

TOSHIBA MOS MEMORY PRODUCT

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

TC534000P

DESCRIPTION

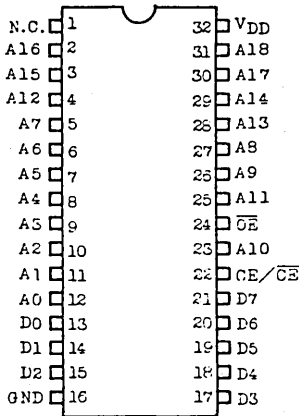
The TC534000P is a 4,194,304 bits read only memory organized as 524,288 words by 8 bits with a low bit cost, thus being suitable for use in program memory of micro-processor, and data memory, especially character generator. The TC534000P using CMOS technology is most suitable for low power applications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

The TC534000P has one programmable chip enable input \overline{CE}/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

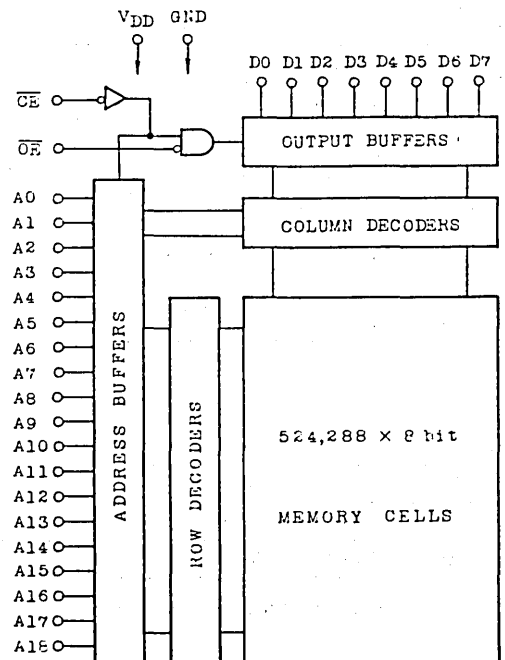
PIN CONNECTION



PIN NAMES

AO ~ A18	Address Inputs
DO ~ D7	Data Outputs
\overline{OE}	Output Enable Input
CE/ \overline{CE}	Chip Enable Input
VDD	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	\overline{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	\overline{CE} =V _{IH}	-	2	mA
I _{DDS2}	Standby Current	\overline{CE} =V _{DD} and V _{IN} =0V(V _{DD})	-	20	μA
I _{DDO1}	Operating Current	V _{IN} =V _{IH} /V _{IL} , t _{cycle} =250ns	-	40	mA
I _{DDO2}		V _{IN} =V _{DD} /0V, t _{cycle} =250ns	-	30	

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.

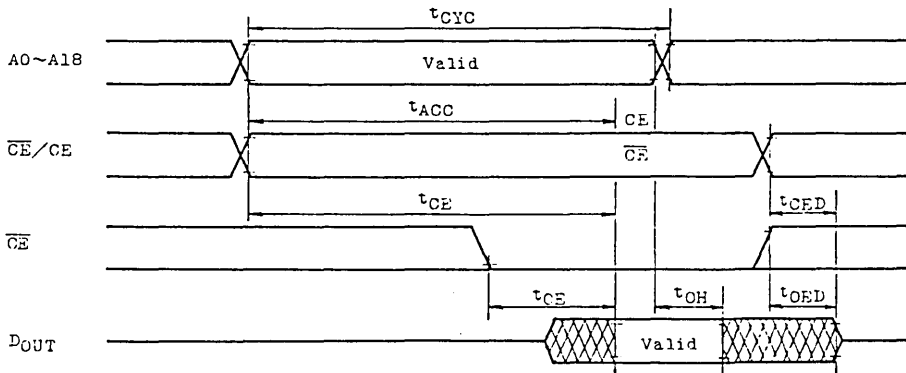
A.C. CHARACTERISTICS (Ta=-40 ~ 85°C, VDD=5V±10%)

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	0	80	
t _{OED}	Output Disable Time from \overline{OE}	-	80	
t _{OH}	Output Hold Time	20	-	

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



OPERATION MODE

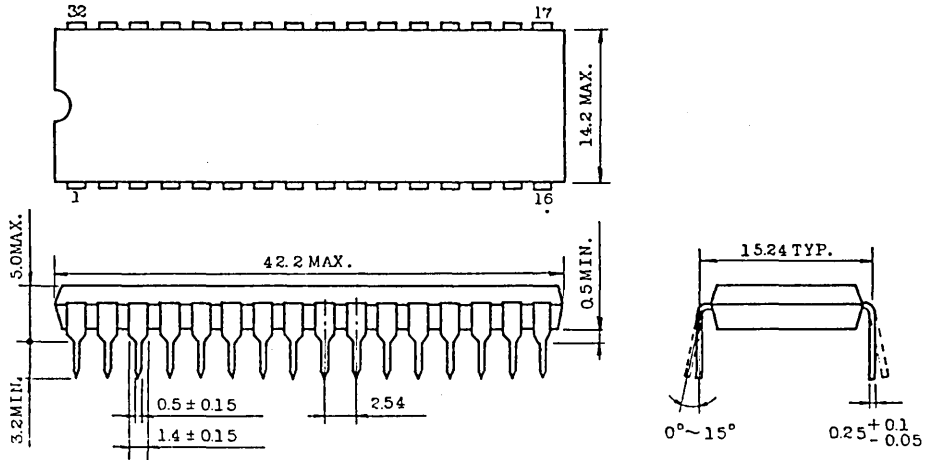
MODE	\overline{CE} (CE)	\overline{OE}	A0 ~ 18	Outputs	Power
Read	L(H)	L	Valid	Data Out	Operating
Standby	H(L)	*	*	High-Z	Standby
Output Deselect	L(H)	H	*	High-Z	Operating

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

TC53400P

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.