

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

PRELIMINARY

DESCRIPTION

The TC534000AP/AF is a 4,194,304 bits read only memory organized as 524,288 words by 8 bits.

The TC534000AP/AF is fabricated using Toshiba's advanced CMOS technology which provides the high speed and low power features with access time of 150ns, an operation current of 40mA at 6.7MHz and a standby current of 20µA.

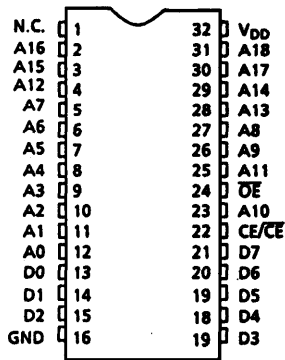
The TC534000AP/AF has one programmable chip enable input CE/CE for device selection.

The TC534000AP/AF is packaged in a standard 600mil 32pin DIP or 525mil 32pin SOP.

FEATURES

- Single 5V Power Supply
- Access Time : 150ns (Max.) $V_{DD}=5V \pm 10\%$
- Power Dissipation
 - Operating Current : 40mA (Max.)
 - Standby Current : 20µA (Max.)
- All Inputs and Outputs : TTL Compatible
- Three State Outputs
- Fully Static Operation
- Programmable Chip Enable
- Package Plastic DIP : TC534000AP
Plastic FP : TC534000AF

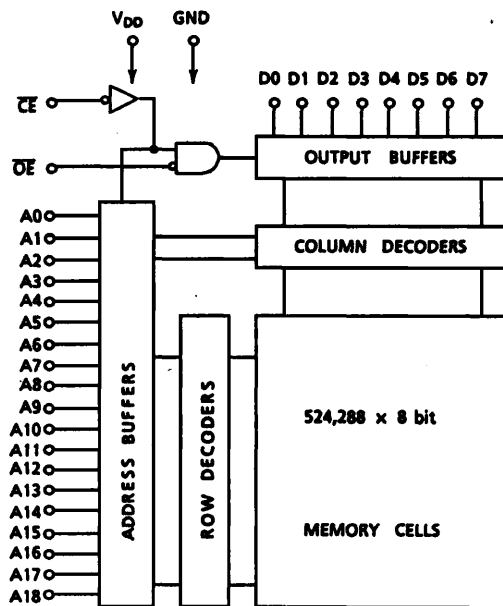
PIN CONNECTION



PIN NAMES

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

BLOCK DIAGRAM



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	1.0/0.6*	W
T_{STG}	Storage Temperature	-55~150	°C
T_{OPR}	Operating Temperature	0~70	°C
T_{SOLDER}	Soldering Temperature - Time	260 · 10	°C · sec

Note : * Plastic FP.

D.C. OPERATING CONDITIONS ($T_a = 0 \sim 70^\circ\text{C}$)

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

D.C. and OPERATING CHARACTERISTICS ($V_{DD} = 5V \pm 10\%$, $T_a = 0 \sim 70^\circ\text{C}$)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{IL}	Input Leakage Current	$V_{IN} = 0 \sim V_{DD}$	-	± 1.0	μA
I_{LO}	Output Leakage Current	$\overline{CE} = V_{IH}$, $V_{OUT} = 0 \sim V_{DD}$	-	± 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_{DD51}	Standby Current	$\overline{CE} = V_{IH}$	-	2	mA
I_{DD52}		$\overline{CE} = V_{DD}$ and $V_{IN} = 0V (V_{DD})$	-	20	μA
I_{DDO1}	Operating Current	$V_{IN} = V_{IH} / V_{IL}$, $t_{cycle} = 150ns$	-	50	mA
I_{DDO2}		$V_{IN} = V_{DD} / 0V$, $t_{cycle} = 150ns$	-	40	mA

CAPACITANCE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
C_{IN}	Input Capacitance	$f = 1\text{MHz}$, $T_a = 25^\circ\text{C}$	-	10	pF
C_{OUT}	Output Capacitance	$f = 1\text{MHz}$, $T_a = 25^\circ\text{C}$	-	10	pF

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

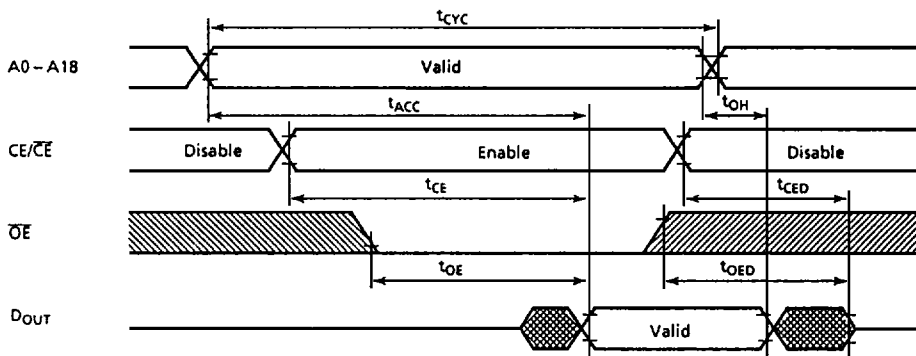
A.C. CHARACTERISTICS

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
t_{ACC}	Access Time	-	150	ns
t_{CE}	Chip Enable Access Time	-	150	ns
t_{OE}	Output Enable Access Time	-	70	ns
t_{CED}	Output Disable Time from \overline{CE}	0	60	ns
t_{OED}	Output Disable Time from \overline{OE}	0	60	ns
t_{OH}	Output Hold Time	10	-	ns
t_{CYC}	Cycle Time	150	-	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, 2.0V
 Input Rise and Fall Time : 5ns

TIMING WAVEFORMS



OPERATION MODE

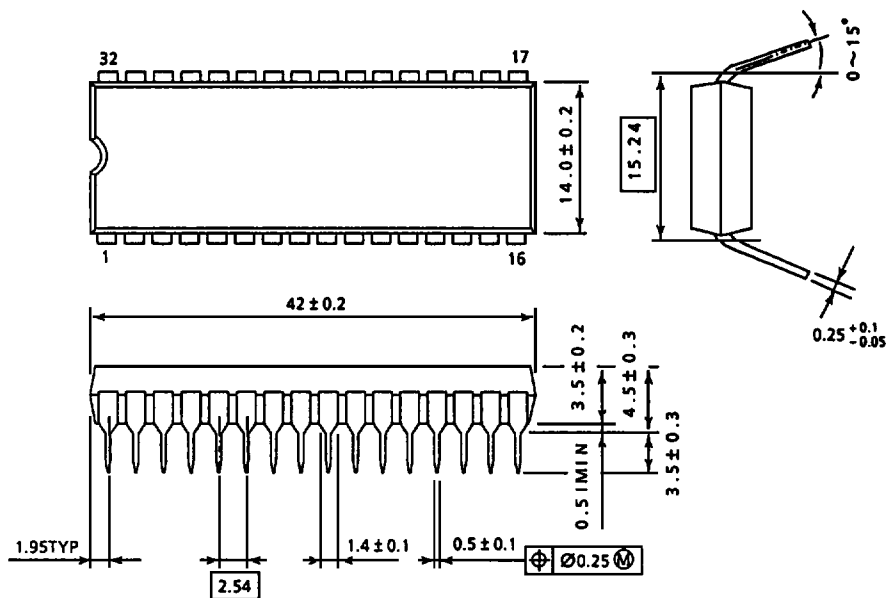
MODE	\overline{CE} (CE)	\overline{OE}	A0~A18	Outputs	Power
Read	L(H)	L	Valid	Data Out	Operating
Standby	H(L)	*	*	High-Z	Standby
Output Deselect	L(H)	H	*	High-Z	Operating

H : VIH L : VIL * : VIH or VIL

TC534000AP/AF

OUTLINE DRAWINGS
Plastic DIP (DIP32 - P - 600)

UNIT : mm



Note: Package width and length do not include mold protrusion, allowable mold protrusion is 0.15mm.

OUTLINE DRAWINGS
Plastic FP (SOP32 - P - 525)

UNIT: mm

