

SONY

CXK581020SP/J -35/45/55

131072-word × 8-bit High Speed CMOS Static RAM

SONY CORP/COMPONENT PRODS

Description

CXK581020SP/J are 131,072-word × 8-bit high speed CMOS static RAMs suitable for use in high speed and low power applications.

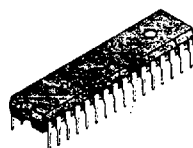
Organized as 131,072 words by 8 bits, it operates from a single 5V supply.

Features

- Fast access time : (Access time)
CXK581020SP/J-35 35ns (Max.)
CXK581020SP/J-45 45ns (Max.)
CXK581020SP/J-55 55ns (Max.)
- Low power operation : (Operation)
CXK581020SP/J-35, 45, 55
300mW(Typ, Cycle = Min.)
- Single +5V supply : +5V ± 10 %
- Fully static memory ... No clock or timing strobe required.
- Equal access and cycle time.
- Directly TTL compatible : All inputs and outputs.
- Available in 32 pin 400-mil DIP and 400-mil SOJ

CXK581020SP
32 pin DIP (Plastic)

CXK581020J
32 pin SOJ (Plastic)



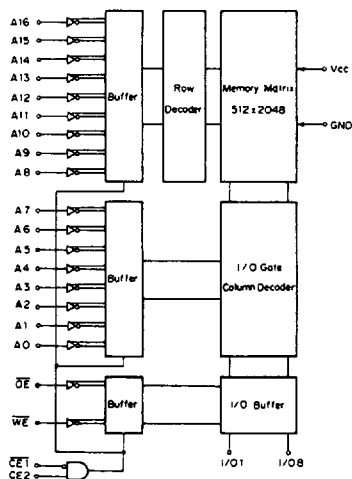
Function

131,072-word × 8-bit static RAM

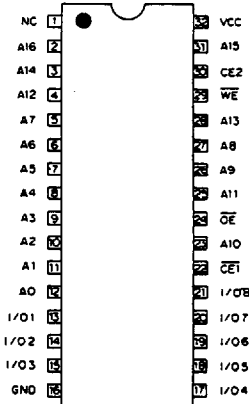
Structure

Silicon gate CMOS IC

Block Diagram



Pin Configuration (Top View)



Pin Description

Symbol	Description
A0 to A16	Address input
I/O1 to I/O8	Data input output
CE1, CE2	Chip enable 1, 2 input
WE	Write enable input
OE	Output enable input
Vcc	+5V Power supply
GND	Ground
NC	No connection

SONY

CXK581020SP/J

SONY CORP/COMPONENT PRODS

Absolute Maximum Ratings

(Ta = 25°C, GND = 0V)

T-46-23-14

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	T _{opr}	0 to + 70	°C
Storage temperature	T _{stg}	- 55 to + 150	°C
Soldering temperature • time	T _{solder}	260 • 10	°C • sec

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

Truth Table

CE1	CE2	OE	WE	Mode	I/O1 to I/O8	V _{CC} current
H	x	x	x	Not selected	High Z	I _{SB1} , I _{SB2}
x	L	x	x	Not selected	High Z	I _{SB1} , I _{SB2}
L	H	H	H	Output disable	High Z	I _{CC2}
L	H	L	H	Read	Data out	I _{CC2}
L	H	x	L	Write	Data in	I _{CC2}

Note) x : "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

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

SONY

SONY CORP/COMPONENT PRODS

CXK581020SP/J

T-46-23-14

Electrical Characteristics

DC and operating characteristics

(Vcc = 5V ± 10%, GND = 0V, Ta = 0 to +70°C)

Item	Symbol	Test conditions	Min.	Typ.*	Max.	Unit
Input leakage current	I _{LI}	V _{IN} = GND to V _{CC}	-2	—	2	μA
Output leakage current	I _{LO}	V _{I/O} = GND to V _{CC} , CE1 = V _{IH} or CE2 = V _{IL} or $\overline{OE}$ = V _{IH} or $\overline{WE}$ = V _{IL}	-2	—	2	μA
Operating power supply current	I _{CC1}	CE1 = V _{IL} , CE2 = V _{IH} , V _{IN} = V _{IH} or V _{IL} , I _{OUT} = 0mA	—	—	—	mA
Average operating current	I _{CC2}	Cycle = Min., Duty = 100%, I _{OUT} = 0mA	—	—	130	mA
Standby current	I _{SB1}	CE1 ≥ V _{CC} - 0.2V or CE2 ≤ 0.2V, V _{IN} ≥ V _{CC} - 0.2V or V _{IN} ≤ 0.2V	—	0.01	2	mA
	I _{SB2}	CE1 = V _{IH} or CE2 = V _{IL} , Cycle = Min.	—	—	55	mA
Output high voltage	V _{OH}	I _{OH} = -4.0mA	2.4	—	—	V
Output low voltage	V _{OL}	I _{OL} = 8.0mA	—	—	0.4	V

* Note) Vcc = 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 (Vcc = 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	Fig. 1

Output Load (1)

Output Load (2)*2

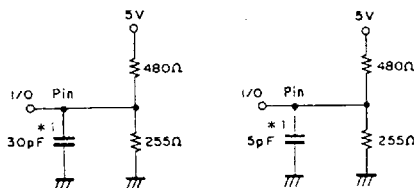
*1. C_L includes scope and jig capacitances.*2. For t_{LZ1}, t_{LZ2}, t_{OLZ}, t_{HZ1}, t_{HZ2}, t_{OW}, t_{TW}

Fig. 1

SONY

SONY CORP/COMPONENT PRODS

CXK581020SP/J

• Read cycle

T-46-23-14

Item	Symbol	-35		-45		-55		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	
Read cycle time	t _{RC}	35	—	45	—	55	—	ns
Address access time	t _{AA}	—	35	—	45	—	55	ns
Chip enable access time ($\overline{CE1}$)	t _{CO1}	—	35	—	45	—	55	ns
Chip enable access time (CE2)	t _{CO2}	—	35	—	45	—	55	ns
Output enable to output valid	t _{OE}	—	20	—	25	—	30	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	15	0	20	0	25	ns
Chip disable to output in high Z ($\overline{OE}$)	t _{OHZ} *	0	15	0	20	0	25	ns
Chip enable to power up time ($\overline{CE1}$, CE2)	t _{PU}	0	—	0	—	0	—	ns
Chip enable to power down time ($\overline{CE1}$, CE2)	t _{PD}	—	35	—	45	—	55	ns

• Write cycle

Item	Symbol	-35		-45		-55		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	
Write cycle time	t _{WC}	35	—	45	—	55	—	ns
Address valid to end of write	t _{AW}	30	—	40	—	45	—	ns
Chip enable to end of write	t _{CW}	30	—	40	—	45	—	ns
Data to write time overlap	t _{DW}	18	—	20	—	25	—	ns
Data hold from write time	t _{DH}	0	—	0	—	0	—	ns
Write pulse width	t _{WP}	30	—	35	—	40	—	ns
Address set up time	t _{AS}	0	—	0	—	0	—	ns
Write recovery time ($\overline{WE}$, $\overline{CE1}$)	t _{WR1}	3	—	3	—	3	—	ns
Write recovery time (CE2)	t _{WR2}	5	—	5	—	5	—	ns
Output active from end of write	t _{OW} *	5	—	5	—	5	—	ns
Write to output in high Z	t _{WHZ} *	0	15	0	15	0	15	ns

* Transition is measured $\pm 500\text{mV}$ from steady voltage with specified loading in Fig. 1 (2). This parameter is sampled and not 100% tested.

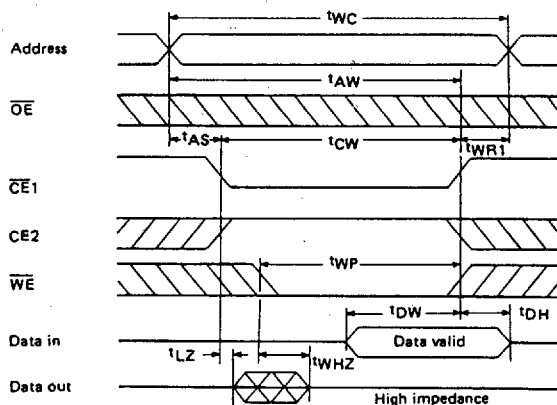
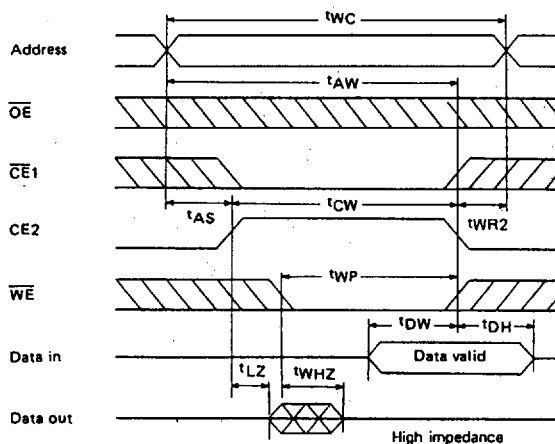
SONY

SONY CORP/COMPONENT PRODS

CXX581020SP/J

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

T-46-23-14

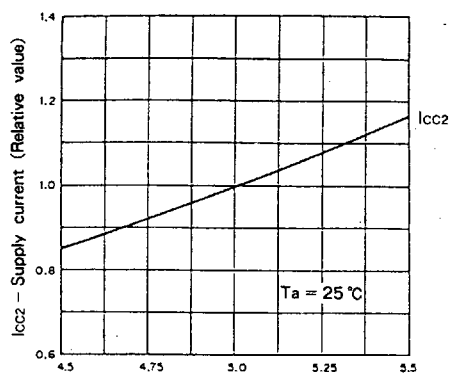
• Write cycle (3) : $\overline{CE2}$ control

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

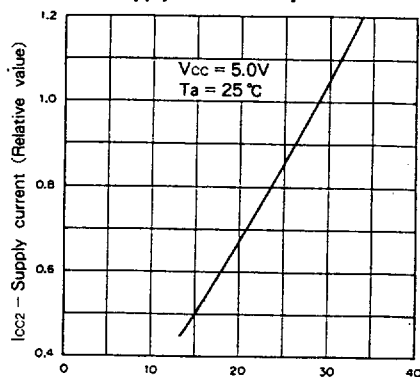
Example of Representative Characteristics

I-46-23-14

Supply current vs. Supply voltage

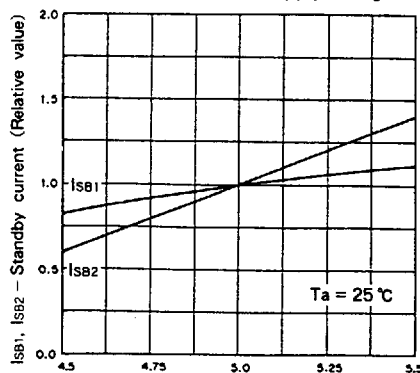
V_{CC} - Supply voltage (V)

Supply current vs. Cycle time

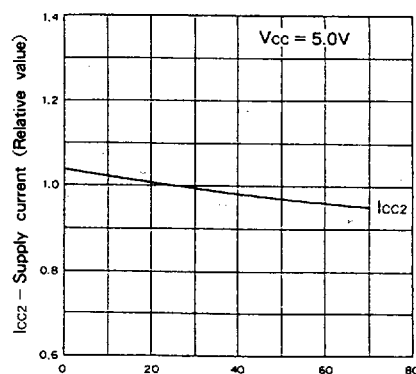


1/trc, 1/twc - Cycle time (MHz)

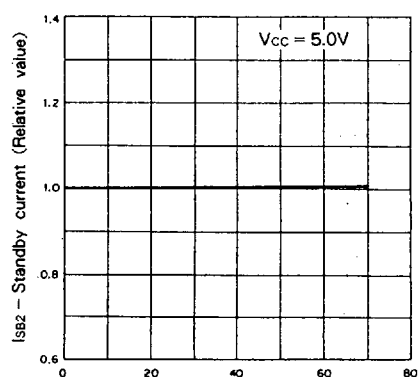
Standby current vs. Supply voltage

V_{CC} - Supply voltage (V)

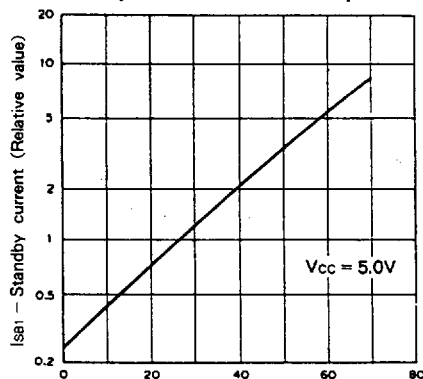
Supply current vs. Ambient temperature

T_a - Ambient temperature ($^\circ\text{C}$)

Standby current vs. Ambient temperature

T_a - Ambient temperature ($^\circ\text{C}$)

Standby current vs. Ambient temperature

T_a - Ambient temperature ($^\circ\text{C}$)

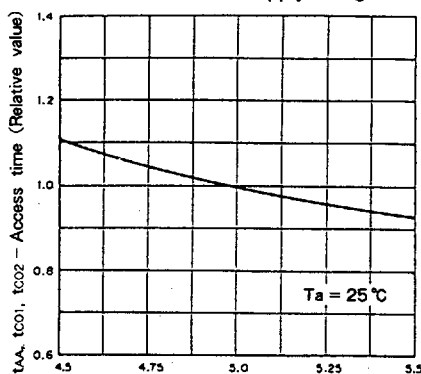
SONY

SONY CORP/COMPONENT PRODS

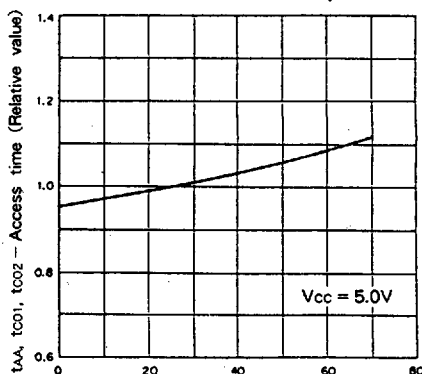
CXK581020SP/J

T-46-23-14

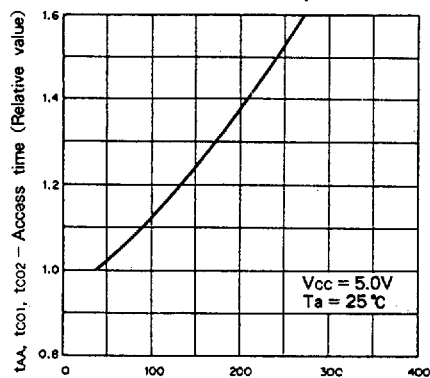
Access time vs. Supply voltage



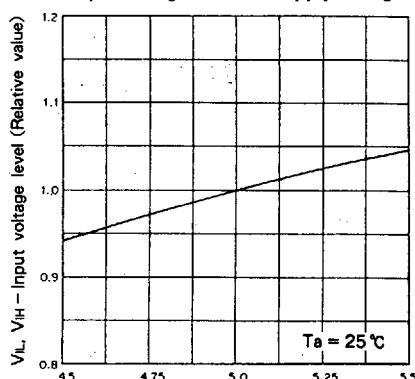
Access time vs. Ambient temperature

 V_{CC} - Supply voltage (V)

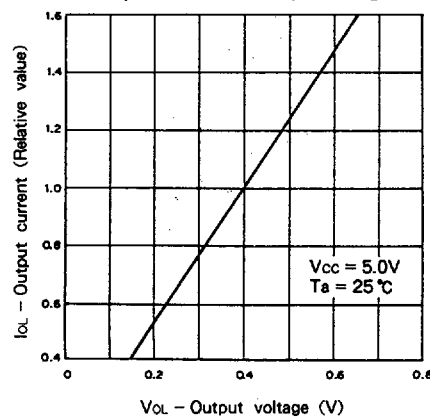
Access time vs. Load capacitance

 C_L - Load capacitance (pF) T_a - Ambient temperature ($^\circ\text{C}$)

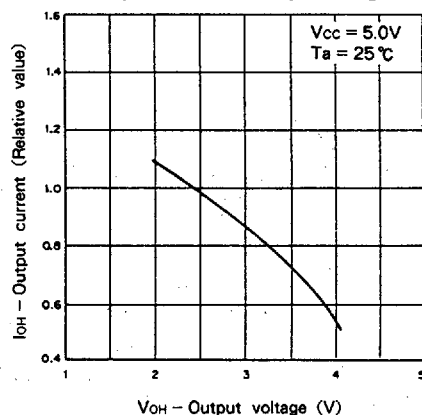
Input voltage level vs. Supply voltage

 V_{CC} - Supply voltage (V)

Output current vs. Output voltage

 V_{OL} - Output voltage (V)

Output current vs. Output voltage

 V_{OH} - Output voltage (V)

SONY

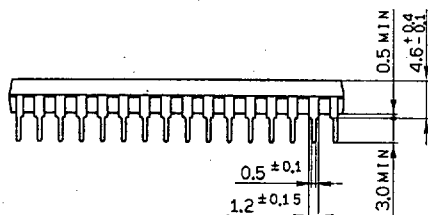
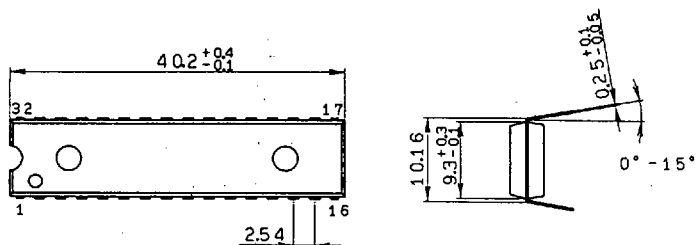
SONY CORP/COMPONENT PRODS

CXK581020SP/J

Package Outline Unit : mm

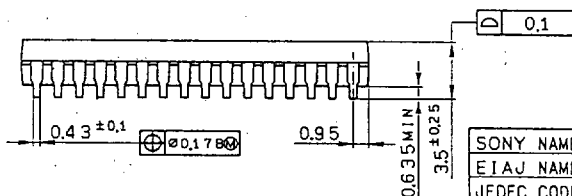
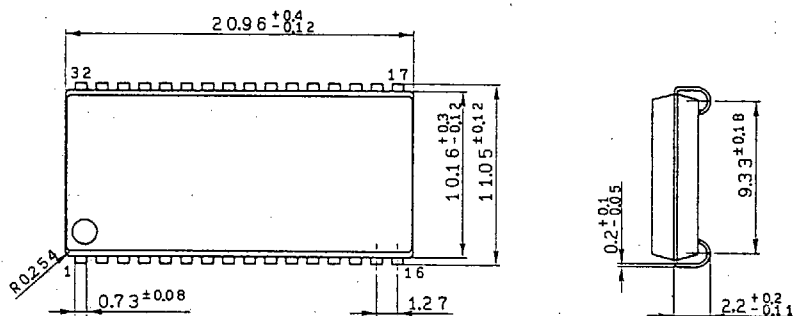
T-46-23-14

CXK581020SP 32 pin DIP (Plastic) 400mil 3.2g



SONY NAME	DIP-32P-02
EIAJ NAME	*DIP032-P-0400-A
JEDEC CODE	

CXK581020J 32 pin SOJ (Plastic) 400mil 1.3g



SONY NAME	SOJ-32P-01
EIAJ NAME	*SOJ032-P-0400-A
JEDEC CODE	