

# TOSHIBA MOS MEMORY PRODUCTS

**256K BIT (32K WORD × 8 BIT) CMOS MASK ROM**  
SILICON GATE MOS

**TC53257P**  
**TC53257F**

## DESCRIPTION

The TC53257P/F is a 262,144 bit read only memory organized as 32,768 words by 8 bits with a low bit cost, this being suitable for use in program memory of microprocessor, and in character generator. The TC53257P/F using CMOS technology is most suitable for low power applications where bat-

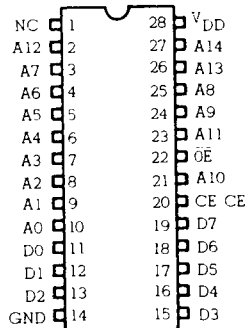
tery operation is required.

The TC53257P/F has one programmable chip enable input  $\overline{CE}/\overline{CE}$  for device selection and one output enable input ( $\overline{OE}$ ) for fast memory access and output control.

## FEATURES

- Single 5V Power Supply
- Access Time: 200ns(Max.)
- Power Dissipation
  - Operating Current : 25mA(Max.)
  - Standby Current : 20 $\mu$ A(Max.)
- Pin Compatible with 256K EPROM TC57256AD/ADI
- Pin Compatible with 256K OTPROM TC54256AP/AF
- Full Static Operation
- Programmable Chip Enable
- All Inputs and Outputs : TTL Compatible
- Three State Outputs
- Package
  - Plastic DIP : TC53257P
  - Plastic FP : TC53257F

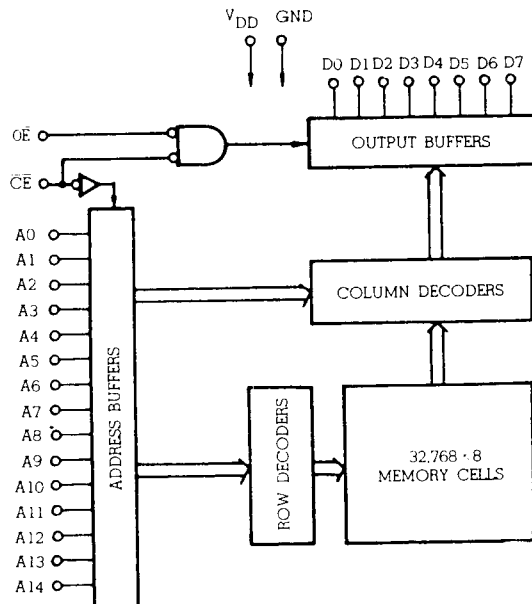
## PIN CONNECTION (TOP VIEW)



## PIN NAMES

A <sub>0</sub> ~A <sub>14</sub>	Address Inputs
D <sub>0</sub> ~D <sub>7</sub>	Data Outputs
NC	No connection
$\overline{CE}/\overline{CE}$	Chip enable input
$\overline{OE}$	Output enable input
V <sub>DD</sub>	Power supply
GND	Ground

## BLOCK DIAGRAM



# TC53257P TC53257F

## MAXIMUM RATINGS

SYMBOL	ITEM	RATING	UNITS
V <sub>DD</sub>	Power Supply Voltage	-0.5~7.0	V
V <sub>IN</sub>	Input Voltage	-0.5~7.0	V
V <sub>OUT</sub>	Output Voltage	0~V <sub>DD</sub>	V
P <sub>D</sub>	Power Dissipation	1.0 0.6*	W
T <sub>STG</sub>	Storage Temperature	-55~150	°C
T <sub>OPR</sub>	Operating Temperature	-40~85	°C
T <sub>SOLDER</sub>	Soldering Temperature·Time	260·10	°C·sec

Note : \*Plastic FP

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

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V <sub>DD</sub>	Power Supply Voltage	4.5	5.0	5.5	V
V <sub>IH</sub>	Input High Voltage	2.2	—	V <sub>DD</sub> +0.3	V
V <sub>IL</sub>	Input Low Voltage	-0.3	—	0.8	V

## D. C. and OPERATING CHARACTERISTICS (Ta = -40~85°C, V<sub>DD</sub> = 5V ± 10%)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I <sub>IL</sub>	Input Leakage Current	V <sub>IN</sub> = 0V ~ V <sub>DD</sub>	—	±1.0	μA
I <sub>LO</sub>	Output Leakage Current	$\overline{CE} = V_{IH}$ or $OE = V_{IH}$ V <sub>OUT</sub> = 0V ~ V <sub>DD</sub>	—	±5.0	μA
I <sub>OH</sub>	Output High Current	V <sub>OH</sub> = 2.4V	-1.0	—	mA
I <sub>OL</sub>	Output Low Current	V <sub>OL</sub> = 0.4V	3.2	—	mA
I <sub>DDs1</sub>	Standby Current	$\overline{CE} = V_{IH}$ CE = V <sub>IL</sub>	—	2	mA
I <sub>DDs2</sub>	Standby Current	$\overline{CE} = V_{DD} - 0.2V$ , CE = 0.2V	—	20	μA
I <sub>DD01</sub>	Operating Current	V <sub>IH</sub> = V <sub>IH VIL</sub> , t <sub>CYCLE</sub> = 200ns	—	40	mA
I <sub>DD02</sub>		V <sub>IN</sub> = V <sub>DD</sub> - 0.2V, 0.2V, t <sub>CYCLE</sub> = 200ns	—	25	mA

## CAPACITANCE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
C <sub>IN</sub>	Input Capacitance	f = 1MHz, Ta = 25°C	—	8	pF
C <sub>OUT</sub>	Output Capacitance	f = 1MHz, Ta = 25°C	—	10	pF

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

# TC53257P TC53257F

## A. C. CHARACTERISTICS

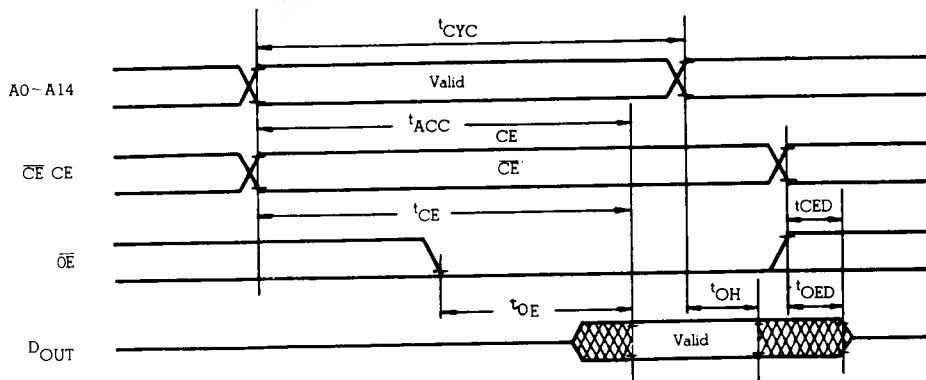
( $T_a = -40 \sim 85^\circ\text{C}$ ,  $V_{DD} = 5V \pm 10\%$ )

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$t_{cyc}$	Cycle Time	200	—	ns
$t_{ACC}$	Access Time	—	200	ns
$t_{CE}$	Chip Enable Access Time from $\overline{CE}/\overline{CE}$	—	200	ns
$t_{OE}$	Output Enable Access Time from $\overline{OE}$	0	70	ns
$t_{CED}, t_{OED}$	Output Disable Time from $\overline{CE}/\overline{CE}, \overline{OE}$	0	60	ns
$t_{OH}$	Output Hold Time	0	—	ns

### A. C. TEST CONDITIONS

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

### TIMING WAVEFORMS



### OPERATION MODE

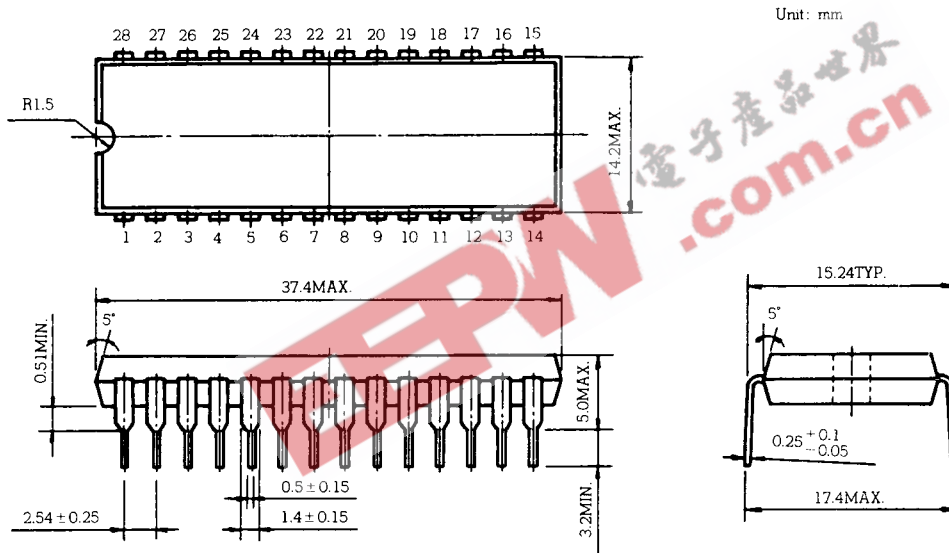
H :  $V_{IH}$ , L :  $V_{IL}$ , \* :  $V_{IH}$  or  $V_{IL}$

MODE	$\overline{CE}$ (CE)	$\overline{OE}$	A0~14	Outputs	Power
Read	L(H)	L	Valid	Data out	Operating
Output Deselect	L(H)	H	*	High-Z	Operating
	H(L)	*	*		Standby

# TC53257P TC53257F

## OUTLINE DRAWINGS

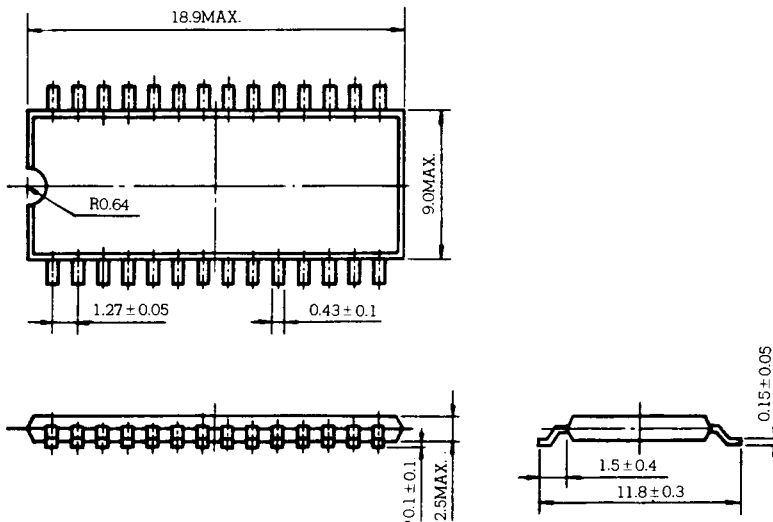
- Plastic DIP



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.28 leads.

- Plastic FP



NOTE : Each lead pitch is 1.27mm.

All leads are located within 0.12mm of their true longitudinal position with respect to No. 1 and No.28 leads.