

S-MOS

S Y S T E M S

A Seiko Epson Affiliate

KF117
PF455-02

SMM43400C

CMOS 4M-BIT MASK ROM

Preliminary

- Low supply current
- Access time 120ns
- 524,288 words × 8bits asynchronous

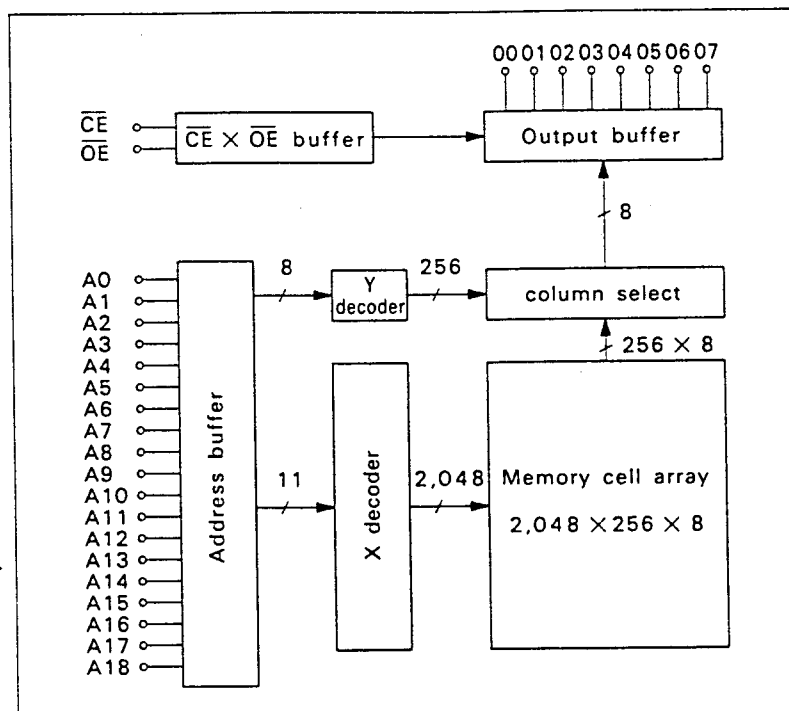
DESCRIPTION

The SMM43400C is a 524,288words×8bits mask programmable asynchronous CMOS read-only memory (ROM) and operates on a single power source. Both the input and output ports are TTL compatible with 3-stateoutput. This memory requires no external clock, since it has perfect static operation.

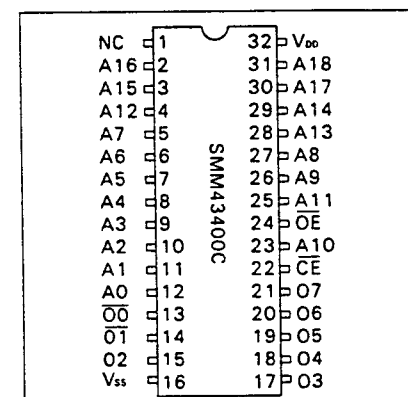
FEATURES

- Access time..... 120ns
- Low supply current..... Standby : 0.1μA (Typ)
Operation : 30mA (Typ)
- Asynchronous type
- Single power supply..... 5V±10%
- TTL-compatible input and output
- 3-state output with wired-OR capability
- Package..... SMM43400C 32-pin DIP (plastic)
SMM43400M 32-pin SOP (plastic) under development

BLOCK DIAGRAM



PIN CONFIGURATION



PIN DESCRIPTION

A0 to A18	Address input
\overline{CE}	Chip enable
\overline{OE}	Output enable
O0 to O7	Data output
V _{DD}	Power supply (+5V)
V _{SS}	Power supply (0V)
NC	No connection

■ ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Supply voltage	V _{DD}	-0.3 to 7.0	V
Input voltage	V _I	-0.3 to V _{DD} +0.3	V
Output voltage	V _O	-0.3 to V _{DD} +0.3	V
Power dissipation	P _D	1.0	W
Output current	I _O	10	mA
Operating temperature	T _{opr}	-10 to 70	°C
Storage temperature	T _{stg}	-65 to 150	°C
Soldering temperature and time	T _{sol}	260°C, 10s (at lead)	—

■ ELECTRICAL CHARACTERISTICS

● DC Electrical Characteristics

(V_{DD} = 5V ± 10%, T_a = -10° to 70°C)

Parameter	Symbol	Conditions	Min	Typ*	Max	Unit
High level input voltage	V _{IH}	—	2.2	—	V _{DD} +0.3	V
Low level input voltage	V _{IL}	—	-0.3	—	0.8	V
Input leakage current	I _{LI}	0 ≤ V _I ≤ V _{DD}	-2.0	—	2.0	μA
Standby supply current	I _{DDS}	$\overline{CE} = V_{DD} - 0.2$	—	0.1	40	μA
Operating supply current	I _{DDO}	with output pin open	—	30	50	mA
Output leakage current	I _{LO}	0 ≤ V _O ≤ V _{DD}	-10.0	—	10.0	μA
High level output voltage	V _{OH}	I _{OH} = -400 μA	2.4	—	—	V
Low level output voltage	V _{OL}	I _{OL} = 1.6 mA	—	—	0.4	V
Input terminal capacitance	C _I	f = 1 MHz	—	—	10	pF
Output terminal capacitance	C _O	f = 1 MHz	—	—	15	pF

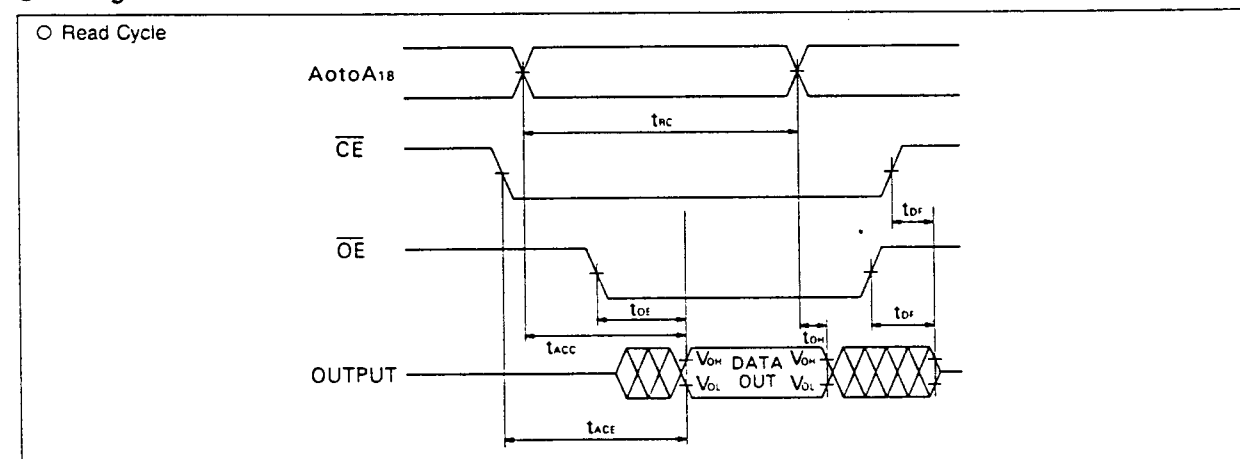
* Typical values are measured at V_{DD} = 5V and T_a = 25°C

● AC Electrical Characteristics

(V_{DD} = 5V ± 10%, T_a = -10° to 70°C)

Parameter	Symbol	Conditions	Min	Max	Unit
Read cycle time	t _{RC}	<ul style="list-style-type: none"> Input pulse level : V_{IH} = 2.4V V_{IL} = 0.8V C_L = 1TTL + 100pF Input/Output Reference level: 1.5V t_r = t_f = 10ns 	120	—	ns
Address access time	t _{ACC}		—	120	ns
\overline{CE} access time	t _{ACE}		—	120	ns
\overline{OE} access time	t _{OE}		—	50	ns
Output floating time	t _{DF}		—	40	ns
Output hold time	t _{OH}		0	—	ns

● Timing Chart



FUNCTIONS

Truth table

\overline{CE}	A0 to A18	\overline{OE}	O0 to O7	Mode
H	X	X	Hi-Z	Standby
L	Stable	H	Hi-Z	Output disable
L	Stable	L	Output data	Read

* X: "H" or "L"

Reading data

Data can be read by setting addresses while holding $\overline{CE} = "L"$ and $\overline{OE} = "L"$.

Standby mode

When \overline{CE} is "H", the memory is in the standby mode. In this mode, the output terminals are in the high impedance state and any input of address is prohibited. There will be no current flow except for leakage in the chip.

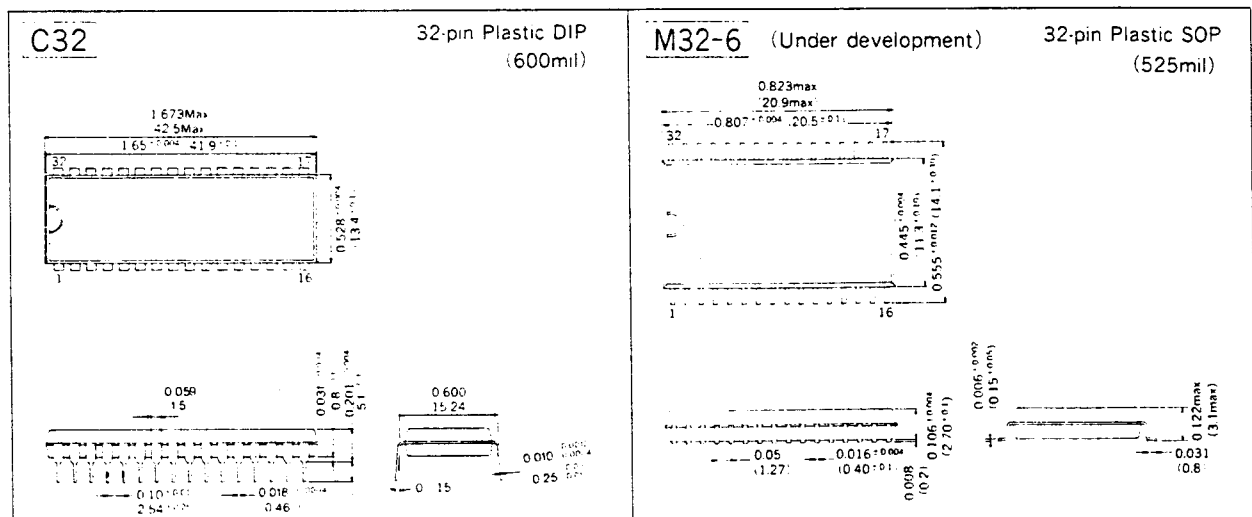
Output disable

When \overline{OE} is set at "H", the output impedance goes high.

[Note] Recommendations

- Although the SMM43400C is a CMOS mask ROM, transient current will flow at the time of transistors transition in data read operation. For protection of such transient current, it is recommended to connect a high-frequency capacitor and an electrolytic capacitor between power supply lines VDD and VSS.
- Although the input and output ports of the SMM43400C are TTL compatible, when it is connected to TTL ICs, it is advisable to connect a pull-up resistor to each of the \overline{CE} , \overline{OE} and the address input terminals.

PACKAGE DIMENSIONS



■ CHARACTERISTICS CURVES

Under measurement

S-MOS Systems, Inc.
2460 North First Street
San Jose, Ca. 95131
(408) 922-0200
(408) 922-0238