

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 micro-processor, and data memory, especially character generator. The TC531001CP/CF using CMOS technology is most suitable for low power applications where battery operations are required.

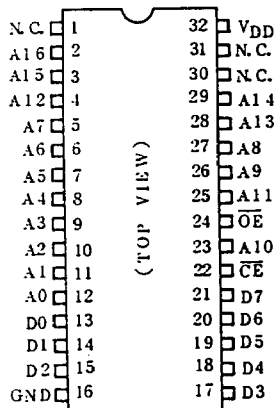
The TC531001CP/CF has one chip enable input  $\overline{CE}$  for device selection.

## FEATURES

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

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

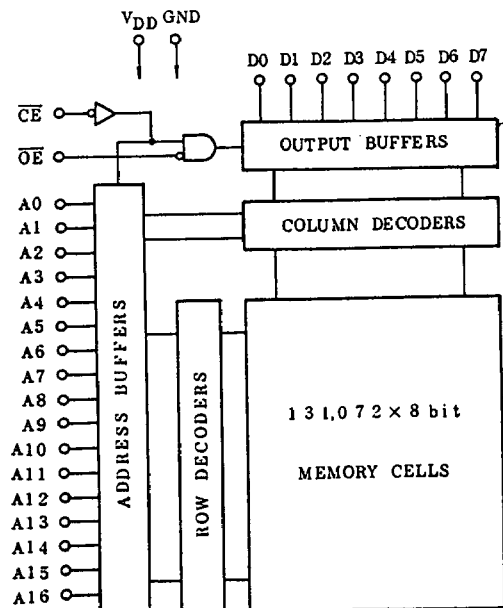
## PIN CONNECTION



## PIN NAMES

A0 ~ A16	Address Inputs
D0 ~ D7	Data Outputs
$\overline{OE}$	Output Enable Input
$\overline{CE}$	Chip Enable Input
VDD	Power Supply
GND	Ground
N.C.	No Connection

## BLOCK DIAGRAM



## MAXIMUM RATINGS

SYMBOL	ITEM	RATING	UNIT
V <sub>DD</sub>	Power Supply Voltage	-0.5 ~ 7.0	V
V <sub>IN</sub>	Input Voltage	-0.5 ~ V <sub>DD</sub>	V
V <sub>OUT</sub>	Output Voltage	0 ~ V <sub>DD</sub>	V
P <sub>D</sub>	Power Dissipation	1.0/0.6 *	W
T <sub>STG</sub>	Storage Temperature	-55 ~ 150	°C
T <sub>OPR</sub>	Operating Temperature	-40 ~ 70	°C
T <sub>SOLDER</sub>	Soldering Temperature Time	260 • 10	°C•sec

Note: \* Plastic FP

## DC OPERATING CONDITIONS (Ta=-40~70°C)

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V <sub>DD</sub>	Power Supply Voltage	4.5	5.0	5.5	V
V <sub>IH</sub>	Input High Voltage	2.2	-	V <sub>DD</sub> +0.3	
V <sub>IL</sub>	Input Low Voltage	-0.3	-	0.8	

## DC and OPERATING CHARACTERISTICS (Ta=-40~70°C, V<sub>DD</sub>=5V±10%)

SYMBOL	PARAMETER	CONDITION		MIN.	MAX.	UNIT
I <sub>IL</sub>	Input Leakage Current	V <sub>IN</sub> =0 ~ V <sub>DD</sub>		-	±1.0	μA
I <sub>LO</sub>	Output Leakage Current	$\overline{CE}$ =V <sub>IH</sub> , V <sub>OUT</sub> =0V ~ V <sub>DD</sub>		-	±5.0	μA
I <sub>OH</sub>	Output High Current	V <sub>OH</sub> =2.4V		-1.0	-	mA
I <sub>OL</sub>	Output Low Current	V <sub>OL</sub> =0.4V		3.2	-	mA
I <sub>DD</sub> S1	Standby Current	$\overline{CE}$ =2.2V		-	2	mA
I <sub>DD</sub> S2	Standby Current	$\overline{CE}$ =V <sub>DD</sub> -0.2V		-	200	μA
I <sub>DD</sub> O1	Operating Current	V <sub>IN</sub> =V <sub>IH</sub> /V <sub>IL</sub> I <sub>OUT</sub> =0mA	t <sub>cycle</sub> =120ns	-	50	mA
			t <sub>cycle</sub> =150ns	-	45	
I <sub>DD</sub> O2		V <sub>IN</sub> =V <sub>DD</sub> -0.2V/0.2V I <sub>OUT</sub> =0mA	t <sub>cycle</sub> =120ns	-	40	
			t <sub>cycle</sub> =150ns	-	35	

## CAPACITANCE

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
C <sub>IN</sub>	Input Capacitance	f=1MHz, Ta=25°C	-	10	pF
C <sub>OUT</sub>	Output Capacitance	f=1MHz, Ta=25°C	-	10	

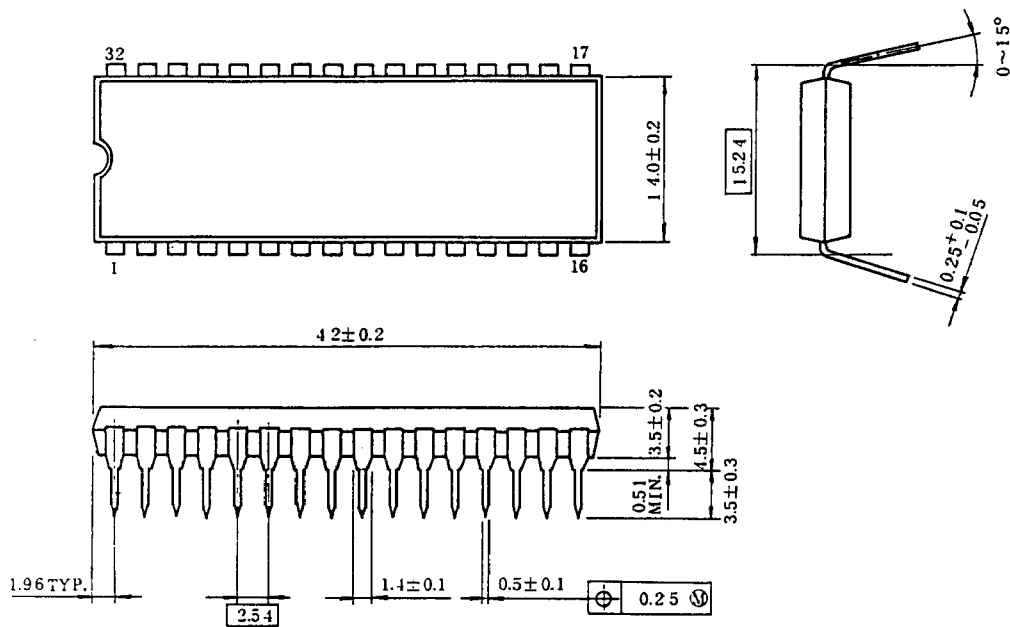
Note: This parameter is periodically sampled and is not 100% tested.



## OUTLINE DRAWINGS

Plastic DIP (DIP32-P-600)

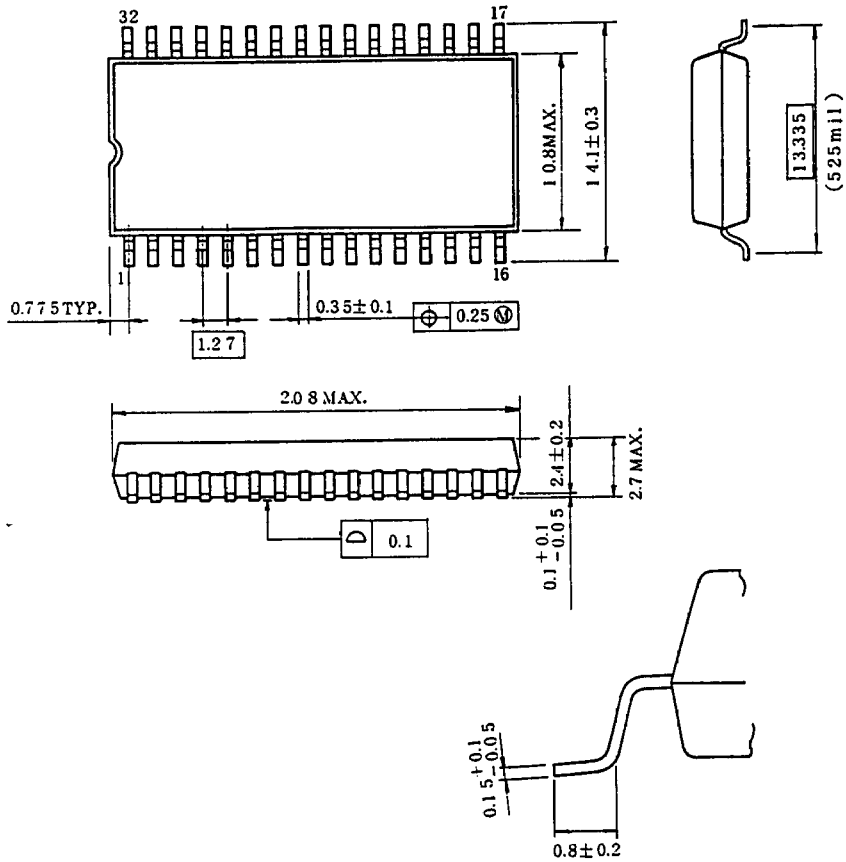
Unit in mm



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.