UMC

UM2333

4K × 8-BIT NMOS MASK-PROGRAMMABLE ROM

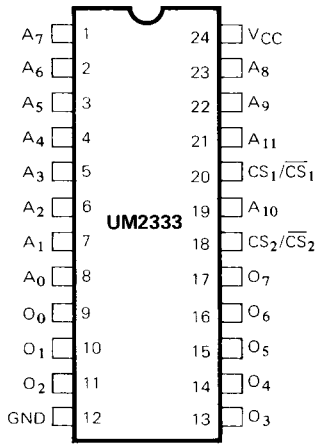
Features

- 4,096 x 8-bit organization
- Single +5V power supply
- Access times: 250/350/450 ns (max.)
- Operating Current: 100 mA (max.)
- N-channel silicon gate Technology
- Two programmable chip selects for output control
- 3-state outputs
- TTL compatible inputs and outputs
- Pin compatible with 2732 EPROM
- Available in 24 pin DIP package (UM2333) or in chip form (UM2333H)

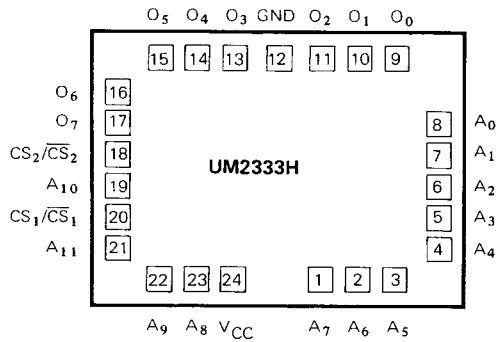
General Description

The UM2333 features a 32,768-bit Read Only Memory organized as 4096 words by 8 bits. The device is completely static in operation, and operates from a single +5V power supply. All inputs and outputs are TTL compatible. The two chip select inputs are programmable. Programming of the device is accomplished by a custom masking process. The UM2333 is designed for memory applications where high performance, large-bit storage, and simple interfacing are important design objectives.

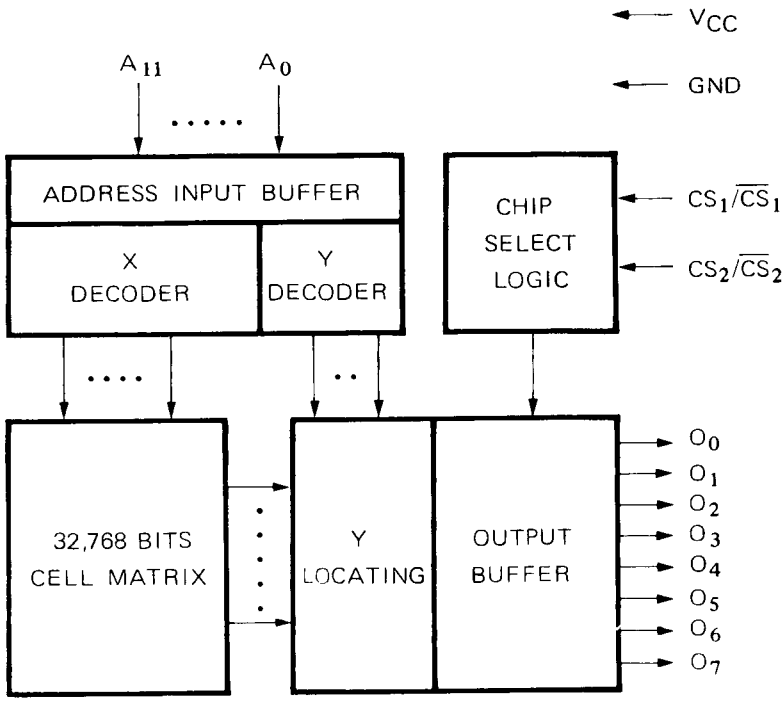
Pin Configuration



Pad Configuration



Block Diagram



Pin Description

Pin No.	Symbol	Description
1–8, 21–23, 19	$A_0 - A_{11}$	Address Input
9–11, 13–17	$O_0 - O_7$	Data Output
12	GND	Ground
24	V_{CC}	Power Supply
20	$CS_1/\overline{CS_1}$	Chip Select Input
18	$CS_2/\overline{CS_2}$	Chip Select Input

Recommended DC Operating Conditions

(T_A = 0°C to +70°C)

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{CC}	Supply Voltage	4.5	5.0	5.5	V
GND	Supply Voltage	0	0	0	V
V_{IH}	Input High Voltage	2.2		V_{CC}+ 0.3	V
V_{IL}	Input Low Voltage	−0.5		0.8	V

Absolute Maximum Ratings *

Ambient Operating Temperature . . . . . −10 to +80°C
Storage Temperature . . . . . −65 to +150°C
Supply Voltage to Ground Potential . . . . . −0.5 to 7.0V
Output Voltage . . . . . −0.5 to V_{CC} + 0.5V
Input Voltage . . . . . −0.5 to V_{CC} + 0.5V
Power Dissipation 1.0W

*Comments

Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

DC Electrical Characteristics (T_A = 0°C to +70°C, V_{CC} = 5.0V ± 10%, GND = 0V)

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V_{OH}	Output High Voltage	2.4		V_{CC}	V	I_{OH} = −400 μA
V_{OL}	Output Low Voltage			0.4	V	I_{OL} = 2.1 mA
V_{IH}	Input High Voltage	2.2		V_{CC} + 0.3	V	
V_{IL}	Input Low Voltage	−0.5		0.8		
I_{CC}	V_{CC} Current			100	mA	
$\|I_{LI}\|$	Input Leakage Current			10	μA	V_{IN} = V_{CC} = 5.25V
$\|I_{LO}\|$	Output Leakage Current			10	μA	V_{OUT} = V_{CC} = 5.25V

Capacitance

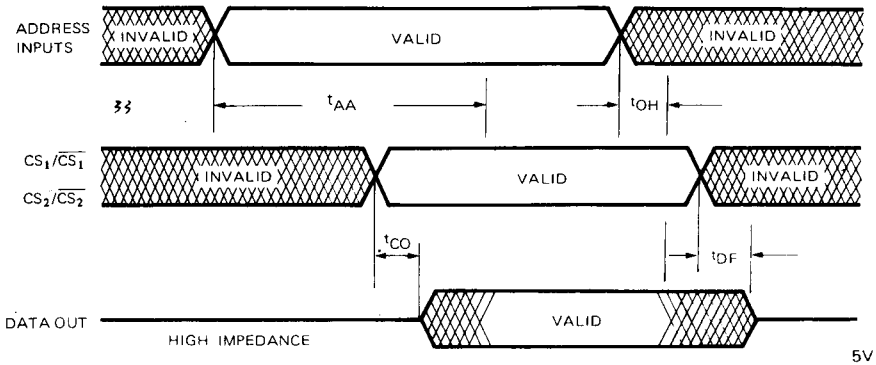
Symbol	Parameter	Min.	Max.	Unit	Test Conditions
C_I*	Input Capacitance		10	pF	T_A = 25°C
C_O*	Output Capacitance		10	pF	f = 1.0 MHz

*This parameter is periodically sampled and is not 100% tested.

AC Characteristics (T_A = 0°C to +70°C, V_{CC} = 5V ± 10%, GND = 0V)

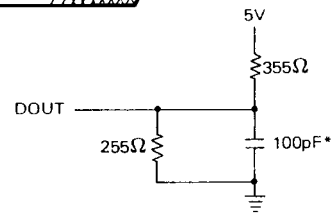
Symbol	Parameter	UM2333		UM2333-1		UM2333-2		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	
t_{AA}	Address access time		450		350		250	ns
t_{CO}	Output enable delay from $CS_1/\overline{CS_1}$ or $CS_2/\overline{CS_2}$		150		120		120	ns
t_{DF}	Output disable delay from $CS_1/\overline{CS_1}$ or $CS_2/\overline{CS_2}$	0	100	0	100	0	100	ns
t_{OH}	Output hold from address change	10		10		10		ns

Timing Waveform



AC Test Conditions

Input Pulse Levels	0.4 – 2.4V
Input Rise and Fall Times	20 ns
Timing Measurement Reference Level	V_{IL} = 1.5V V_{IH} = 1.5V V_{OL} = 0.8V V_{OH} = 2.0V
Output Load	See Figure 1



*Including scope and jig

Figure 1. Output Load Circuit

Ordering Information

Part No.	Access Time	Package
UM2333	450 ns	24L DIP
UM2333H	450 ns	Chip Form
UM2333-1	350 ns	24L DIP
UM2333H-1	350 ns	Chip Form
UM2333-2	250 ns	24L DIP
UM2333H-2	250 ns	Chip Form