WHITE ELECTRONIC DESIGNS

256Kx8 Static RAM CMOS, Module

FEATURES

- 256Kx8 bit CMOS Static
- Random Access Memory
  - Access Times 70, 85 and 100ns
  - Data Retention Function (LP version)
  - TTL Compatible Inputs and Outputs
  - Fully Static, No Clocks
- High Density Packaging
  - 32 Pin SOIC Module, No. 21 (OBSOLETE)
  - 32 Pin DIP Module, No. 184
- Single +5V (±10%) Supply Operation

DESCRIPTION

The EDI8F8257C is a 2Mb CMOS Static RAM based on two 128Kx8 Static RAMs mounted on a multi-layered epoxy laminate (FR4) substrate.

Functional equivalence to the monolithic 2Mb Static RAM is achieved by utilization of an on-board decoder that interprets the higher order address (A17) to select one of the 128Kx8 Static RAMs.

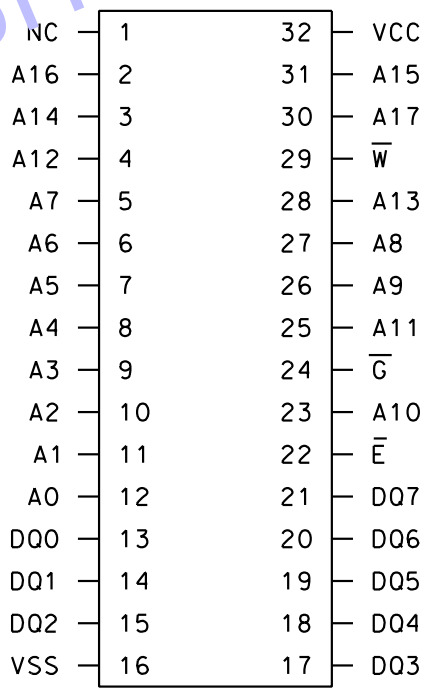
The 32 pin DIP pinout adheres to the JEDEC standard for the two megabit device, to ensure compatibility with future monolithics.

The device is available with Low Power and Data Retention (EDI8F8257LP).

All inputs and outputs are TTL compatible and operate from a single 5V supply. Fully asynchronous, the EDI8F8257C requires no clocks or refreshing for operation.

PIN CONFIGURATIONS AND BLOCK DIAGRAM

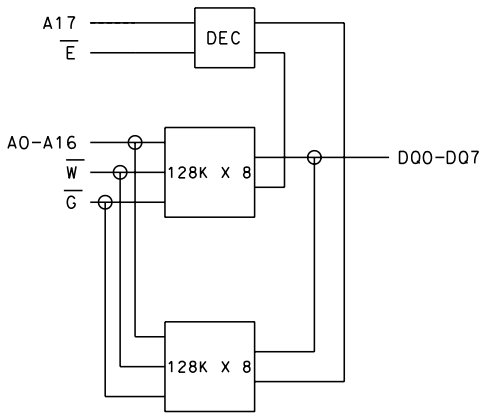
PINOUT



PIN NAMES

AØ-A17	Address Inputs
$\overline{E}$	Chip Enable
$\overline{W}$	Write Enable
$\overline{G}$	Output Enable
DQØ-DQ7	Common Data Input/Output
VCC	Power (+5V±10%)
VSS	Ground
NC	No Connection

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
Storage Temperature	
Plastic	-55°C to +125°C
Power Dissipation	1 Watt
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 =100pF

(note: For TEHQZ,TGHQZ 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		–	110	130	mA
Standby (TTL) Power Supply Current	ICC2	$\overline{E} \geq$ VIH, VIN $\leq$ VIL VIN $\geq$ VIH		–	10	35	mA
Full Standby Power Supply Current (CMOS)	ICC3	$\overline{E} \geq$ VCC-0.2V VIN $\geq$ VCC-0.2V VIN $\leq$ 0.2V	C LP	– –	2 40	5 400	mA µA
Input Leakage Current	ILI	VIN = 0V to VCC		-10	–	10	µA
Output Leakage Current	ILO	V I/O = 0V to VCC		-10	–	10	µA
Output High Voltage	VOH	IOH = -1.0mA		2.4	–	–	V
Output Low Voltage	VOL	IOL = 2.1mA		–	–	0.4	V

*Typical: TA = 25°C, VCC = 5.0V

TRUTH TABLE

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

CAPACITANCE

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

Parameter	Sym	Max	Unit
Input Capacitance (Except DQ Pins)	CI	15	pF
Capacitance (DQ Pins)	CD/Q	20	pF
Input ($\overline{E}$)	CC	10	pF
Input ($\overline{W}$) Line	CW	15	pF

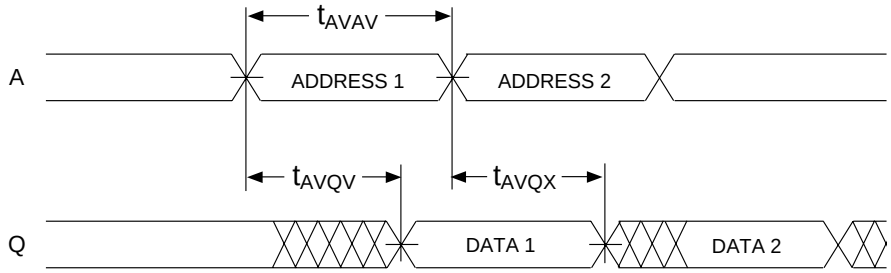
These parameters are sampled, not 100% tested.

AC CHARACTERISTICS READ CYCLE

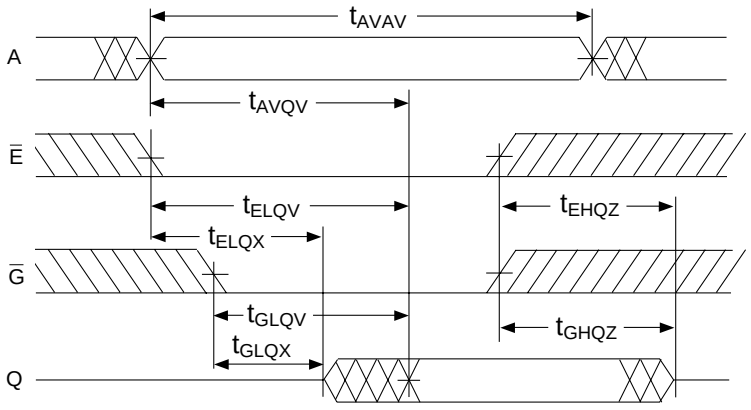
	Symbol		70ns		85ns		100ns		
Parameter	**JEDEC**	**Alt.**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Units**
Read Cycle Time	TAVAV	TRC	70		85		100		ns
Address Access Time	TAVQV	TAA		70		85		100	ns
Chip Enable Access Time	TELQV	TACS		70		85		100	ns
Chip Enable to Output in Low Z (1)	TELQX	TCLZ	5		5		5		ns
Chip Disable to Output in High Z (1)	TEHQZ	TCHZ		30		35		40	ns
Output Hold from Address Change	TAVQX	TOH	3		3		3		ns
Output Enable to Output Valid	TGLQV	TOE		40		45		50	ns
Output Disable to Output in High Z(1)	TGHQZ	TOHZ		30		35		40	ns
Output Enable to Output in Low Z (1)	TGLQX	TOLZ	0		0		0		ns

Note: Parameter guaranteed, but not tested

READ CYCLE 1 - $\overline{W}$ HIGH, $\overline{G}$, $\overline{E}$ LOW



READ CYCLE 2 - $\overline{W}$ HIGH

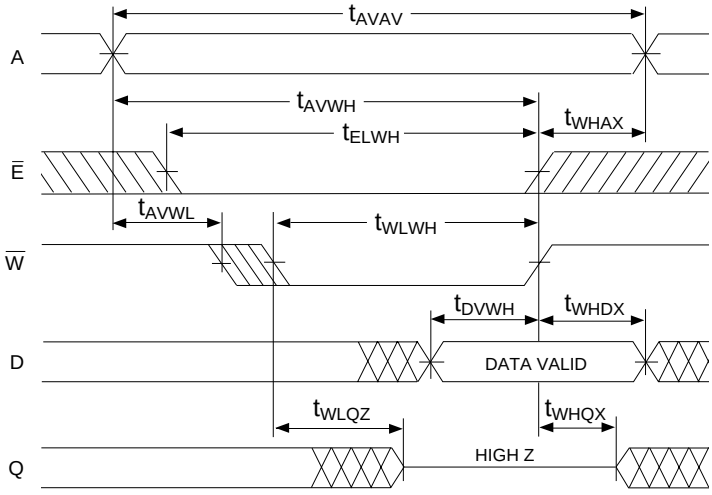


AC CHARACTERISTICS WRITE CYCLE

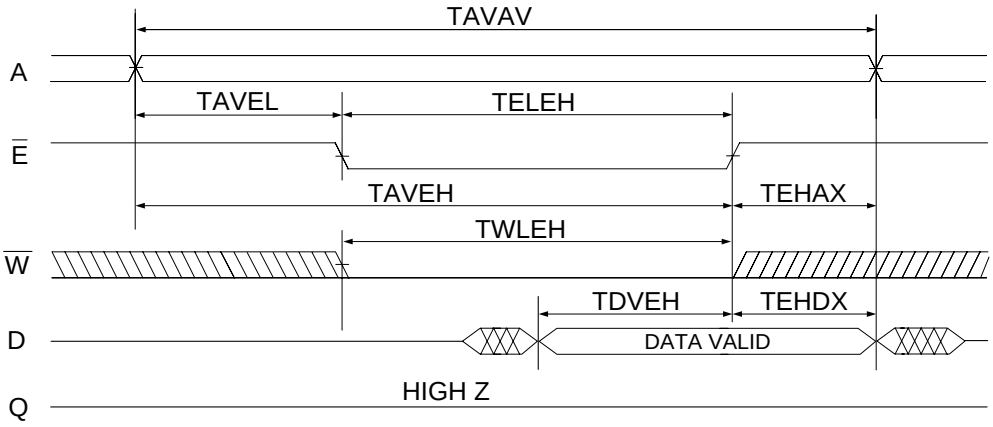
Parameter	Symbol JEDEC	Symbol Alt.	70ns Min	70ns Max	85ns Min	85ns Max	100ns Min	100ns Max	Units
Write Cycle Time	TAVAV	TWC	70		85		100		ns
Chip Enable to End of Write	TELWH	TCW	65		70		80		ns
	TELEH	TCW	65		70		80		ns
Address Setup Time	TAVWL	TAS	0		0		0		ns
	TAVEL	TAS	0		0		0		ns
Address Valid to End of Write	TAVWH	TAW	65		70		80		ns
	TAVEH	TAW	65		70		80		ns
Write Pulse Width	TWLWH	TWP	65		70		80		ns
	TWLEH	TWP	65		70		80		ns
Write Recovery Time	TWHAX	TWR	0		0		0		ns
	TEHAX	TWR	0		0		0		ns
Data Hold Time	TWHDX	TDH	0		0		0		ns
	TEHDX	TDH	0		0		0		ns
Write to Output in High Z (1)	TWLQZ	TWHZ	0	30	0	35	0	40	ns
Data to Write Time	TDVWH	TDW	30		35		40		ns
	TDVEH	TDW	30		35		40		ns
Output Active from End of Write (1)	TWHQX	TWLZ	5		5		5		ns

Note 1: Parameter guaranteed, but not tested.

WRITE CYCLE 1 - $\overline{W}$ CONTROLLED



WRITE CYCLE 2 - $\overline{E}$ CONTROLLED

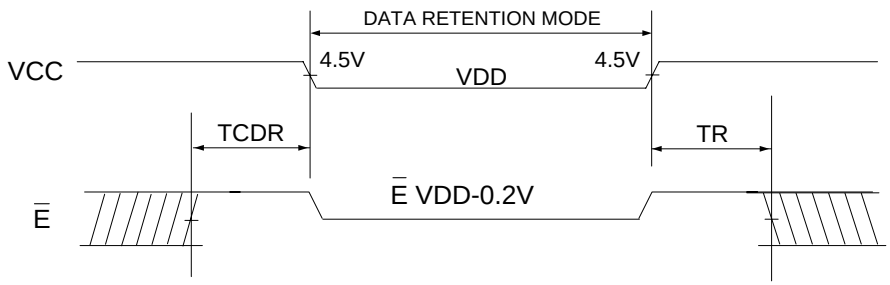


DATA RETENTION CHARACTERISTICS LP VERSION ONLY

Characteristic	Sym	Test Conditions	VDD	Min	Typ	Max		Unit
						70°C	85°C	
Data Retention Voltage	VDD	VDD = 0.2V		2	–	–	–	V
Data Retention Quiescent Current	ICCDR	$\overline{E} \geq$ VDD -0.2V	2V	–	10	125	185	µA
		VIN ≥ VDD -0.2V	3V	–	20	200	250	µA
Chip Disable to Data Retention Time	TCDR	or VIN ≤ 0.2V		0	–	–	–	ns
Operation Recovery TIme	TR			TAVAV*	–	–	–	ns

*Read Cycle Time

DATA RETENTION $\overline{E}$ CONTROLLED



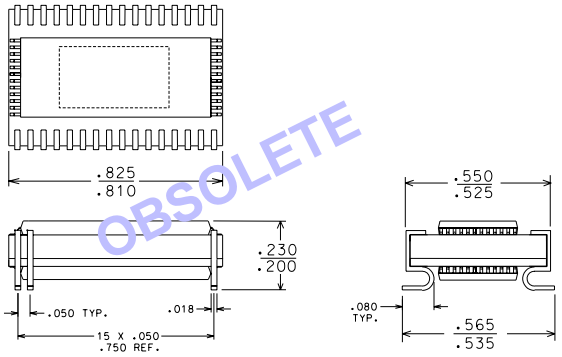
ORDERING INFORMATION

Standard Power	Low Power with Data Retention	Speed (ns)	Package No.	
EDI8F8257C70BPC	EDI8F8257LP70BPC	70	21	OBSOLETE
EDI8F8257C85BPC	EDI8F8257LP85BPC	85	21	
EDI8F8257C100BPC	EDI8F8257LP100BPC	100	21	
EDI8F8257C70B6C	EDI8F8257LP70B6C	70	184	
EDI8F8257C85B6C	EDI8F8257LP85B6C	85	184	
EDI8F8257C100B6C	EDI8F8257LP100B6C	100	184	

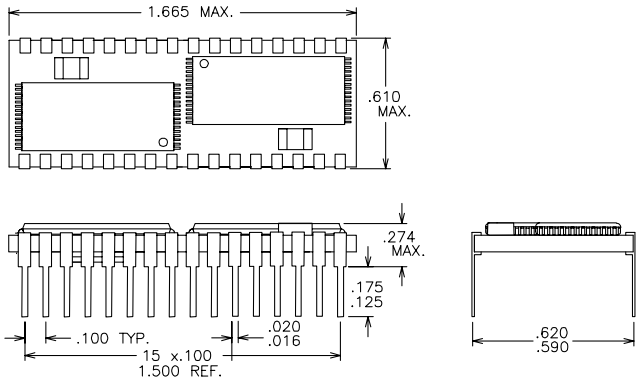
Note: To order an Industrial grade product substitute the letter C in the Suffix with the letter I, eg. EDI8F8257C70BPC becomes EDI8F8257C70BPI.

PACKAGE DESCRIPTION

PACKAGE NO. 21: 32 PIN SOIC MODULE



PACKAGE NO. 184: 32 PIN DUAL-IN-LINE PACKAGE



ALL DIMENSIONS ARE IN INCHES