

# MOS INTEGRATED CIRCUIT



## 16384 BIT READ ONLY MEMORY

- SINGLE +5V ± 10% POWER SUPPLY
- ACCESS TIME 450 ns (MAX.)
- INPUTS AND OUTPUTS TTL COMPATIBLE
- THREE PROGRAMMABLE CHIP SELECTS FOR SIMPLE MEMORY EXPANSION AND SYSTEM INTERFACE
- COMPLETELY STATIC OPERATION
- THREE-STATE OUTPUT FOR DIRECT BUS INTERFACE

The M 2316E is a 16384 bit static Read Only Memory N-channel Si-Gate MOS 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 M 2316E is available in 24-lead dual-in-line plastic package.

## ABSOLUTE MAXIMUM RATINGS

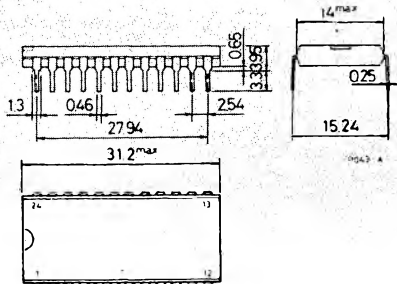
$V_i^*$	Input voltage (at any pin)	-0.5 to 7	V
$P_{tot}$	Total power dissipation	1	W
$T_{stg}$	Storage temperature	-55 to +125	°C
$T_{op}$	Operating temperature under bias	-10 to 80	°C

\* This voltage is with respect to Ground

ORDERING NUMBER: M 2316E B1 for dual in-line plastic package

## MECHANICAL DATA

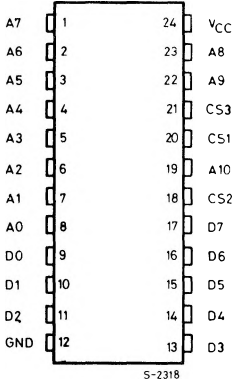
Dimensions in mm





M 2316E

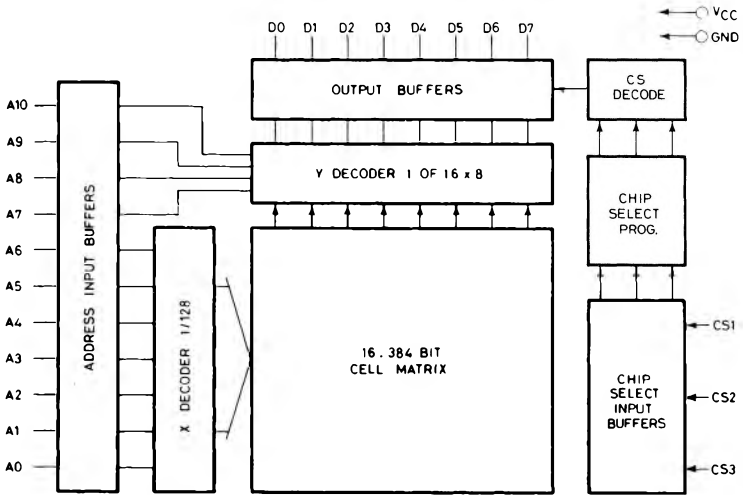
### PIN CONNECTIONS



### PIN NAMES

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

### BLOCK DIAGRAM





**M 2316E**

**STATIC ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 0^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ ,  $V_{CC} = 5\text{V} \pm 10\%$  unless otherwise specified)

Parameter	Test conditions	Min.	Typ.(1)	Max.	Unit
$I_{LI}$ Input load current(All input pins)	$V_I = 0$ to $5.25\text{V}$			10	$\mu\text{A}$
$I_{LOH}$ Output leakage current	Chip deselected $V_O = 4\text{V}$			10	$\mu\text{A}$
$I_{LOL}$ Output leakage current	Chip deselected $V_O = 0.4\text{V}$			-20	$\mu\text{A}$
$I_{CC}$ Power supply current	All inputs $5.25\text{V}$ Data out open		70	120	$\text{mA}$
$V_{IL}$ Input low voltage		-0.5		0.8	$\text{V}$
$V_{IH}$ Input high voltage		2.4		$V_{CC}+1\text{V}$	$\text{V}$
$V_{OL}$ Output low voltage	$I_{OL} = 2.1\text{mA}$			0.4	$\text{V}$
$V_{OH}$ Output high voltage	$I_{OH} = -400\mu\text{A}$	2.4			$\text{V}$

Note: 1 Typical values for  $T_{amb} = 25^{\circ}\text{C}$  and nominal supply voltage.

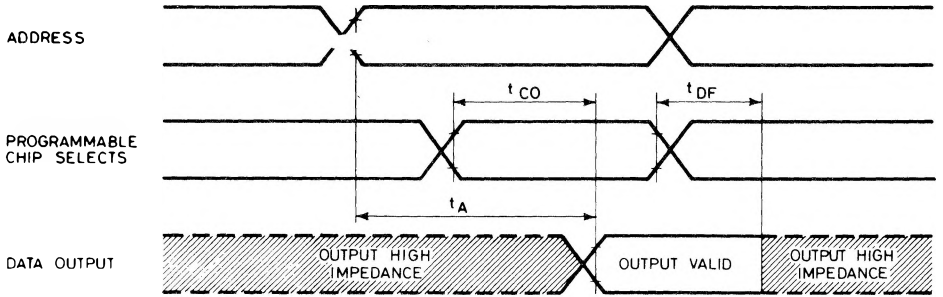
**DYNAMIC ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ ,  $V_{CC} = +5\text{V} \pm 10\%$  unless otherwise specified)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
$t_A$ Address to output delay time	Output load = 1 TTL gate and $C_L = 100\text{pF}$ Input pulse levels $-0.8$ to $2.4\text{V}$ Input pulse rise and fall times (10% to 90%) $-20\text{ns}$ Timing Measurement Reference level: Input = $1\text{V}$ and $2.2\text{V}$ Output = $0.8\text{V}$ and $2.2\text{V}$			450	$\text{ns}$
$t_{CO}$ Chip select to output enable delay time				120	$\text{ns}$
$t_{DF}$ Chip deselect to output data float delay time		10		100	$\text{ns}$
$C_I$ Input capacitance	$T_{amb} = 25^{\circ}\text{C}$ $f = 1\text{MHz}$ All pins except pin under test tied to AC ground		5	10	$\text{pF}$
$C_O$ Output capacitance	$T_{amb} = 25^{\circ}\text{C}$ $f = 1\text{MHz}$ All pins, except pin under test tied to AC ground		10	15	$\text{pF}$



M 2316E

### A.C. Waveforms



S-2320