UM23C1101

131,072 X 8 BIT CMOS MASK ROM

Features

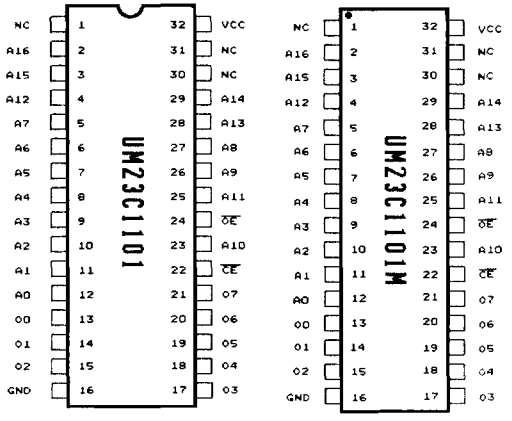
- 131,072 x 8 bit organization
- Single +5V power supply
- Access times: 100/120ns (max.)
- Current: Operating: 30mA (max.)
  Standby: 10 μA (max.)
- Three-state outputs for wired-OR expansion
- Full static operation
- TTL-compatible inputs and outputs
- Available in 32-pin DIP, 32-pin SOP packages or in DICE FORM

General Description

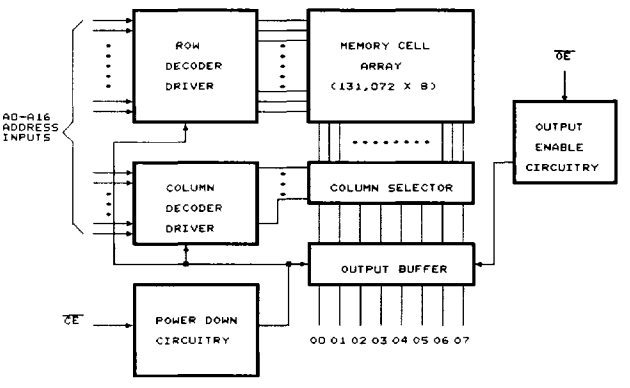
The UM23C1101 is a 131,072 word by 8 bit EPROM-compatible Read Only Memory. It is designed to be compatible with all microprocessors and similar applications where high performance, large-bit storage, and simple interfacing are important design considerations. The device is designed for use with operating voltages ranging from 4.5V to 5.5V.

The UM23C1101 offers automatic power-down controlled by the Chip Enable $\overline{CE}$ input. When $\overline{CE}$ goes high, the device will automatically power-down and remain in a low-power standby mode as long as $\overline{CE}$ remains high.

Pin Configurations



Block Diagram



Pin Descriptions

Pin No.	Symbol	Description
2 - 12, 23 25 - 29	A0 - A16	Address Inputs
13 - 15 17 - 21	O0 - O7	Data Outputs
16	GND	Ground
32	VCC	Power Supply
22	$\overline{CE}$	Chip Enable Input
24	$\overline{OE}$	Output Enable
1, 30, 31	NC	No Connection

Recommended DC Operating Conditions

(T_A = 0°C to + 70°C)

Symbol	Parameter	Min.	Max.	Unit
VCC	Supply Voltage	4.5	5.5	V
GND	Ground	0	0	V
VIH	Input High Voltage	2.2	VCC+0.3	V
VIL	Input Low Voltage	- 0.5	0.8	V

Absolute Maximum Ratings*

Operating Temperature . . . . . -10°C to + 80°C
Storage Temperature . . . . . -65°C to + 150°C
Supply Voltage to Ground Potential . . . . . -0.5 to + 7.0V
Output Voltage . . . . . -0.5V to VCC + 0.5V
Input Voltage . . . . . -0.5 to VCC + 0.5V
Power Dissipation 400mW

*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, VCC = 5.0V ± 10%, GND = 0V)

Symbol	Parameter	UM23C1101		Unit	Conditions	Note
		Min.	Max.			
VOH	Output High Voltage	2.4		V	IOH = -1mA	
VOL	Output Low Voltage		0.4	V	IOL = 3.2mA	

DC Electrical Characteristics (continued)

Symbol	Parameter	UM23C1101		Unit	Conditions	Note
		Min.	Max.			
VIH	Input High Voltage	2.2	VCC+0.3	V		
VIL	Input Low Voltage	-0.5	0.8	V		
$\|I_{LI}\|$	Input Leakage Current		+10	μA	VCC = max V_{IN} = VCC to GND	
$\|I_{LO}\|$	Output Leakage Current		+10	μA	VCC = max Vout = VCC to GND	1
I_{CC}	Operating Supply Current		30	mA	Tcyc = min.	2
I_{SB}	Standby Supply Current (TTL)		1.0	mA	$\overline{CE}$ = VIH	
I_{SBI}	Standby Supply Current (CMOS)		10	μA	$\overline{CE}$ = VCC - 0.2V	

Capacitance

Symbol	Parameter	Min.	Max.	Unit	Conditions	Note
C_I	Input Capacitance		10	pF	T_A = 25°C f = 1.0 MHz	3
C_O	Output Capacitance		10	pF		

AC Characteristics

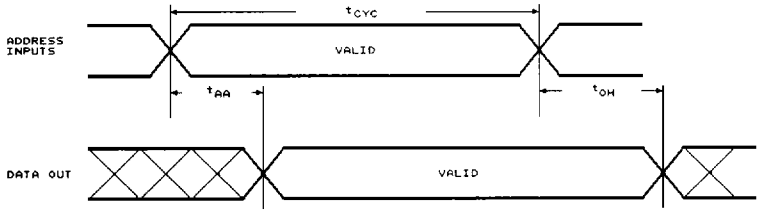
(T_A = 0°C to + 70°C, VCC = 5.0V ± 10%, GND = 0V)

Symbol	Parameter	100ns		120ns		Unit	Note
		Min.	Max.	Min.	Max.		
t_{CYC}	Cycle Time	100		120		ns	
t_{AA}	Address Access Time		100		120	ns	
t_{ACE}	Chip Enable Access Time		100		120	ns	
t_{AOE}	Output Enable Access Time		60		60	ns	
t_{OH}	Output Hold after Address Change	10		10		ns	
t_{LZ}	Output Low Z Delay	10		10		ns	4, 6
t_{HZ}	Output High Z Delay		25		25	ns	5, 6

Notes:
1. $\overline{OE}$ / $\overline{CE}$ = VIH (outputs unloaded)
2. $\overline{OE}$ / $\overline{CE}$ = VIL (outputs unloaded)
3. This parameter is periodically sampled and not 100% tested. All pins, except pins under test, are tied to AC ground.
4. Output LOW impedance delay (t_{LZ}) is measured from $\overline{CE}$ or $\overline{OE}$ going active.
5. Output HIGH impedance delay (t_{HZ}) is measured from $\overline{CE}$ or $\overline{OE}$ going inactive.
6. This parameter is sampled and not 100% tested.

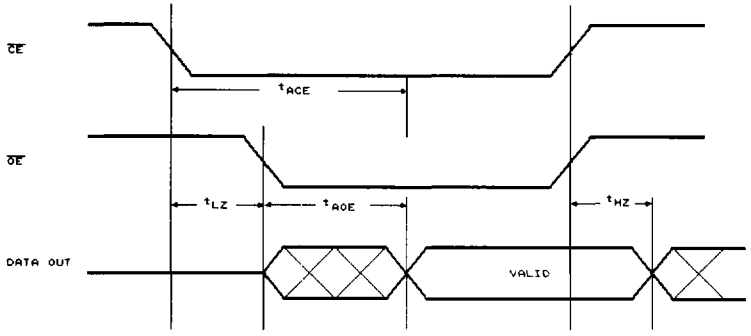
Timing Waveforms

Propagation Delay from Address ($\overline{CE}$ Going Enable)



Timing Waveforms (continued)

Propagation Delay from Chip Enable (Address Valid)



AC Test Conditions

	5.0V ± 10%
Input Pulse Level	0.4V - 2.4V
Input Rise and Fall Time	10 ns
Timing Measurement Reference Level	VIL = 0.8V VIH = 2.2V VOL = 0.8V VOH = 2.0V
Output Load	1 TTL gate and C_L = 100pF

Function Table

$\overline{CE}$	$\overline{OE}$	O0 - O7	Mode
A	A	Output Data	Read
I	X	Hi - Z	Power-Down
A	I	Hi - Z	Output Disable

1. $\overline{CE}$ and $\overline{OE}$ are active low.
2. "A" means "Active," "I" means "Inactive," and "X" means "Disregard."

Ordering Information

Part No.	Access Time (ns)	Package
UM23C1101	100/120	32L DIP
UM23C1101M	100/120	32L SOP
UM23C1101H	100/120	DICE FORM