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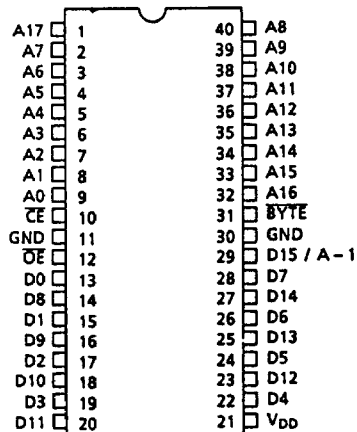
The TC534200P/F is most suitable for the program memory, data memory, and character generater.

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 : 20μA (Max.)

- Fully Static Operation
- All Inputs and Outputs : TTL Compatible
- Three State Outputs
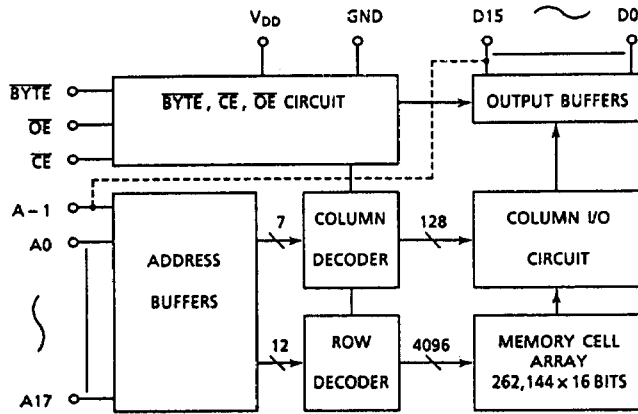- TC534200P : DIP40−P−600
- TC534200F : SOP40−P−525

PIN CONNECTION (TOP VIEW)

A17	1		40	A8
A7	2		39	A9
A6	3		38	A10
A5	4		37	A11
A4	5		36	A12
A3	6		35	A13
A2	7		34	A14
A1	8		33	A15
A0	9		32	A16
CE	10		31	BYTE
GND	11		30	GND
OE	12		29	D15 / A−1
D0	13		28	D7
D8	14		27	D14
D1	15		26	D6
D9	16		25	D13
D2	17		24	D5
D10	18		23	D12
D3	19		22	D4
D11	20		21	V$_{DD}$

PIN NAMES

A0~A17	Address inputs
D0~D14	Data Outputs
CE	Chip Enable Input
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	$\overline{CE}$	$\overline{OE}$	$\overline{BYTE}$	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 Inpedance			Active
Standby	H	*	*	High Inpedance			Standby

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

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

*.SOP

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D.C. OPERATING CONDITIONS (Ta = 0~70°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 (Ta = 0~70°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	$V_{OH}=2.4V$	− 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}		$\overline{CE}=V_{DD}-0.2V$	−	20	μA
I_{DDO1}	Opereating Current	$V_{IN}=V_{IH}/V_{IL}$, $t_{cycle}=150ns$	−	60	mA
I_{DDO2}		$V_{IN}=V_{DD}-0.2V/0.2V, t_{cycle}=150ns$	−	50	mA

CAPACITANCE   f = 1MHz , Ta = 25°C

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

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

TC534200P/F−15

A.C. CHARACTERISTICS (Ta = 0~70°C, V_DD = 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}	$\overline{BYTE}$ Access Time	–	150	ns
t_{OE}	Output Enable Access Time	–	70	ns
t_{CED}	Output Disable Time from $\overline{CE}$	–	60	ns
t_{OED}	Output Disable Time from $\overline{OE}$	–	60	ns
t_{BTD}	Output Disable Time from $\overline{BYTE}$	–	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

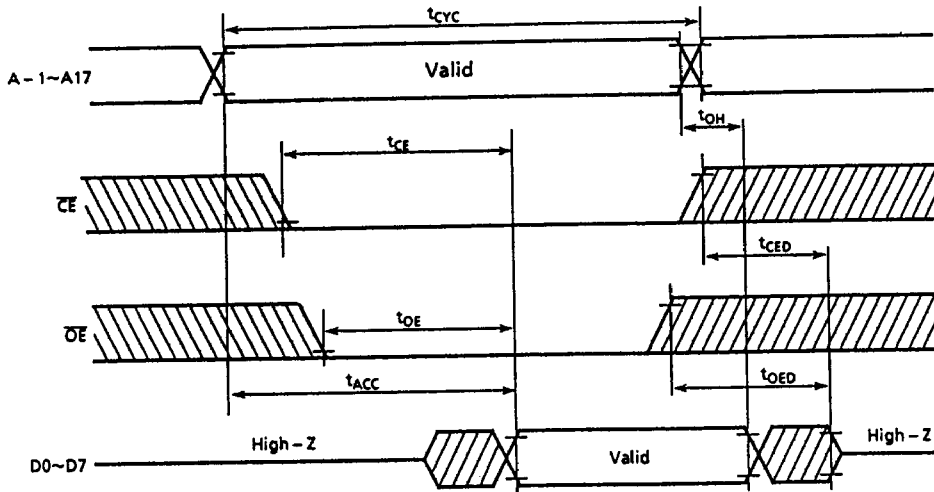   Output : 0.8V , 2.0V

Input Rise and Fall Time   : 5ns

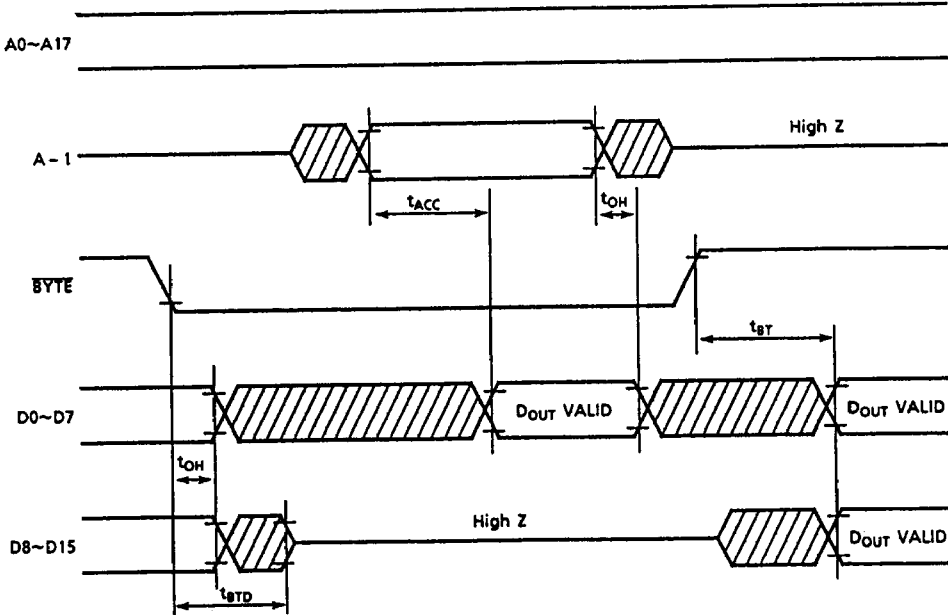## TIMING WAVEFORMS

WORD − WIDE READ MODE

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

BYTE-WIDE READ MODE

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

$\overline{BYTE}$ TRANSITION

Note: $\overline{CE}$ = V_{IL}, $\overline{OE}$ = V_{IL}
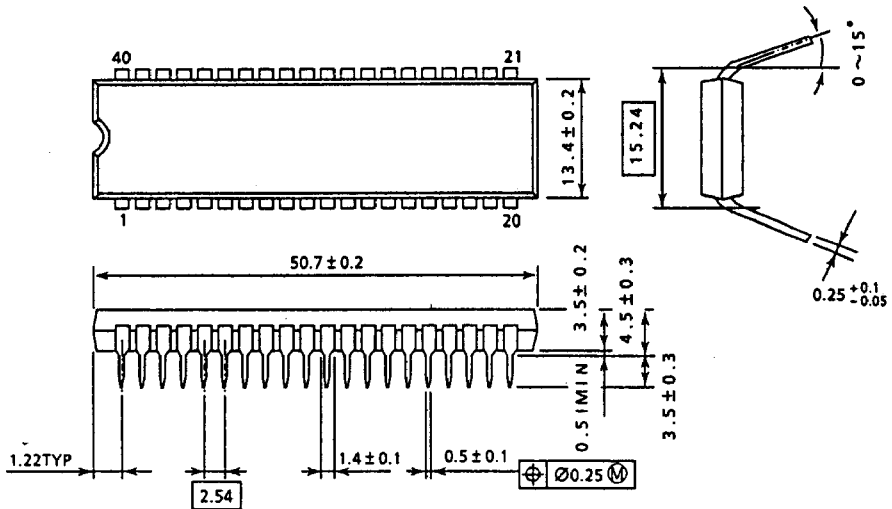
TC534200P/F−15

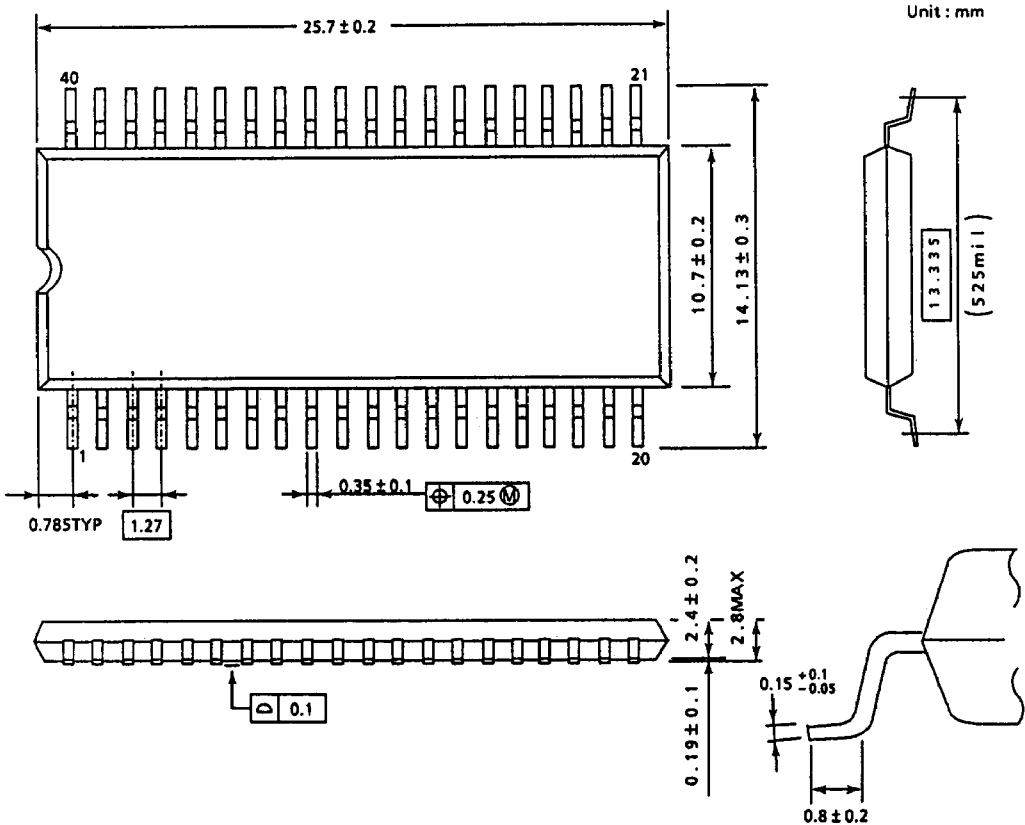## OUTLINE DRAWINGS

● 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

Unit : mm

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