NAME	*DIP028-P-0300-A
JEDEC CODE	MO-058-AB*

* (Similar)

CXK5863AJ 28pin SOJ (Plastic) 300mil 0.8g



SONY NAME	SOJ-28P-01
EIAJ NAME	*SOJ028-P-0300-A
JEDEC CODE	MO-077-AB