

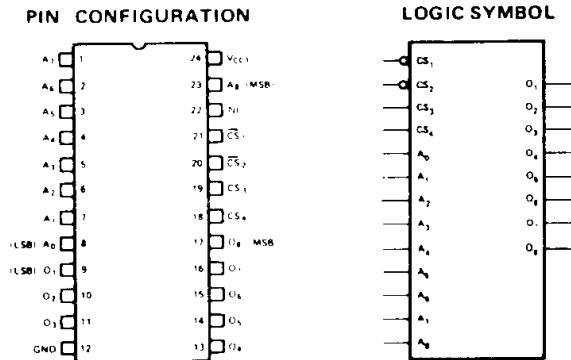
# M3604A, M3624A

## 4K (512 x 8) HIGH-SPEED PROM

MILITARY TEMPERATURE RANGE

- Military Temperature Range: -55°C to +125°C
- Fast Access Time — 90nsec Maximum
- Open Collector (M3604A) or Three-State (M3624A) Outputs
- Four Chip Select Inputs for Easy Memory Expansion
- Polycrystalline Silicon Fuse for Higher Reliability
- Standard Packaging — 24 Pin Hermetic Dual In-Line Lead Configuration

The M3604A and M3624A are military temperature range PROMs organized as 512 words by 8 bits. They are manufactured with all outputs high and logic output low levels can be electrically programmed in selected bit locations. The M3604A and M3624A, except for programming, have the same electrical specifications and are direct replacements to their predecessors, the M3604 and M3624.



### ABSOLUTE MAXIMUM RATINGS\*

- Temperature Under Bias . . . . . -65°C to +135°C
- Storage Temperature . . . . . -65°C to +160°C
- Output or Supply Voltages . . . . . -0.5V to 7 Volts
- All Input Voltages . . . . . -1.6V to 5.6V
- Output Currents . . . . . 100mA

\*COMMENT

Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or at any other condition above those indicated in the operational sections of this specification is not implied.

### D.C. CHARACTERISTICS $V_{CC} = +5.0V \pm 10\%$ , $T_A = -55^\circ C$ to $+125^\circ C$

Symbol	Parameter	Limits			Unit	Test Conditions
		Min.	Typ. <sup>[1]</sup>	Max.		
I <sub>FA</sub>	Address Input Load Current		-0.05	-0.25	mA	V <sub>CC</sub> = Max, V <sub>A</sub> = 0.45V
I <sub>FS</sub>	Chip Select Input Load Current		-0.05	-0.25	mA	V <sub>CC</sub> = Max, V <sub>S</sub> = 0.45V
I <sub>RA</sub>	Address Input Leakage Current			40	μA	V <sub>CC</sub> = Max, V <sub>A</sub> = Max
I <sub>RS</sub>	Chip Select Input Leakage Current			40	μA	V <sub>CC</sub> = Max, V <sub>S</sub> = Max
V <sub>CA</sub>	Address Input Clamp Voltage		-0.9	-1.5	V	V <sub>CC</sub> = Min, I <sub>A</sub> = -10mA
V <sub>CS</sub>	Chip Select Input Clamp Voltage		-0.9	-1.5	V	V <sub>CC</sub> = Min, I <sub>S</sub> = -10mA
V <sub>OL</sub>	Output Low Voltage		0.3	0.45	V	V <sub>CC</sub> = Min, I <sub>OL</sub> = 10mA
I <sub>CEX</sub>	Output Leakage Current			100	μA	V <sub>CC</sub> = Max, V <sub>CE</sub> = Max
I <sub>CC1</sub>	Power Supply Current (M3604A)			190	mA	V <sub>CC1</sub> = Max, V <sub>A0</sub> → V <sub>A8</sub> = 0V, $\overline{CS}_1 = \overline{CS}_2 = 0V, CS_3 = CS_4 = 5.5V$
V <sub>IL</sub>	Input "Low" Voltage			0.8	V	V <sub>CC</sub> = 5.0V, T <sub>A</sub> = 25°C
V <sub>IH</sub>	Input "High" Voltage	2.0			V	V <sub>CC</sub> = 5.0V, T <sub>A</sub> = 25°C

### M3624A ONLY

Symbol	Parameter	Min.	Typ. <sup>[1]</sup>	Max.	Unit	Test Conditions
I <sub>IO</sub>	Output Leakage for High Impedance Stage			100	μA	V <sub>O</sub> = Max or 0.45V, V <sub>CC</sub> = Max, $\overline{CS}_1 = \overline{CS}_2 = 2.4V$
I <sub>SC</sub> <sup>[2]</sup>	Output Short Circuit Current	-20	-25	-80	mA	V <sub>O</sub> = 0V
V <sub>OH</sub>	Output High Voltage	2.4			V	I <sub>OH</sub> = -2.4mA, V <sub>CC</sub> = 5V

- NOTES: 1. Typical values are at 25°C and at nominal voltage.  
 2. Unmeasured outputs are open during this test.

MILITARY TEMP.

**A.C. CHARACTERISTICS**  $V_{CC} = +5.0V \pm 10\%$ ,  $T_A = -55^\circ C$  to  $+125^\circ C$

SYMBOL	PARAMETER	LIMITS		UNIT	CONDITIONS
		TYP. <sup>[1]</sup>	MAX.		
$t_{A++}$ , $t_{A--}$ $t_{A+-}$ , $t_{A-+}$	Address to Output Delay	60	90	ns	$\overline{CS}_1 = \overline{CS}_2 = V_{IL}$ and $CS_3 = CS_4 = V_{IH}$ to Select the PROM
$t_{S++}$	Chip Select to Output Delay	20	45	ns	
$t_{S--}$	Chip Select to Output Delay	20	45	ns	

**CAPACITANCE** <sup>[2]</sup>  $T_A = 25^\circ C$ ,  $f = 1$  MHz

SYMBOL	PARAMETER	LIMITS		UNIT	TEST CONDITIONS
		TYP.	MAX.		
$C_{INA}$	Address Input Capacitance	4	10	pF	$V_{CC} = 5V$ $V_{IN} = 2.5V$
$C_{INS}$	Chip-Select Input Capacitance	6	10	pF	$V_{CC} = 5V$ $V_{IN} = 2.5V$
$C_{OUT}$	Output Capacitance	7	15	pF	$V_{CC} = 5V$ $V_{OUT} = 2.5V$

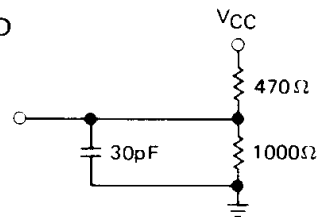
- NOTES: 1. Typical values are at 25°C and nominal voltage.  
2. This parameter is only periodically sampled and is not 100% tested.

**SWITCHING CHARACTERISTICS**

Conditions of Test:

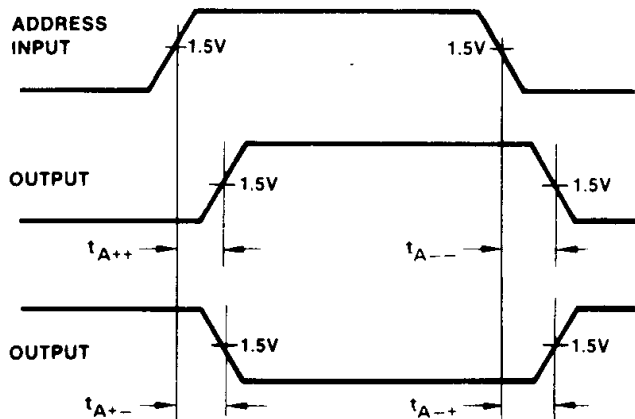
Input pulse amplitudes - 2.5V  
Input pulse rise and fall times of  
5 nanoseconds between 1 volt and 2 volts  
Speed measurements are made at 1.5 volt levels  
Output loading is 10 mA and 30 pF  
Frequency of test - 2.5 MHz

10 mA TEST LOAD



**WAVEFORMS**

ADDRESS TO OUTPUT DELAY



CHIP SELECT TO OUTPUT DELAY

