1M BIT (128K WORD x 8 BIT) CMOS MASK ROM

SILICON GATE CMOS

DESCRIPTION

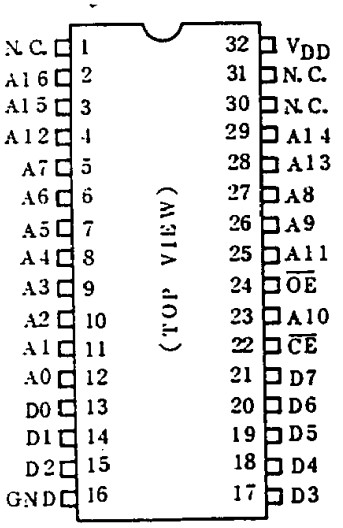
The TC531001CP/CF is a 1,048,576 bits read only memory organized as 131,072 words by 8 bits with a low bit cost, thus being suitable for use in program memory of microprocessor, and data memory, especially character generator. The TC531001CP/CF using CMOS technology is most suitable for low power applications where battery operations are required.
The TC531001CP/CF has one chip enable input $\overline{CE}$ for device selection.

FEATURES

TC531001CP/CF	120ns Version	150ns Version
Access Time (max.)	120ns	150ns
Power Dissipation Operating Current (max.)	40mA	35mA
Power Dissipation Standby Current (max.)	20μA	20μA

- Single 5V Power Supply
- All Inputs and Outputs: TTL Compatible
- Three State Outputs
- Fully Static Operation
- Package Plastic DIP: TC531001CP
  Plastic FP : TC531001CF

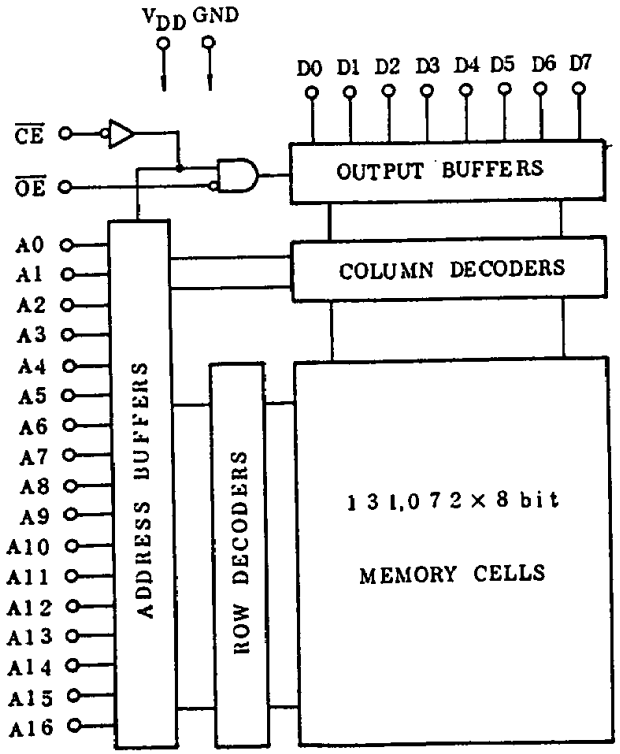
PIN CONNECTION



PIN NAMES

A0 ∿ A16	Address Inputs
D0 ∿ D7	Data Outputs
$\overline{OE}$	Output Enable Input
$\overline{CE}$	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 ~ 70	°C
T_{SOLDER}	Soldering Temperature Time	260 · 10	°C·sec

Note: * Plastic FP

DC OPERATING CONDITIONS (Ta=-40~70°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_{IL}	Input Low Voltage	-0.3	-	0.8	

DC and OPERATING CHARACTERISTICS (Ta=-40~70°C, V_{DD}=5V±10%)

SYMBOL	PARAMETER	CONDITION		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}=0V~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		3.2	-	mA
I_{DDS1}	Standby Current	$\overline{CE}$=2.2V		-	2	mA
I_{DDS2}	Standby Current	$\overline{CE}$=V_{DD}-0.2V		-	200	μA
I_{DDO1}	Operating Current	V_{IN}=V_{IH}/V_{IL}, I_{OUT}=0mA	t_{cycle}=120ns	-	50	mA
			t_{cycle}=150ns	-	45	
I_{DDO2}		V_{IN}=V_{DD}-0.2V/0.2V, I_{OUT}=0mA	t_{cycle}=120ns	-	40	
			t_{cycle}=150ns	-	35	

CAPACITANCE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
C_{IN}	Input Capacitance	f=1MHz, Ta=25°C	-	10	pF
C_{OUT}	Output Capacitance	f=1MHz, Ta=25°C	-	10	

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

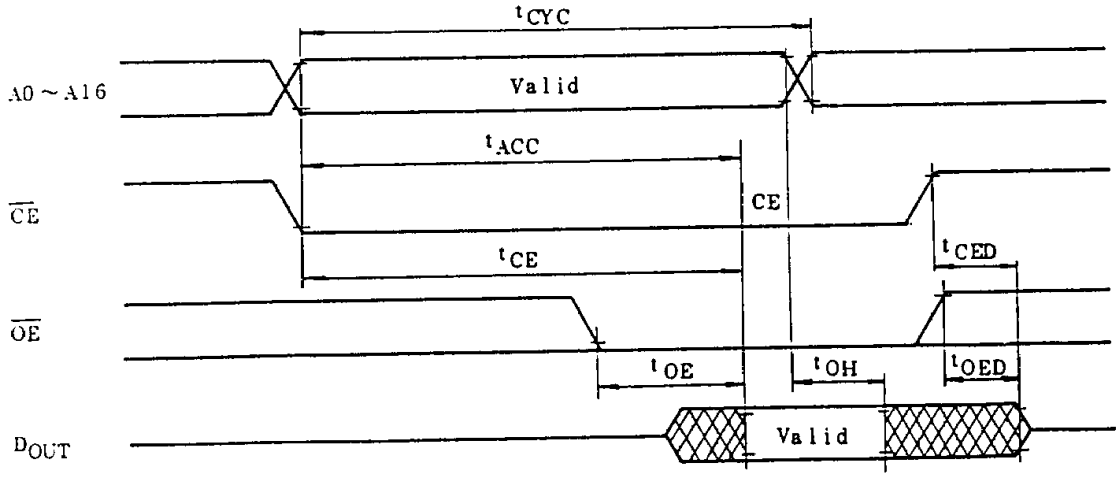
AC CHARACTERISTICS (Ta=-40∼70°C, V_{DD}=5V±10%)

SYMBOL	PARAMETER	120ns Version		150ns Version		UNIT
		MIN.	MAX.	MIN.	MAX.	
t_{cycle}	Cycle Time	120	-	150	-	ns
t_{ACC}	Access Time	-	120	-	150	
t_{CE}	Chip Enable Access Time	-	120	-	150	
t_{OE}	Output Enable Access Time	-	70	-	70	
t_{CED}	Output Disable Time from $\overline{CE}$	-	50	-	50	
t_{OED}	Output Disable Time from $\overline{OE}$	-	50	-	50	
t_{OH}	Output Hold Time	5	-	5	-	

AC 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

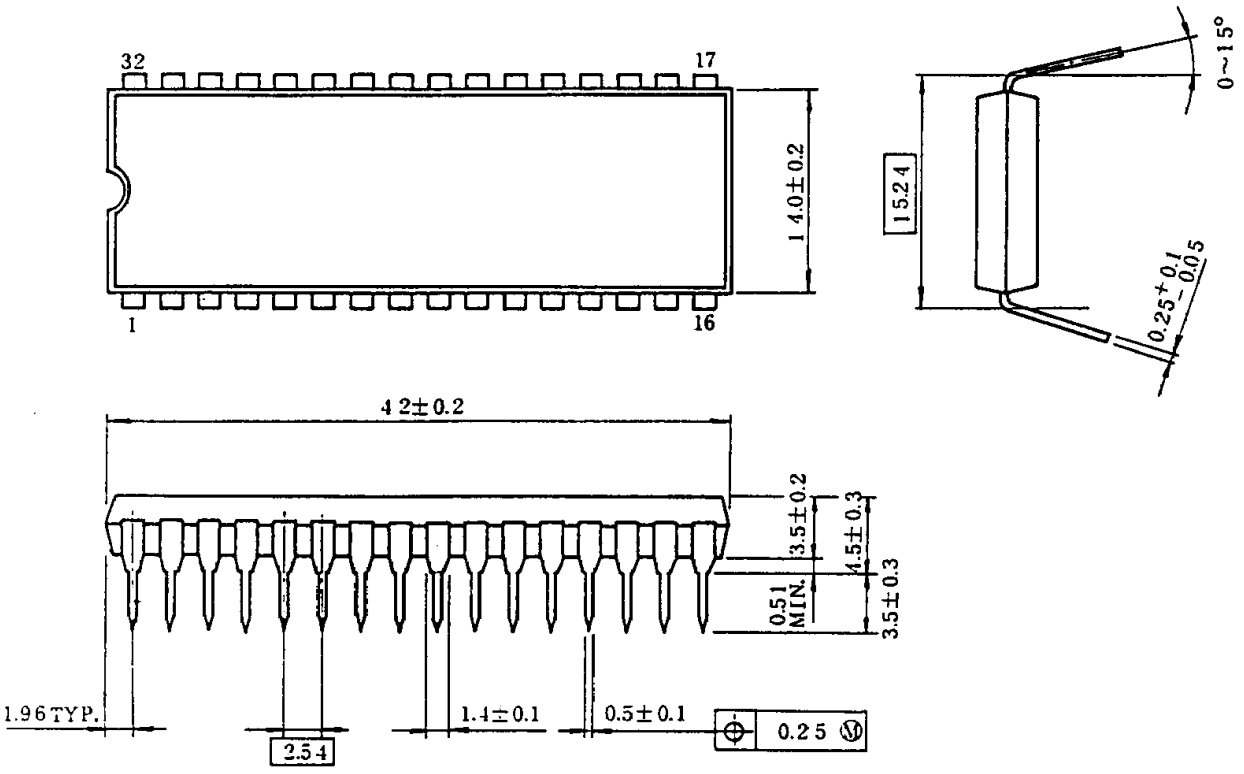
MODE	$\overline{CE}$	$\overline{OE}$	A0 ∼ 16	Outputs	Power
Read	L	L	Valid	Data Out	Operating
Standby	H	*	*	High-Z	Standby
Output Deselect	L	H	*	High-Z	Operating

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

OUTLINE DRAWINGS

Plastic DIP (DIP32-P-600)

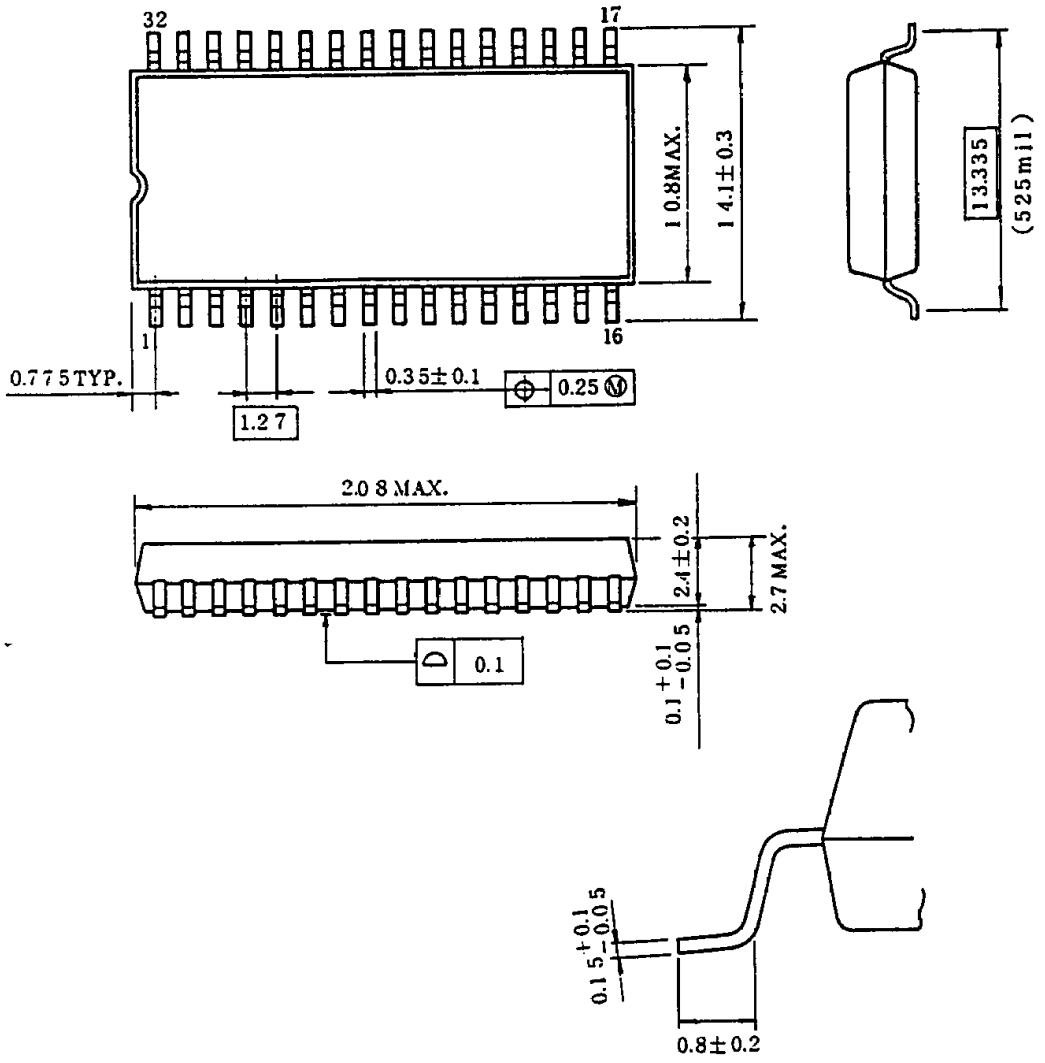
Unit in mm



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

Plastic FP (SOP32-P-525)

Unit in mm



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