

32 MBIT (2,097,152 WORD BY 16 BITS) CMOS MASK ROM

DESCRIPTION

The TC5332202AP is a 33,554,432-bit Read Only Memory organized as 2,097,152 words by 16 bits .

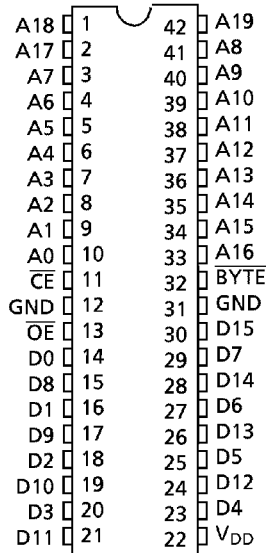
The TC5332202AP is most suitable for application such as program memory, data memory, and character generators.

The TC5332202AP is packaged in a standard 600 mil 42-pin DIP.

FEATURES

- Single 5 V Power Supply
- Access Time: 120 ns (max)
- Power Dissipation  
Operating Current: 45 mA (max)  
Standby Current : 100  $\mu$ A (max)
- Fully Static Operation
- All Inputs and Outputs: TTL Compatible
- Three State Outputs
- TC5332202AP: DIP42 – P – 600

PIN ASSIGNMENT (TOP VIEW)



TC5332202AP

PIN NAMES

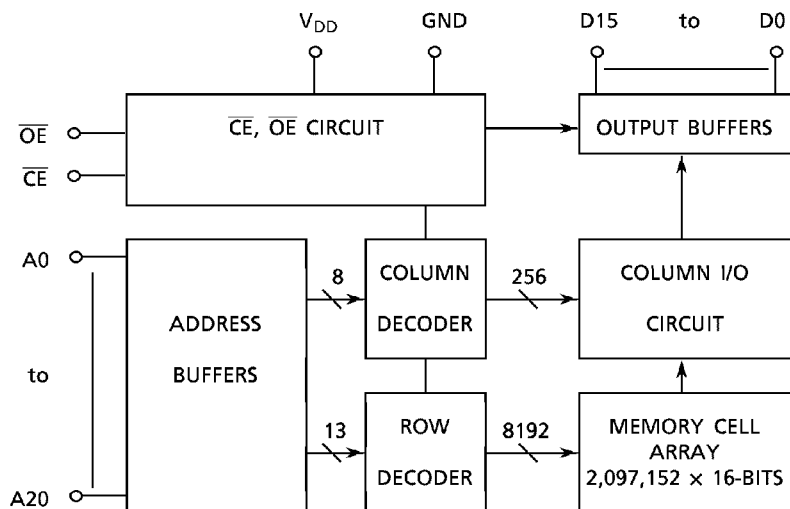
A0 to A20	Address Inputs
D0 to D15	Data Outputs
CE	Chip Enable Input
OE	Output Enable Input
V <sub>DD</sub>	Power Supply
GND	Ground

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BLOCK DIAGRAM



MODE SELECTION

MODE	$\overline{CE}$	$\overline{OE}$	D0 to D15	POWER
Read (16-Bit)	L	L	Data Out	Active
Output Deselect	L	H	High Impedance	Active
Standby	H	*	High Impedance	Standby

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

ABSOLUTE MAXIMUM RATINGS

SYMBOL	RATING	VALUE	UNIT
$V_{DD}$	Power Supply Voltage	- 0.5 to 7.0	V
$V_{IN}$	Input Voltage	- 0.5 to 7.0	V
$V_{OUT}$	Output Voltage	0 to $V_{DD} + 0.5$	V
$P_D$	Power Dissipation	0.6	W
$T_{STG}$	Storage Temperature	- 55 to 150	°C
$T_{OPR}$	Operating Temperature	- 10 to 70	°C
$T_{SOLDER}$	Soldering Temperature (10 s)	260	°C

**DC RECOMMENDED OPERATING CONDITIONS** ( $T_a = -10^\circ$  to  $70^\circ\text{C}$ )

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	–	$V_{DD} + 0.5$	V
$V_{IL}$	Input Low Voltage	– 0.3	–	0.8	V

**DC CHARACTERISTICS** ( $T_a = -10^\circ$  to  $70^\circ\text{C}$ ,  $V_{DD} = 5\text{ V} \pm 10\%$ )

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$I_{IL}$	Input Leakage Current	$V_{IN} = 0$ to $V_{DD}$	–	$\pm 5.0$	$\mu\text{A}$
$I_{LO}$	Output Leakage Current	$V_{OUT} = 0$ to $V_{DD}$	–	$\pm 5.0$	$\mu\text{A}$
$I_{OH}$	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	$\mu\text{A}$
$I_{DDO1}$	Operating Current	$V_{IN} = V_{IH}/V_{IL}$ , $t_{\text{cycle}} = 120\text{ ns}$ $I_{OUT} = 0\text{ mA}$	–	50	mA
$I_{DDO2}$		$V_{IN} = V_{DD} - 0.2\text{ V}/0.2\text{ V}$ $t_{\text{cycle}} = 120\text{ ns}$ , $I_{OUT} = 0\text{ mA}$	–	45	mA

**CAPACITANCE** ( $f = 1\text{ MHz}$ ,  $T_a = 25^\circ\text{C}$ ,  $V_{DD} = 5.0\text{ V}$ )

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$C_{IN}$	Input Capacitance	$V_{IN} = 0\text{ V}$	–	15	pF
$C_{OUT}$	Output Capacitance	$V_{OUT} = 0\text{ V}$	–	15	pF

Note: This parameter is periodically sampled and is not tested for every component.

**AC CHARACTERISTICS AND OPERATING CONDITIONS**

( $T_a = -10^\circ$  to  $70^\circ\text{C}$ ,  $V_{DD} = 5\text{ V} \pm 10\%$ )

SYMBOL	PARAMETER	MIN	MAX	UNIT
$t_{CYC}$	Cycle Time	120	-	ns
$t_{ACC}$	Address Access Time	-	120	ns
$t_{CE}$	Chip Enable Access Time	-	120	ns
$t_{OE}$	Output Enable Access Time	-	60	ns
$t_{CEE}$	Output Enable Time from $\overline{CE}$	0	-	ns
$t_{OEE}$	Output Enable Time from $\overline{OE}$	0	-	ns
$t_{CED}$	Output Disable Time from $\overline{CE}$	-	45	ns
$t_{OED}$	Output Disable Time from $\overline{OE}$	-	35	ns
$t_{OH}$	Output Hold Time	5	-	ns

**AC TEST CONDITIONS**

Output Load : 100 pF + 1 TTL  
 Input Levels : 0.6 V/2.4 V  
 Timing Measurement Reference Levels Input : 0.8 V/2.2 V  
 Output: 0.8 V/2.2 V  
 Input Rise and Fall Time : 5 ns

**16-BIT READ MODE**

