256Kx4 SRAM CMOS, High Speed Module

The EDI8M4257C is a Megabit (256Kx4-bit) High Speed Static RAM Module with four bi-directional input/output lines. The module is constructed of four 256Kx1 Static RAMs in leadless chip carriers surface mounted on a multi-layered ceramic substrate.

Extremely high speeds are achieved with EDI81256C high performance, high reliability Static RAMs. This state-of-the-art technology, combined with innovative circuit design techniques, provides the fastest one Megabit module available.

All inputs and outputs of the EDI8M4257C are TTL-compatible and operate from a single 5V supply. Fully asynchronous circuitry is used requiring no clocks or refreshing for operation and providing equal access and cycle times for ease of use.

EDI Military Modules are built with RAMs that are compliant to MIL-STD-883, paragraph 1.2.1.

Features

256Kx4 bit, Megabit Density CMOS
Static Random Access Memory Module

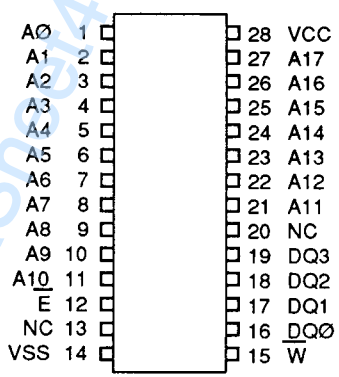
- Fast Access Times of 35, 45, 55, and 70ns
- Low power consumption:
  Active: 1600mW (typ)
  Standby: 10mW (typ)
- Common I/O lines
- TTL-compatible inputs and outputs

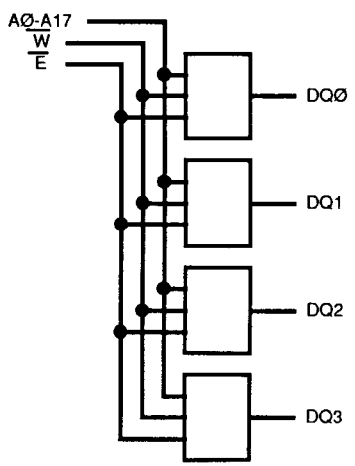
28 pin DIP, 400 mil centers, No. 104
Single +5V (±10%) Supply Operation

Pin Names

AØ-A17	Address Inputs
$\overline{E}$	Chip Enable
$\overline{W}$	Write Enable
DQØ-DQ3	Data Input/Output
VCC	Power (+5V±10%)
VSS	Ground
NC	No Connection

Pin Configuration and Block Diagram





Absolute Maximum Ratings*

Voltage on any pin relative to VSS ..... -0.5V to 7.0V
Operating Temperature TA (Ambient)
Commercial ..... 0°C to +70°C
Industrial ..... -40°C to +85°C
Military ..... -55°C to +125°C
Storage Temperature, Ceramic ..... -65°C to +150°C
Power Dissipation ..... 3 Watts
Output Current. ..... 20 mA

*Stress greater than 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 any other conditions greater than those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

Recommended DC Operating Conditions

Parameter	Sym	Min	Typ	Max	Units
Supply Voltage	VCC	4.5	5.0	5.5	V
Supply Voltage	VSS	0	0	0	V
Input High Voltage	VIH	2.2	--	6.0	V
Input Low Voltage	VIL	-0.3	--	0.8	V

AC Test Conditions

Input Pulse Levels ..... VSS to 3.0V
Input Rise and Fall Times 5ns
Input and Output Timing Levels 1.5V
Output Load ..... 1TTL, CL = 30pF
(note: For TEHQZ and TWLQZ, CL = 5pF)

DC Electrical Characteristics

Parameter	Sym	Conditions	Min	Typ*	Max	Units
Operating Power Supply Current	ICC1	$\overline{W}$, $\overline{E}$ = VIL, II/O = 0mA, Min Cycle	--	320	480	mA
Standby (TTL) Power Supply Current	ICC2	$\overline{E}$≥ VIH, VIN ≤ VIL or VIN ≥ VIH	--	8	100	mA
Full Standby Power Supply Current	ICC3	$\overline{E}$ ≥ VCC-0.2V VIN ≥ VCC-0.2V or VIN ≤ 0.2V	--	4	40	mA
Input Leakage Current	ILI	VIN = 0V to VCC	--	--	±10	µA
Output Leakage Current	ILO	V I/O = 0V to VCC	--	--	±10	µA
Output High Voltage	VOH	IOH = -4.0mA	2.4	--	--	V
Output Low Voltage	VOL	IOL = 8.0mA	--	--	0.4	V

*Typical: TA = 25°C, VCC = 5.0V

Truth Table

$\overline{E}$	$\overline{W}$	Mode	Output	Power
H	X	Standby	HIGH Z	ICC2, ICC3
L	H	Read	DOUT	ICC1
L	L	Write	HIGH Z	ICC1

Capacitance

(f=1.0MHz, VIN=VCC or VSS)

Parameter	Sym	Max	Unit
Input Capacitance (Except DQ Pins)	CI	40	pF
Capacitance Control (DQ Pins)	CD/Q	18	pF

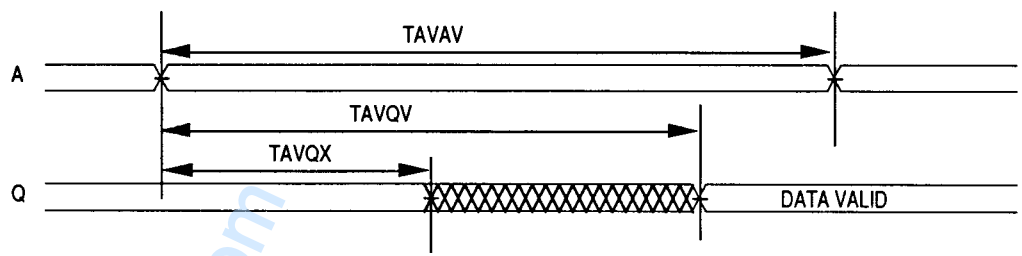
These parameters are sampled, not 100% tested.

AC Characteristics
Read Cycle

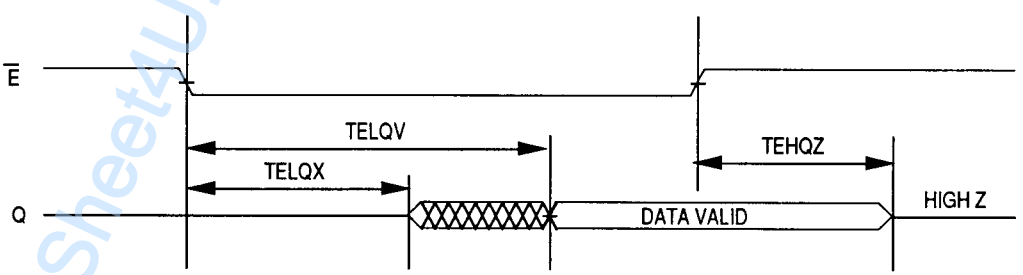
Parameter	Symbol	35ns		45ns		55ns		70ns		Units
		Min	Max	Min	Max	Min	Max	Min	Max	
Read Cycle Time	TAVAV	35		45		55		70		ns
Address Access Time	TAVQV		35		45		55		70	ns
Chip Enable Access Time	TELQV		35		45		55		70	ns
Chip Enable to Output in Low Z (1)	TELQX	5		5		5		5		ns
Chip Enable to Output in High Z (1)	TEHQZ	0	20	0	20	0	20	0	20	ns
Output Hold from Address Change	TAVQX	5		5		5		5		ns
Chip Enable to Power Up (1)	TPU	0		0		0		0		ns
Chip Disable to Power Down (1)	TPD	0	35	0	45	0	55	0	70	ns

Note 1: Parameter guaranteed, but not tested.

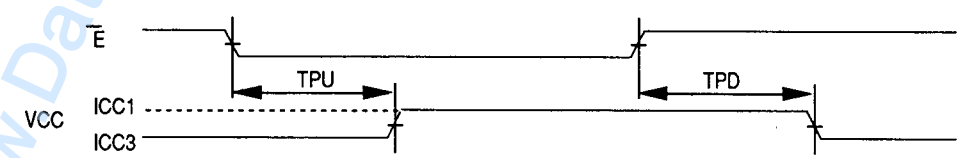
Read Cycle 1
$\overline{W}$ High (continuously selected, $\overline{E}$ Low)



Read Cycle 2
$\overline{E}$ Low, $\overline{W}$ High



$\overline{E}$ Power Down Function



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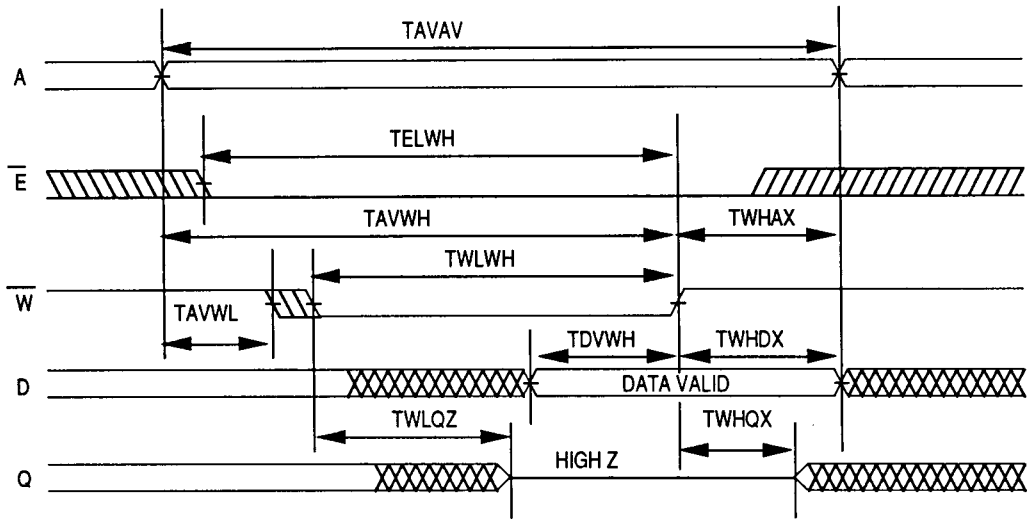
AC Characteristics
Write Cycle

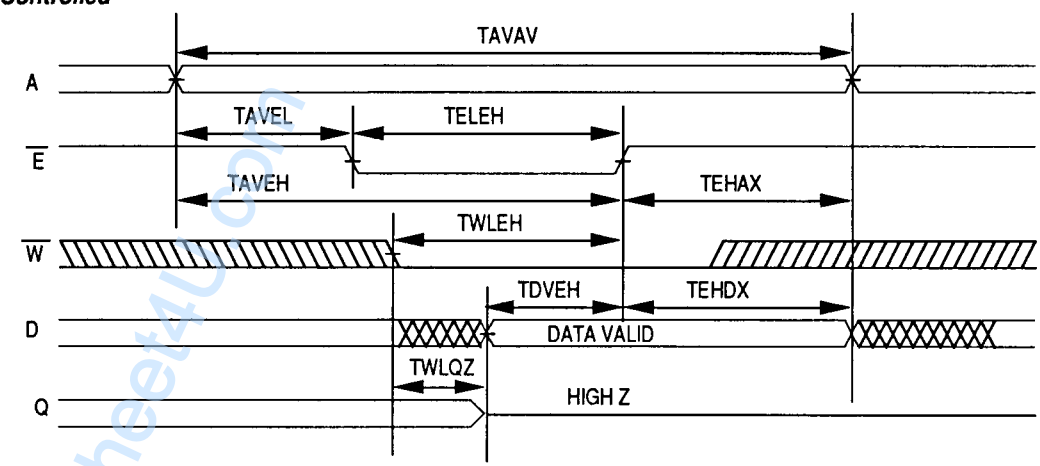
Parameter	Symbol		35ns		45ns		55ns		70ns		Units
			Min	Max	Min	Max	Min	Max	Min	Max	
Write Cycle Time	TAVAV		35		45		55		70		ns
Chip Enable to	TELWH	$\overline{W}$	30		35		40		45		ns
End of Write	TELEH	$\overline{E}$	30		35		40		45		ns
Address Setup Time	TAVWL	$\overline{W}$	0		0		0		0		ns
	TAVEL	$\overline{E}$	0		0		0		0		ns
Address Valid to	TAVWH	$\overline{W}$	30		35		40		45		ns
End of Write	TAVEH	$\overline{E}$	30		35		40		45		ns
Write Pulse Width	TWLWH	$\overline{W}$	25		25		30		30		ns
	TWLEH	$\overline{E}$	25		25		30		30		ns
Write Recovery Time	TWHAX	$\overline{W}$	5		5		5		5		ns
	TEHAX	$\overline{E}$	5		5		5		5		ns
Data Hold Time	TWHDX	$\overline{W}$	0		0		0		0		ns
	TEHDX	$\overline{E}$	0		0		0		0		ns
Write to Output in High Z (1)	TWLQZ		0	15	0	15	0	20	0	20	ns
Data to Write Time	TDVWH	$\overline{W}$	20		25		25		30		ns
	TDVEH	$\overline{E}$	20		25		25		30		ns
Output Active from End of Write (1)	TWHQX		0		0		0		0		ns

Note 1: Parameter guaranteed, but not tested.

Write Cycle 1
$\overline{W}$ Controlled



Write Cycle 2
$\overline{E}$ Controlled



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