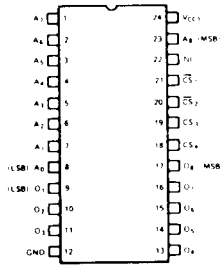
M3604A, M3624A
4K (512 x 8) HIGH-SPEED PROM

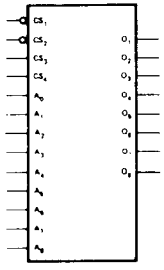
- **Military Temperature Range: -55° C to +125° C**
- **Fast Access Time — 90nsec Maximum**
- **Open Collector (M3604A) or Three-State (M3624A) Outputs**
- **Four Chip Select Inputs for Easy Memory Expansion**
- **Polycrystalline Silicon Fuse for Higher Reliability**
- **Standard Packaging — 24 Pin Hermetic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

PIN CONFIGURATION



LOGIC SYMBOL



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 ±10%, T_A = −55°C to +125°C

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

M3624A ONLY

Symbol	Parameter	Min.	Typ.[1]	Max.	Unit	Test Conditions
$\|I_O\|$	Output Leakage for High Impedance Stage			100	μA	V_O= Max or 0.45V, V_{CC}= Max, $\overline{CS}_1$=$\overline{CS}_2$=2.4V
I_{SC}[2]	Output Short Circuit Current	-20	-25	-80	mA	V_O = 0V
V_{OH}	Output High Voltage	2.4			V	I_{OH}=-2.4mA, V_{CC} = 5V

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

A.C. CHARACTERISTICS V_{CC} = +5.0V ±10%, T_A = −55°C to +125°C

SYMBOL	PARAMETER	LIMITS TYP.[1]	LIMITS MAX.	UNIT	CONDITIONS
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 [2] T_A = 25°C, f = 1 MHz

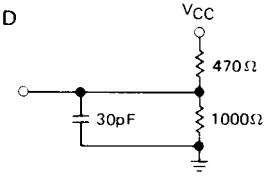
SYMBOL	PARAMETER	LIMITS TYP.	LIMITS MAX.	UNIT	TEST CONDITIONS
C_{INA}	Address Input Capacitance	4	10	pF	V_{CC} = 5V V_{IN} = 2.5V
C_{INS}	Chip-Select Input Capacitance	6	10	pF	V_{CC} = 5V V_{IN} = 2.5V
C_{OUT}	Output Capacitance	7	15	pF	V_{CC} = 5V V_{OUT} = 2.5V

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

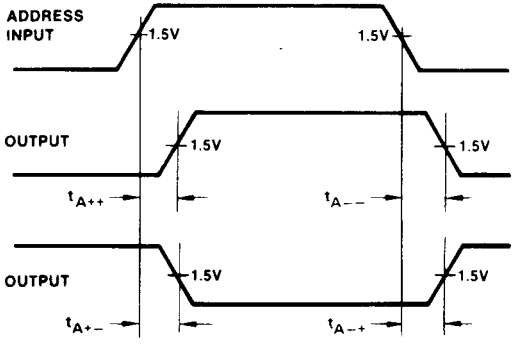
Conditions of Test:
Input pulse amplitudes · 2.5V
Input pulse rise and fall times of
5 nanoseconds between 1 volt and 2 volts
Speed measurements are made at 1.5 volt levels
Output loading is 10 mA and 30 pF
Frequency of test · 2.5 MHz

10 mA TEST LOAD



WAVEFORMS

ADDRESS TO OUTPUT DELAY



CHIP SELECT TO OUTPUT DELAY