

16M BIT (1M WORD × 16 BIT/2M WORD × 8BIT) CMOS MASK ROM

PRELIMINARY**DESCRIPTION**

The TC5316200P/F is a 16,777,216 bits read only memory organized as 1,048,576 words by 16 bits when **BYTE** is logical high, and is organized as 2,097,152 words by 8 bits when **BYTE** is logical low.

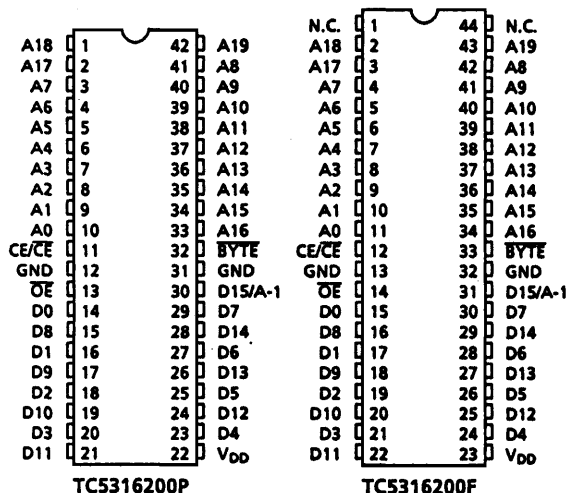
The TC5316200P/F is most suitable for the program memory, data memory, and character generator.

The TC5316200P/F has a programmable chip enable input **CE/CE** for device selection.

The TC5316200P/F is packaged in a standard 600mil 42pin DIP, or 600mil 44 pin SOP.

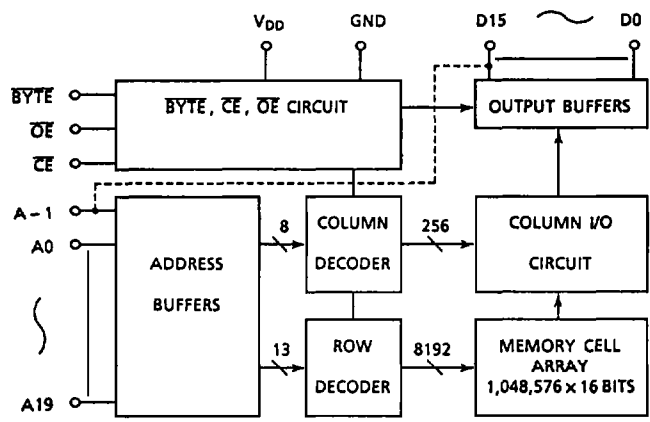
FEATURES

- Single 5V Power Supply
- Access Time : 200ns (Max.)
- Power Dissipation
 - Operating Current : 50mA (Max.)
 - Standby Current : 100μA (Max.)
- Fully Static Operation
- All Inputs and Outputs : TTL Compatible
- Three State Outputs
- Programmable Chip Enable
- 42pin 600mil width Plastic DIP
- 44pin 600mil width Plastic SOP

PIN CONNECTION (TOP VIEW)**PIN NAMES**

A0~A19	Address Inputs
D0~D14	Data Outputs
CE/CE	Chip Enable Input
OE	Output Enable Input
D15/A-1	Data Output/Address Input
BYTE	Word, Byte selection Input
VDD	Power Supply
GND	Ground
N.C.	No Connection

BLOCK DIAGRAM



MODE SELECTION

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

H : V_{IH} L : V_{IL} * : V_{IH} 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

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}		$\overline{CE} = V_{DD} - 0.2\text{V}$	–	100	μA
I_{DDO1}	Operating Current	$V_{IN} = V_{IH} / V_{IL}$, $t_{\text{cycle}} = 200\text{ns}$	–	60	mA
I_{DDO2}		$V_{IN} = V_{DD} - 0.2\text{V} / 0.2\text{V}$, $t_{\text{cycle}} = 200\text{ns}$	–	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 ($T_a = 0 \sim 70^\circ\text{C}$, $V_{DD} = 5V \pm 10\%$)

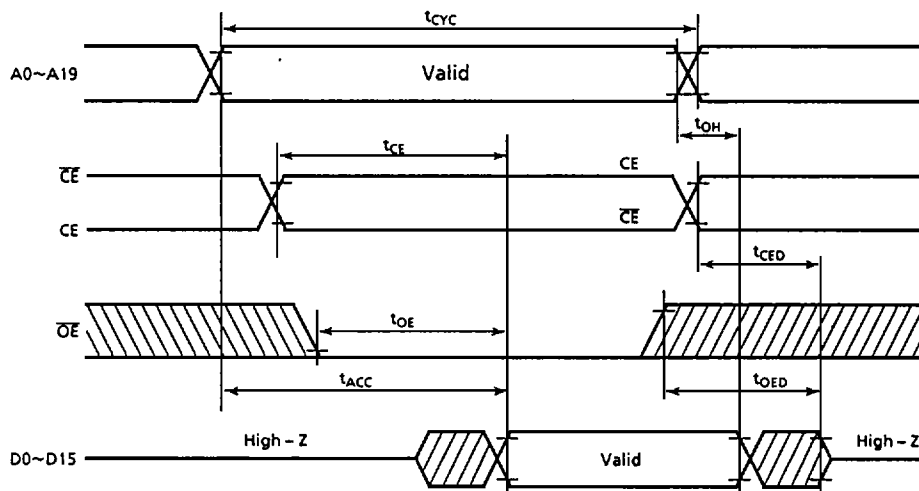
SYMBOL	PARAMETER	MIN.	MAX.	UNIT
t_{CYC}	Cycle Time	200	–	ns
t_{ACC}	Address Access Time	–	200	ns
t_{CE}	Chip Enable Access Time	–	200	ns
t_{BT}	BYTE Access Time	–	200	ns
t_{OE}	Output Enable Access Time	–	70	ns
t_{CED}	Output Disable Time from $\overline{CE}$	–	60	ns
t_{OED}	Output Disable Time from $\overline{OE}$	–	60	ns
t_{BTD}	Output Disable Time from 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

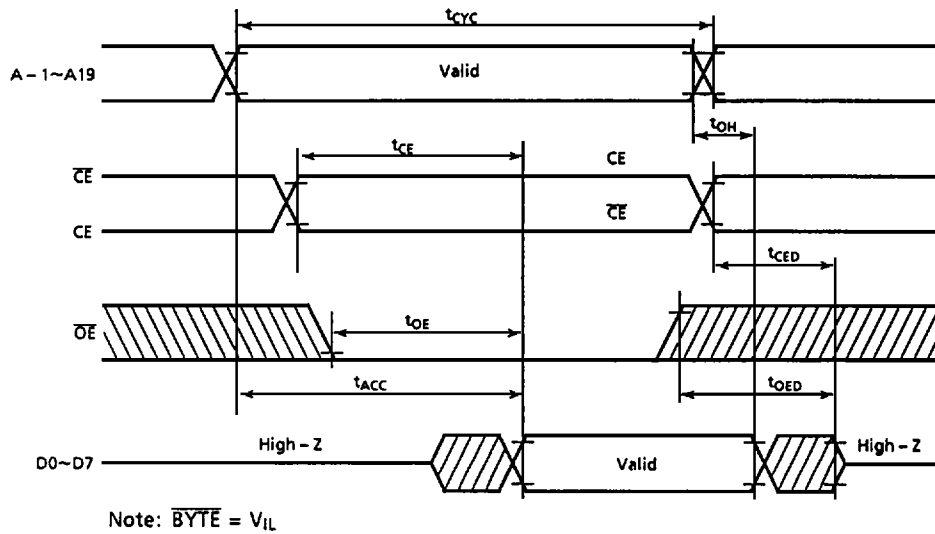
TIMING WAVEFORMS

WORD – WIDE READ MODE

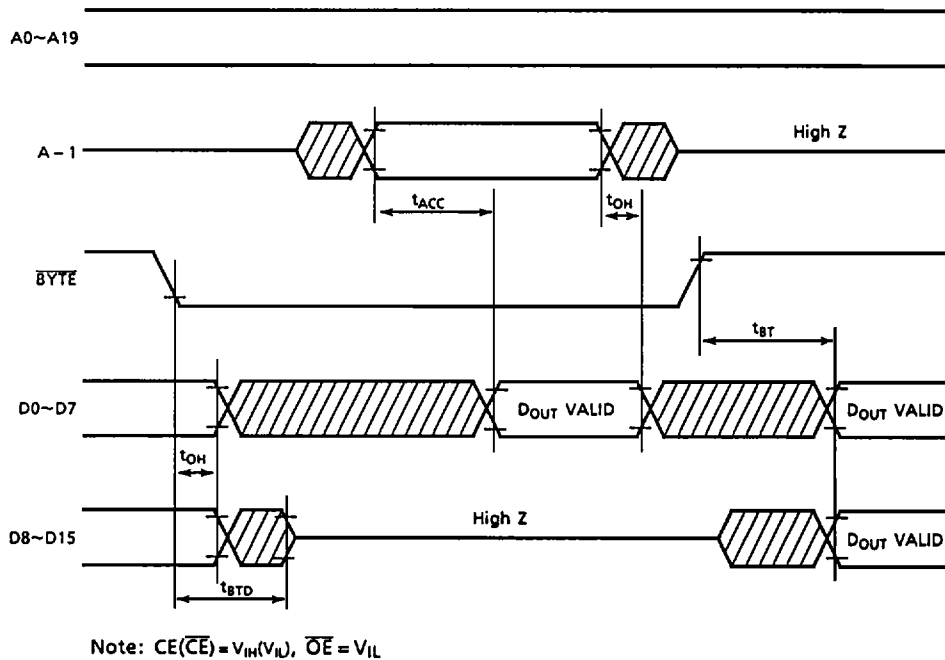


Note: $\overline{BYTE} = V_{IH}$

BYTE-WIDE READ MODE



BYTE TRANSITION

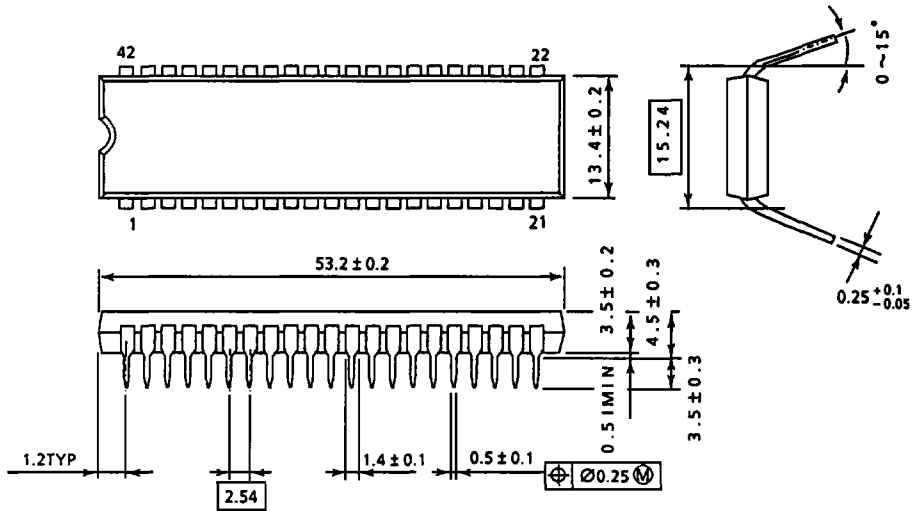


OUTLINE DRAWINGS

● Plastic DIP

DIP42-P-600.

Unit : mm

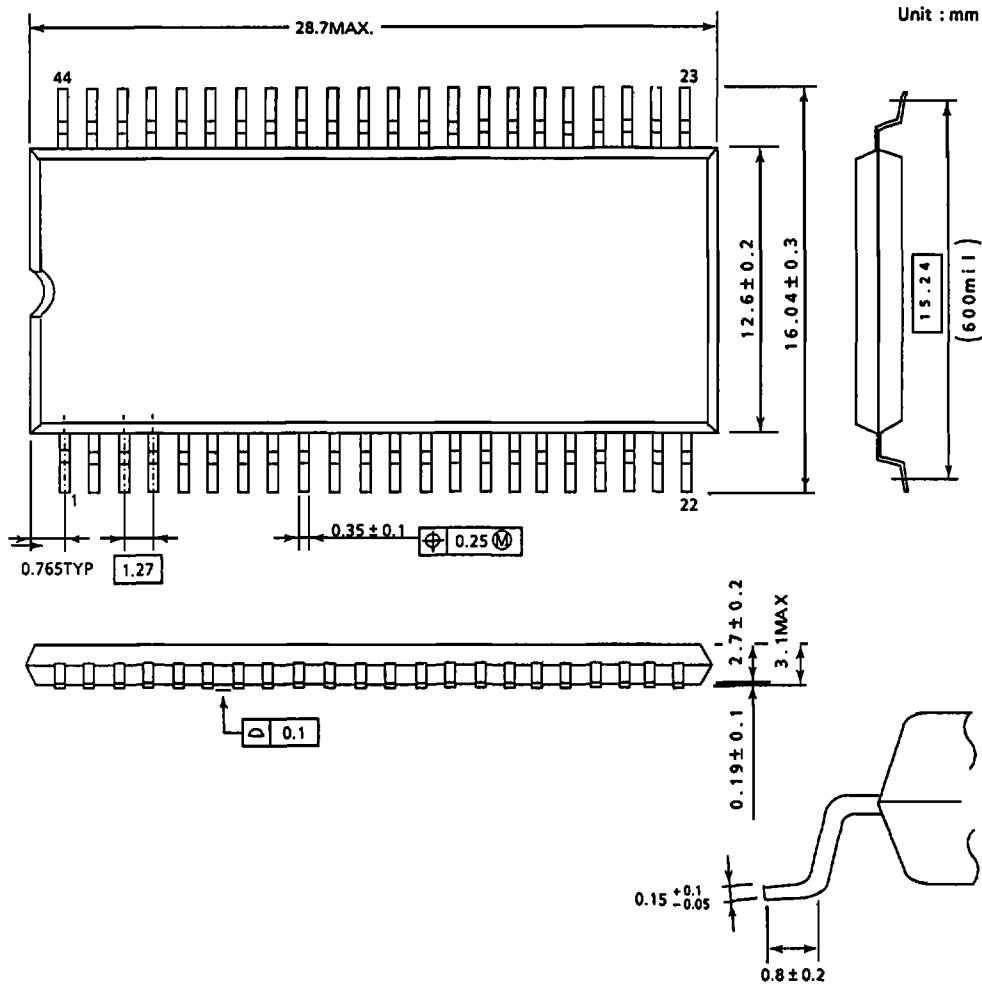


Note : Package width and length do not include mold protrusion, allowable mold protrusion is 0.15mm.

OUTLINE DRAWINGS

• Plastic SOP

SOP44-P-600



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