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

DESCRIPTION

The TC534000P/F is a 4,194,304 bits read only memory organized as 524,288words by 8bits.

The TC534000P/F is fabricated using Toshiba's advanced CMOS technology which provides the high speed and low power features with access time of 200ns/250ns, an operation current of 30mA at 5MHz and a standby current of 20μA.

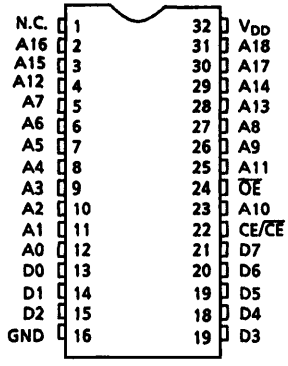
The TC534000P/F has one programmable chip enable input CE/$\overline{CE}$ for device selection.

The TC534000P/F is packaged in a standard 600mil 32pin DIP or 525mil 32pin SOP.

FEATURES

- Single 5V Power Supply
- Access Time : 250ns (Max.) V_{DD}=5V±10%
  : 200ns (Max.) V_{DD}=5V±5%
- Power Dissipation
  Operating Current : 30mA (Max.)
  Standby Current : 20μA (Max.)
- All Inputs and Outputs : TTL Compatible
- Three State Outputs
- Fully Static Operation
- Programmable Chip Enable
- Package Plastic DIP : TC534000P
  Plastic FP : TC534000F

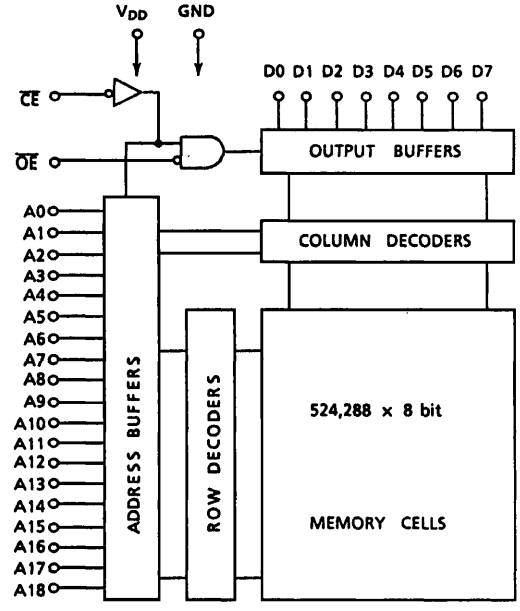
PIN CONNECTION



PIN NAMES

A0~A18	Address Inputs
D0~D7	Data Outputs
$\overline{OE}$	Output Enable Input
CE/$\overline{CE}$	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	−40~85	°C
T_{SOLDER}	Soldering Temperature - Time	260 · 10	°C · sec

Note : * Plastic FP.

D.C. OPERATING CONDITIONS (Ta = −40~85°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 ± 10% , Ta = −40~85°C)

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} = 0~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}		$\overline{CE}$ = 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	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	pF

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

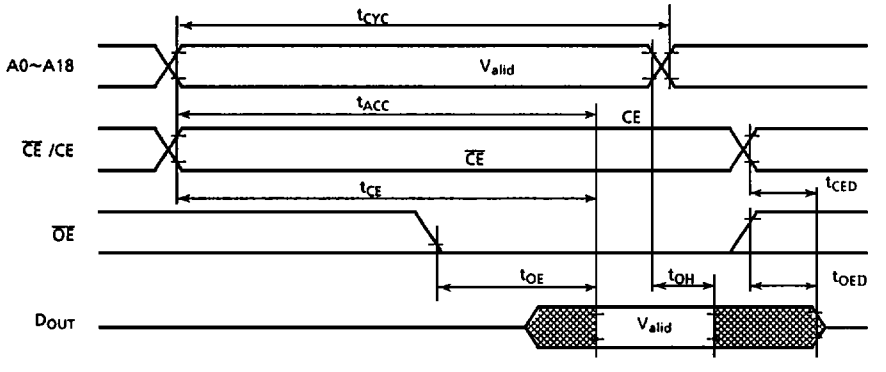
A.C. CHARACTERISTICS

SYMBOL	PARAMETER	Ta = −40~85°C, V_{DD} = 5V ± 10%		Ta = −40~70°C, V_{DD} = 5V ± 5%		UNIT
		MIN.	MAX.	MIN.	MAX.	
t_{ACC}	Access Time	−	250	−	200	ns
t_{CE}	Chip Enable Access Time	−	250	−	200	ns
t_{OE}	Output Enable Access Time	−	70	−	70	ns
t_{CED}	Output Disable Time from $\overline{CE}$	0	70	0	70	ns
t_{OED}	Output Disable Time from $\overline{OE}$	0	70	0	70	ns
t_{OH}	Output Hold Time	10	−	10	−	ns
t_{CYC}	Cycle Time	250	−	200	−	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



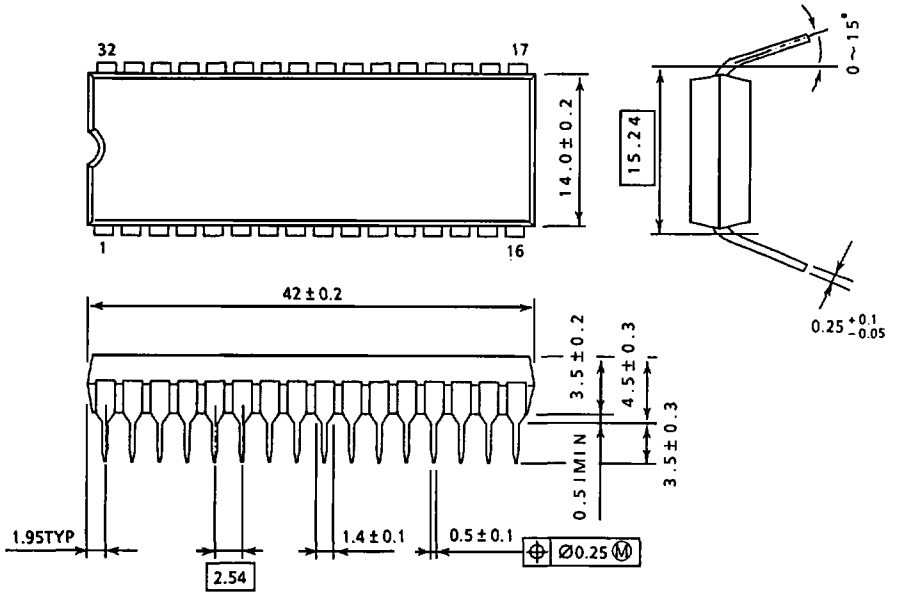
OPERATION MODE

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

OUTLINE DRAWINGS
Plastic DIP (DIP32 – P – 600)

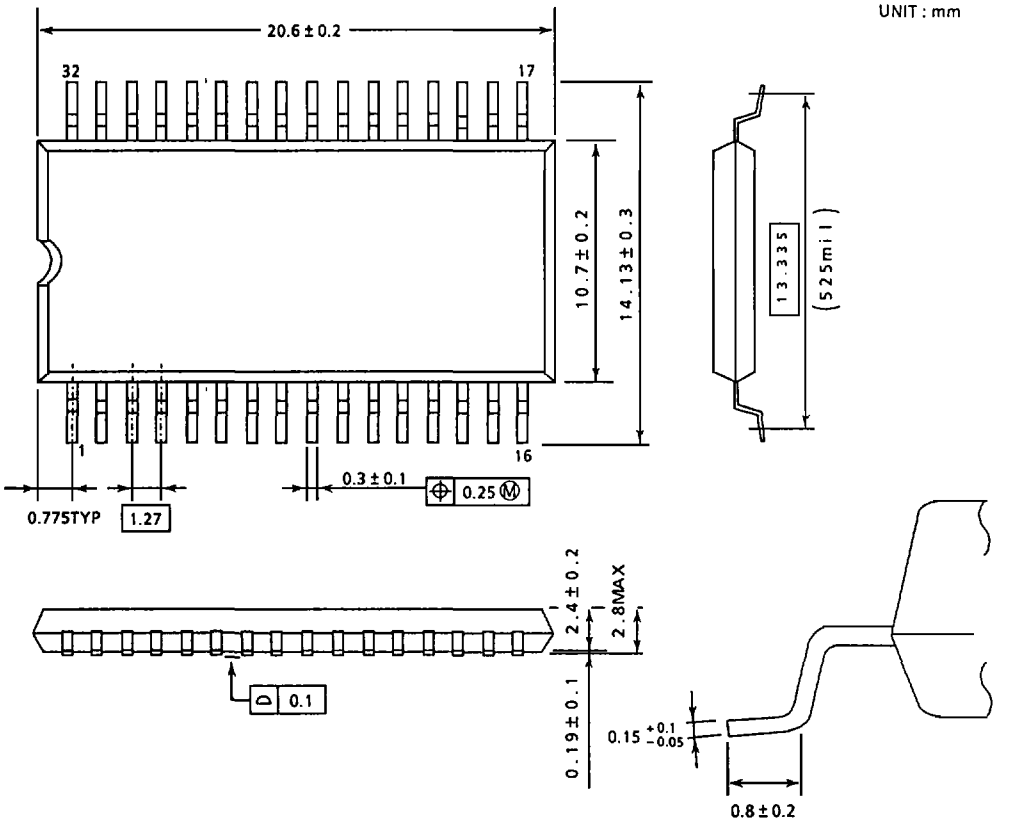
UNIT : mm



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



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