

TOSHIBA MOS MEMORY PRODUCTS

4M BIT (512K WORD×8 BIT) CMOS MASK ROM
SILICON GATE CMOS

TC534000P

DESCRIPTION

The TC534000P is a 4,194,304 bits read only memory organized as 524,288 words by 8 bits with a low bit cost, thus being suitable for use in program memory of micro-processor, and data memory, especially character generator. The TC534000P using CMOS technology is most suitable for low power applications where battery opera-

tions are required.

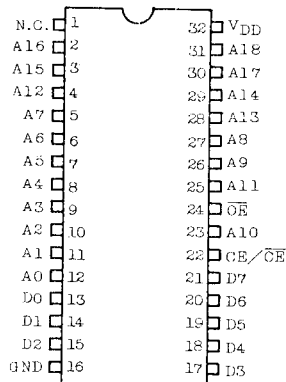
The TC534000P has one programmable chip enable input $\overline{CE}/\overline{CE}$ for device selection.

The TC534000P is moulded in a 32 pin standard plastic package, 0.6 inch in width.

FEATURES

- Single 5V Power Supply
- Access Time: 250ns (Max.)
- Power Dissipation
 - Operating Current: 30mA (Max.)
 - Standby Current: 20 μ A (Max.)
- All inputs and Outputs: TTL Compatible
- Three State Outputs
- 32 pin 600 mil width Plastic DIP
- Fully Static Operation
- Programmable Chip Enable

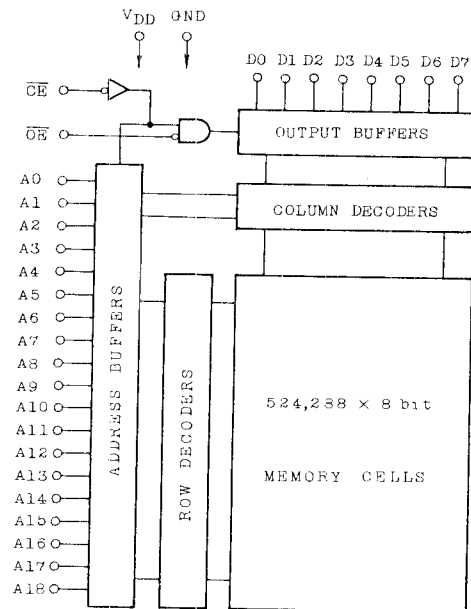
PIN CONNECTION



PIN NAMES

A0 ~ A18	Address Inputs
D0 ~ D7	Data Outputs
\overline{OE}	Output Enable Input
$\overline{CE}/\overline{CE}$	Chip Enable Input
V _{DD}	Power Supply
GND	Ground
N.C.	No Connection

BLOCK DIAGRAM



TC53400P

MAXIMUM RATINGS

SYMBOL	ITEM	RATING	UNIT
V _{DD}	Power Supply Voltage	-0.5 ~ 7.0	V
V _{IN}	Input Voltage	-0.5 ~ V _{DD}	V
V _{OUT}	Output Voltage	0 ~ V _{DD}	V
P _D	Power Dissipation	1.0	W
T _{STG}	Storage Temperature	-55 ~ 150	°C
T _{OPR}	Operating Temperature	-40 ~ 85	°C
T _{SOLDER}	Soldering Temperature • Time	260 • 10	°C • sec

D.C. OPERATING CONDITIONS (Ta = -40 ~ 85°C)

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V _{DD}	Power Supply Voltage	4.5	5.0	5.5	V
V _{IH}	Input High Voltage	2.2	-	V _{DD} + 0.3	
V _{IL}	Input Low Voltage	-0.3	-	0.8	

D.C. and OPERATING CHARACTERISTICS (Ta = -40 ~ 85°C, V_{DD} = 5V ± 10%)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I _{IL}	Input Leakage Current	V _{IN} = 0 ~ V _{DD}	-	±1.0	μA
I _{LO}	Output Leakage Current	CE = V _{IH} , V _{OUT} = 0V ~ V _{DD}	-	±5.0	μA
I _{OH}	Output High Current	V _{OH} = 2.4V	-1.0	-	mA
I _{OL}	Output Low Current	V _{OL} = 0.4V	2.0	-	mA
I _{DDS1}	Standby Current	CE = V _{IH}	-	2	mA
I _{DDS2}	Standby Current	CE = V _{DD} - 0.2V and V _{IN} = 0V (V _{DD})	-	20	μA
I _{DD01}	Operating Current	V _{IN} = V _{IH} / V _{IL} , t _{cycle} = 250ns	-	40	mA
I _{DD02}		V _{IN} = V _{DD} - 0.2V / 0.2V, t _{cycle} = 250ns	-	30	mA

CAPACITANCE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
C _{IN}	Input Capacitance	f = 1MHz, Ta = 25°C	-	8	pF
C _{OUT}	Output Capacitance	f = 1MHz, Ta = 25°C	-	10	

Note: This parameter is periodically sampled and is not 100% tested.

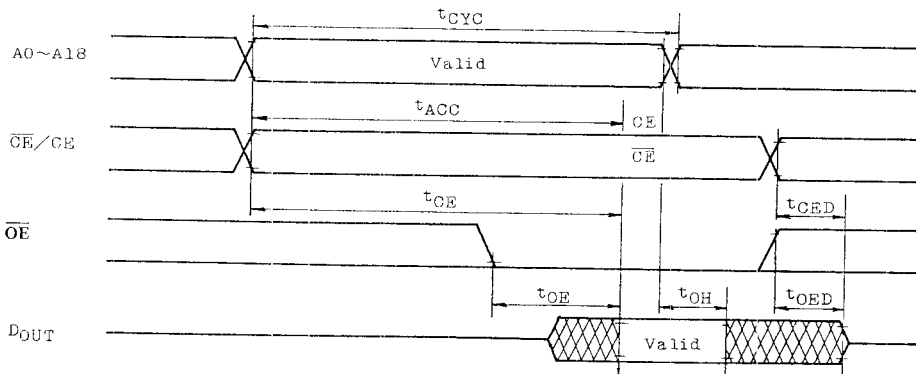
A.C. CHARACTERISTICS (Ta = -40 ~ 85°C, VDD = 5V ± 10%)

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
t _{CYC}	Cycle Time	250	—	ns
t _{ACC}	Access Time	—	250	
t _{CE}	Chip Enable Access Time	—	250	
t _{OE}	Output Enable Access Time	—	100	
t _{CED}	Output Disable Time	—	80	
t _{OED}	Output Disable Time from OE	—	80	
t _{OH}	Output Hold Time	10	—	

AC TEST CONDITIONS

- Output Load : 100pF + 1TTL
- Input Levels : 0.6V, 2.4V
- Timing Measurement Reference Levels
 Input : 0.8V, 2.2V
 Output : 0.8V, 2.0V
- Input Rise and Fall Time : 5ns

TIMING WAVEFORMS



OPERATING MODE

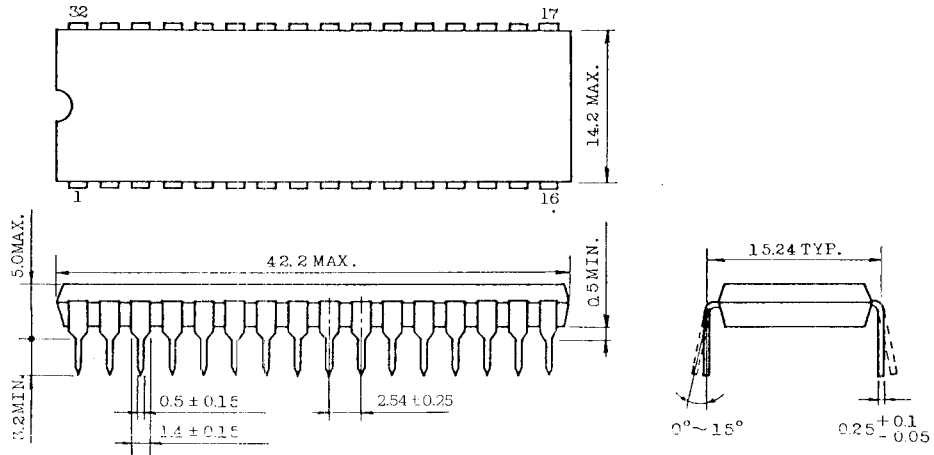
MODE	CE (CE)	OE	A0 ~ 18	Outputs	Power
Read	L(H)	L	Valid	Data Out	Operating
Standby	H(L)	*	*	High-Z	Standby
Output Deselect	L(H)	H	*	High-Z	Operating

H: V_{IH}, L: V_{IL}, *: V_{IH} or V_{IL}

TC534000P

● OUTLINE DRAWINGS

Unit: mm



NOTE: Each lead pitch is 2.54mm.

All leads are located within 0.25mm of their true longitudinal position with respect to No. 1 and No. 32 leads.

NOTE: Toshiba does not assume any responsibility for use of any circuitry described; no circuit patent licenses are implied, and Toshiba reserves the right, at any time without notice, to change said circuitry.