



**PRELIMINARY**  
Notice: This is not a final specification. Some parametric limits are subject to change.

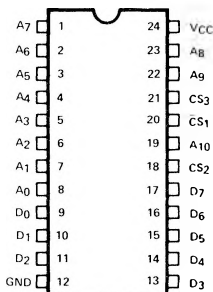
# 2316E 16,384 BIT STATIC ROM

- Fast Access Time—450 ns Max.
- Single +5V  $\pm$  10% Power Supply
- Intel MCS 80 and 85 Compatible
- Three Programmable Chip Selects for Simple Memory Expansion and System Interface
- EPROM/ROM Pin Compatible for Cost-Effective System Development
- Completely Static Operation
- Inputs and Outputs TTL Compatible
- Three-State Output for Direct Bus Interface

The Intel® 2316E is a 16,384-bit static, N-channel MOS read only memory (ROM) organized as 2048 words by 8 bits. Its high bit density is ideal for large, non-volatile data storage applications such as program storage. The three-state outputs and TTL input/output levels allow for direct interface with common system bus structures. The 2316E single +5V power supply and 450 ns access time are both ideal for usage with high performance microcomputers such as the Intel MCS™-80 and MCST™-85 devices.

A cost-effective system development program may be implemented by using the pin compatible Intel 2716 16K UV EPROM for prototyping and the lower cost 2316E ROM for production. The 2716 is fully compatible to the 2316E in all respects. The three 2316E programmable chip selects may be defined by the user and are fixed during the masking process. To simplify the conversion from 2716 prototyping to 2316E production, it is recommended that the 2316E programmable chip select logic levels be defined the same as that shown in the below data sheet pin configuration. This pin configuration and these chip select logic levels are the same as the 2716.

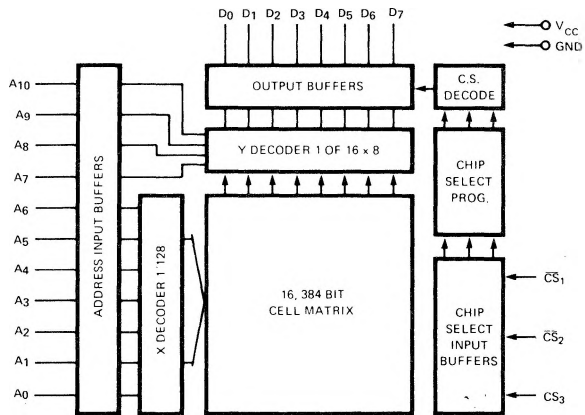
### PIN CONFIGURATION



### PIN NAMES

A0-A10	ADDRESS INPUTS
D7-D0	DATA OUTPUTS
CS1-CS3	CHIP SELECT INPUTS

### BLOCK DIAGRAM



**ABSOLUTE MAXIMUM RATINGS\***

Ambient Temperature Under Bias. . . . . -10°C to 80°C  
 Storage Temperature . . . . . -65°C to +150°C  
 Voltage On Any Pin With Respect  
   to Ground . . . . . -0.5V to +7V  
 Power Dissipation . . . . . 1.0 Watt

\*COMMENT: Stresses above those listed under "Absolute Maximum Ratings" 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 conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**D.C. AND OPERATING CHARACTERISTICS**

T<sub>A</sub> = 0°C to +70°C, V<sub>CC</sub> = 5V ±10%, unless otherwise specified.

SYMBOL	PARAMETER	LIMITS			UNIT	TEST CONDITIONS
		MIN.	TYP. <sup>(1)</sup>	MAX.		
I <sub>LI</sub>	Input Load Current (All Input Pins)			10	μA	V <sub>IN</sub> = 0 to 5.25V
I <sub>LOH</sub>	Output Leakage Current			10	μA	Chip Deselected, V <sub>OUT</sub> = 4.0V
I <sub>LOL</sub>	Output Leakage Current			-20	μA	Chip Deselected, V <sub>OUT</sub> = 0.4V
I <sub>CC</sub>	Power Supply Current		70	120	mA	All Inputs 5.25V Data Out Open
V <sub>IL</sub>	Input "Low" Voltage	-0.5		0.8	V	
V <sub>IH</sub>	Input "High" Voltage	2.4		V <sub>CC</sub> +1.0V	V	
V <sub>OL</sub>	Output "Low" Voltage			0.4	V	I <sub>OL</sub> = 2.1 mA
V <sub>OH</sub>	Output "High" Voltage	2.4			V	I <sub>OH</sub> = -400 μA

NOTE: 1. Typical values for T<sub>A</sub> = 25°C and nominal supply voltage.

**A.C. CHARACTERISTICS**

T<sub>A</sub> = 0°C to +70°C, V<sub>CC</sub> = +5V ±10%, unless otherwise specified.

SYMBOL	PARAMETER	LIMITS		UNIT
		MIN.	MAX.	
t <sub>A</sub>	Address to Output Delay Time		450	ns
t <sub>CO</sub>	Chip Select to Output Enable Delay Time		120	ns
t <sub>DF</sub>	Chip Deselect to Output Data Float Delay Time	10	100	ns

**CONDITIONS OF TEST FOR  
A.C. CHARACTERISTICS**

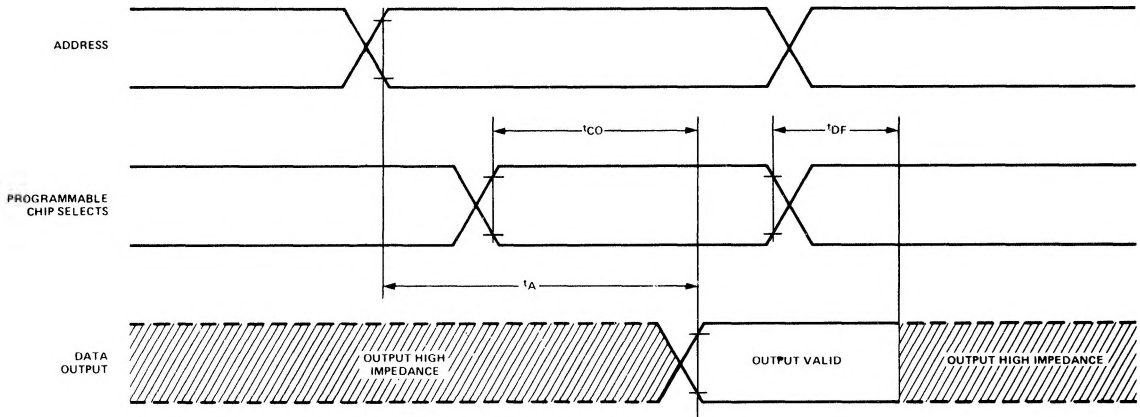
Output Load . . . . . 1 TTL Gate and C<sub>L</sub> = 100 pF  
 Input Pulse Levels . . . . . 0.8 to 2.4V  
 Input Pulse Rise and Fall Times (10% to 90%) . . . . . 20 ns  
 Timing Measurement Reference Level  
   Input . . . . . 1V and 2.2V  
   Output . . . . . 0.8V and 2.0V

**CAPACITANCE<sup>(2)</sup>** T<sub>A</sub> = 25°C, f = 1 MHz

SYMBOL	TEST	LIMITS	
		TYP.	MAX.
C <sub>IN</sub>	All Pins Except Pin Under Test Tied to AC Ground	5 pF	10 pF
C <sub>OUT</sub>	All Pins Except Pin Under Test Tied to AC Ground	10 pF	15 pF

NOTE: 2. This parameter is periodically sampled and is not 100% tested.

**A.C. Waveforms**



**Typical System Application (8K × 8 ROM Memory)**

