

4M BIT (256K WORD × 16 BIT / 512K WORD × 8BIT) CMOS MASK ROM

DESCRIPTION

The TC534200P/F is a 4,194,304 bits read only memory organized as 262,144 words by 16 bits when BYTE is logical high, and is organized as 524,288 words by 8 bits when BYTE is logical low.

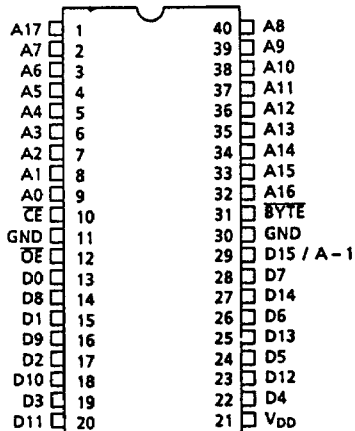
The TC534200P/F is most suitable for the program memory, data memory, and character generator.

The TC534200P/F is packaged in a standard 600mil 40pin DIP, or 525mil 40 pin SOP.

FEATURES

- Single 5V Power Supply
- Access Time : 150ns (Max.)
- Power Dissipation
 - Operating Current : 50mA (Max.)
 - Standby Current : 20 μ A (Max.)
- Fully Static Operation
- All Inputs and Outputs : TTL Compatible
- Three State Outputs
- TC534200P : DIP40-P-600
- TC534200F : SOP40-P-525

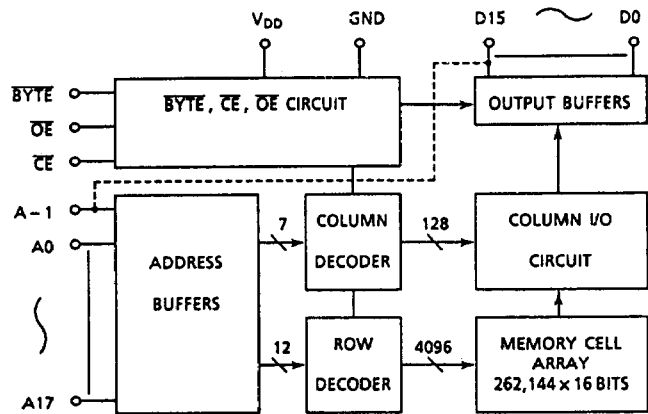
PIN CONNECTION (TOP VIEW)



PIN NAMES

A0~A17	Address inputs
D0~D14	Data Outputs
$\overline{CE}$	Chip Enable Input
$\overline{OE}$	Output Enable Input
D15/A-1	Data Output / Addrss Input
BYTE	Word, Byte selection Input
V _{DD}	Power Supply
GND	Ground

BLOCK DIAGRAM



MODE SELECTION

MODE	CE	OE	BYTE	D0 - D7	D8 - D14	D15 / A - 1	Power
Read (16 Bit)	L	L	H	Data Out			Active
Read (8 Bit)	L	L	L	Data Out (Lower 8bit)	High Impedance	L	Active
Read (8 Bit)	L	L	L	Data Out (Upper 8bit)	High Impedance	H	Active
Output Deselect	L	H	*	High Impedance			Active
Standby	H	*	*	High Impedance			Standby

H : VIH L : VIL * : VIH or VIL

MAXIMUM RATINGS

SYMBOL	ITEM	RATING	UNIT
VDD	Power Supply Voltage	- 0.5~7.0	V
VIN	Input Voltage	- 0.5~VDD	V
VOUT	Output Voltage	0~VDD	V
PD	Power Dissipation	1.0 / 0.6*	W
TSTG	Storage Temperature	- 55~150	°C
TOPR	Operating Temperature	0~70	°C
TSOLDER	Soldering Temperature · Time	260 · 10	°C · sec

*.SOP

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

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
V_{IL}	Input Low Voltage	-0.3	-	0.8	V

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

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	$V_{OUT} = 0 \sim V_{DD}$	-	± 5.0	μA
I_{OH}	Output High Current	$V_{OH} = 2.4\text{V}$	-1.0	-	mA
I_{OL}	Output Low Current	$V_{OL} = 0.4\text{V}$	2.0	-	mA
I_{DDS1}	Standby Current	$\overline{CE} = V_{IH}$	-	2	mA
I_{DDS2}		$\overline{CE} = V_{DD} - 0.2\text{V}$	-	20	μA
I_{DDO1}	Operating Current	$V_{IN} = V_{IH}/V_{IL}$, $t_{\text{cycle}} = 150\text{ns}$	-	60	mA
I_{DDO2}		$V_{IN} = V_{DD} - 0.2\text{V} / 0.2\text{V}$, $t_{\text{cycle}} = 150\text{ns}$	-	50	mA

CAPACITANCE $f = 1\text{MHz}$, $T_a = 25^\circ\text{C}$

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
C_{IN}	Input Capacitance	$V_{IN} = 0\text{V}$	-	10	pF
C_{OUT}	Output Capacitance	$V_{OUT} = 0\text{V}$	-	12	pF

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

A.C. CHARACTERISTICS (Ta = 0~70°C, VDD = 5V ± 10%)

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
t _{CYC}	Cycle Time	150	–	ns
t _{ACC}	Address Access Time	–	150	ns
t _{CE}	Chip Enable Access Time	–	150	ns
t _{BT}	BYTE Access Time	–	150	ns
t _{OE}	Output Enable Access Time	–	70	ns
t _{CEO}	Output Disable Time from $\overline{CE}$	–	60	ns
t _{OED}	Output Disable Time from $\overline{OE}$	–	60	ns
t _{STD}	Output Disable Time from BYTE	–	60	ns
t _{OH}	Output Hold Time	5	–	ns

A.C. TEST CONDITIONS

Output Load

: 100pF + 1TTL

Input Levels

: 0.6V , 2.4V

Timing Measurement Reference Levels

Input : 0.8V , 2.2V

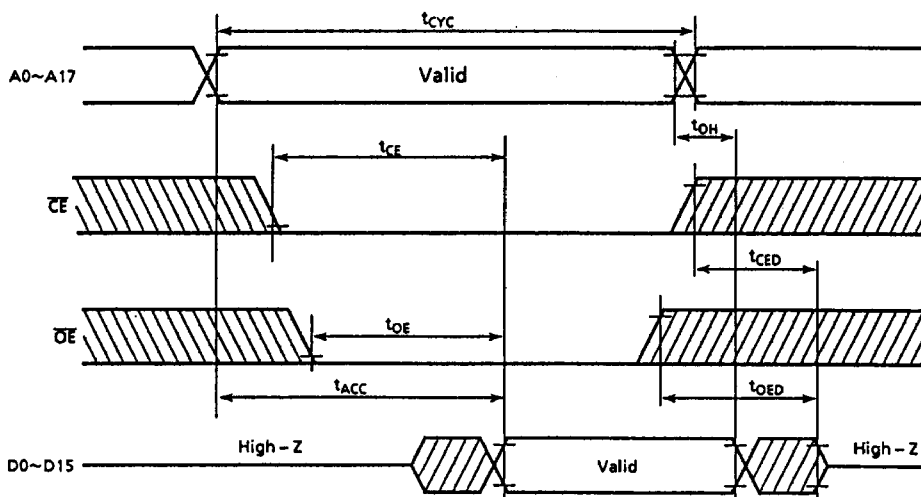
Output : 0.8V , 2.0V

Input Rise and Fall Time

: 5ns

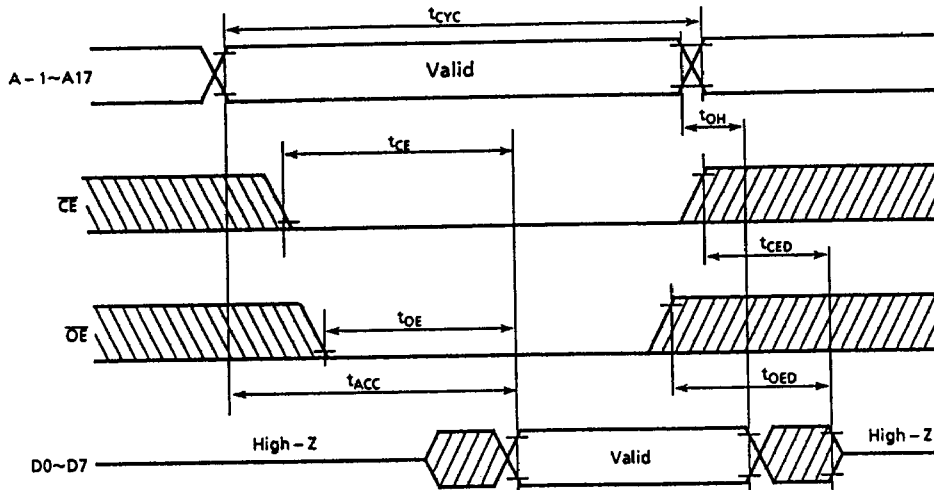
TIMING WAVEFORMS

WORD - WIDE READ MODE



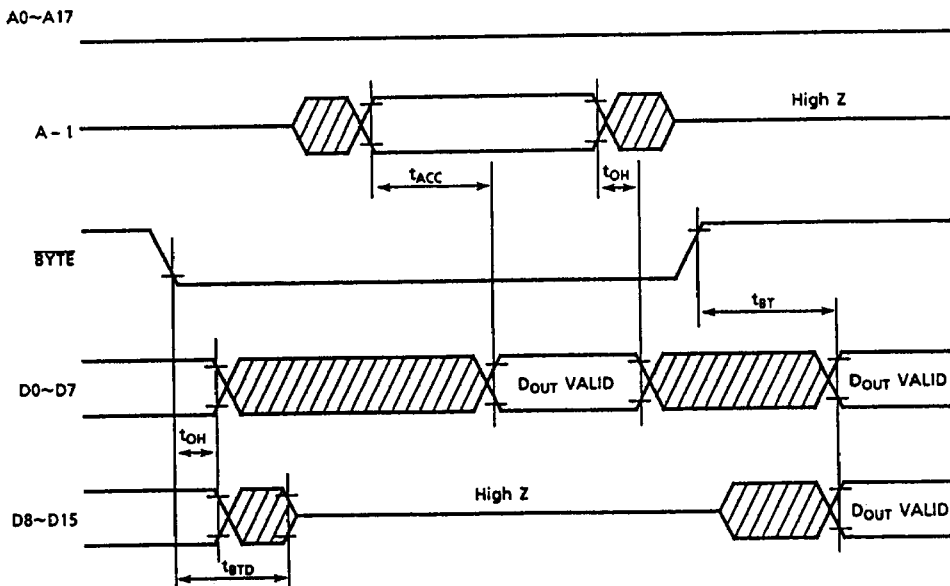
Note: $\overline{\text{BYTE}} \approx V_{IH}$

BYTE-WIDE READ MODE



Note: $\overline{BYTE} = V_{IL}$

BYTE TRANSITION



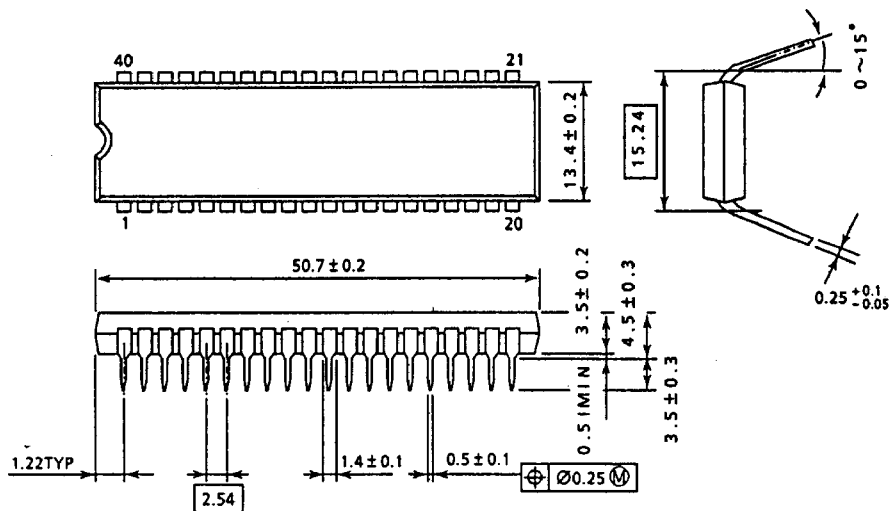
Note: $\overline{CE} = V_{IL}$, $\overline{OE} = V_{IL}$

OUTLINE DRAWINGS

- Plastic DIP

DIP40-P-600

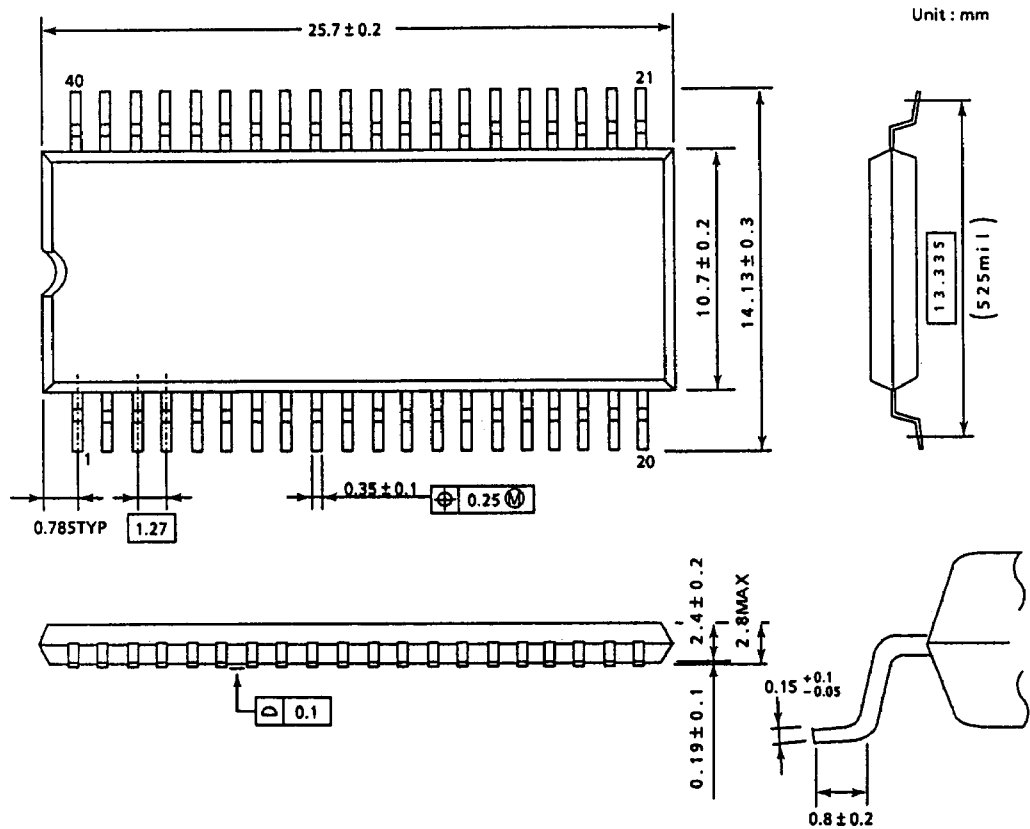
Unit: mm



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

OUTLINE DRAWINGS

- Plastic SOP
- SOP40-P-525



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