WHITE ELECTRONIC DESIGNS

1Mx8 CMOS SRAM MONOLITHIC

FEATURES

- 1 Mx8 bit CMOS Static RAM
  - Access Times 55 through 100ns
  - Data Retention Function (EDI8F81027LP)
  - TTL Compatible Inputs and Outputs
  - Fully Static, No Clocks
- High Density Packaging
  - 32 Pin DIP, No. 352
- Single +5V (±10%) Supply Operation

DESCRIPTION

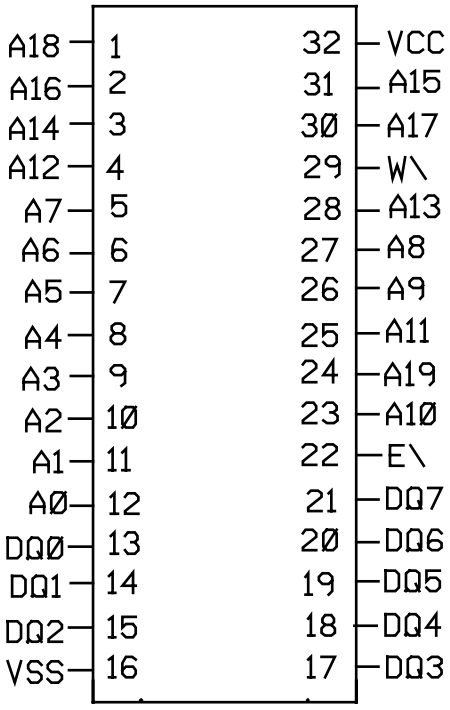
The EDI8F81027C is an 8Mb CMOS Static RAM based on two 512Kx8 Static RAMs mounted on a multi-layered epoxy laminate (FR4) substrate.

A low power version with data retention (EDI8F81027LP) is also available.

All inputs and outputs are TTL compatible and operate from a single 5V supply.

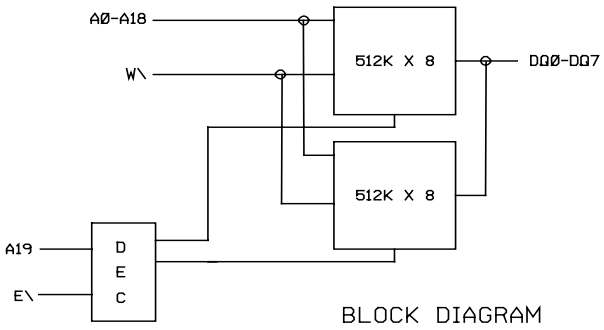
Fully asynchronous, the EDI8F81027C requires no clocks or refreshing for operation.

PIN CONFIGURATIONS AND BLOCK DIAGRAM



PIN NAMES

AØ-A19	Address Inputs
$\overline{E}$	Chip Enable
$\overline{W}$	Write 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	-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	Symbol	Conditions		Min	Typ*	Max	Units
Operating Power Supply Current	ICC1	$\overline{W}$, $\overline{E}$ = VIL, II/O = 0mA, Min Cycle		–	85	140	mA
Standby (TTL) Power Supply Current	ICC2	$\overline{E} \geq$ VIH, VIN $\leq$ VIL VIN $\geq$ VIH		–	25	55	mA
Full Standby Power Supply Current (CMOS)	ICC3	$\overline{E} \geq$ VCC-0.2V	C	–	1.5	2	mA
		VIN $\geq$ VCC-0.2V or VIN $\leq$ 0.2V	LP	–	190	300	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
Address Lines	CI	30	pF
Data Lines	CD/Q	43	pF
Chip Enable Line	CC	10	pF
Write and Output Enable Lines	CW	32	pF

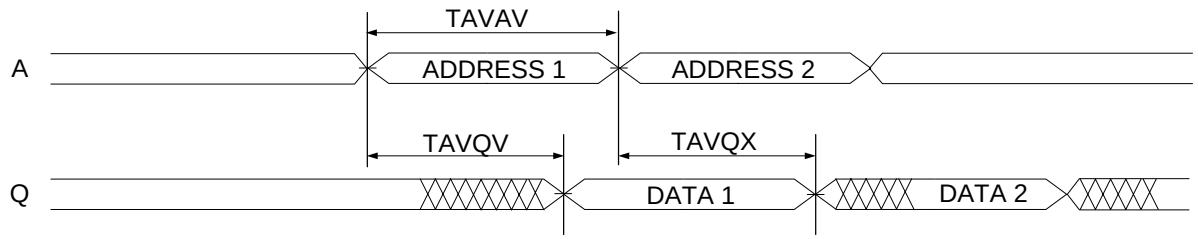
These parameters are sampled, not 100% tested.

AC CHARACTERISTICS READ CYCLE

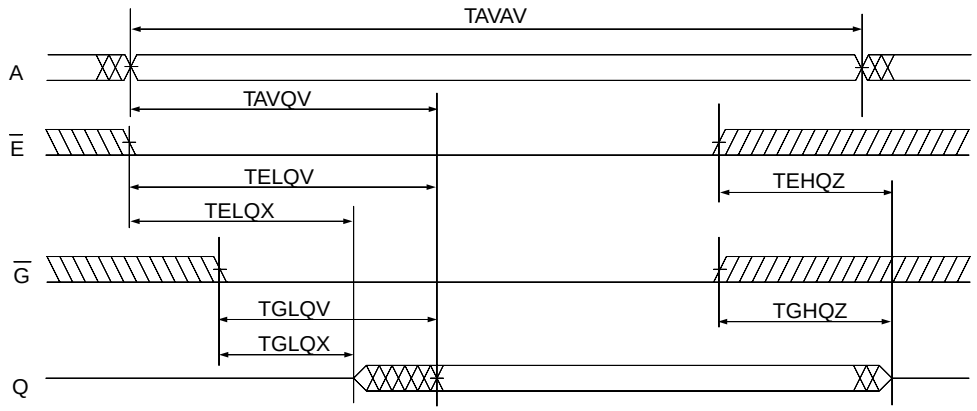
Parameter	Symbol JEDEC	Symbol Alt.	55ns Min	55ns Max	70ns Min	70ns Max	85ns Min	85ns Max	100ns Min	100ns Max	Units
Read Cycle Time	TAVAV	TRC	55		70		85		100		ns
Address Access Time	TAVQV	TAA		55		70		85		100	ns
Chip Enable Access Time	TELQV	TACS		55		70		85		100	ns
Chip Enable to Output in Low Z (1)	TELQX	TCLZ	5		5		5		5		ns
Chip Disable to Output in High Z (1)	TEHQZ	TCHZ		25		30		35		40	ns
Output Hold from Address Change	TAVQX	TOH	5		5		5		5		ns

Note 1: Parameter guaranteed, but not tested.

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



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

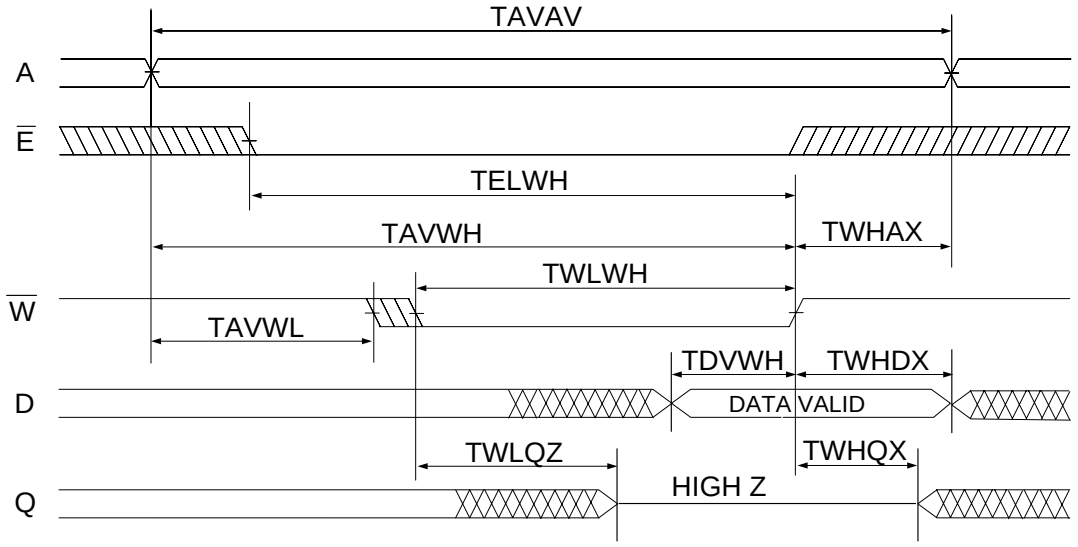


AC CHARACTERISTICS WRITE CYCLE

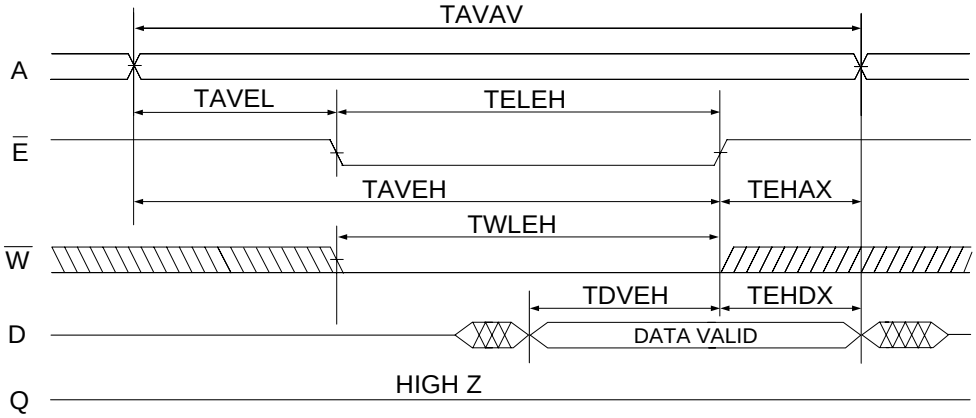
Write Cycle Parameter	Symbol JEDEC	Symbol Alt.	55ns Min	55ns Max	70ns Min	70ns Max	85ns Min	85ns Max	100ns Min	100ns Max	Units
Write Cycle Time	TAVAV	TWC	55		70		85		100		ns
Chip Enable to End of Write	TELWH	TCW	50		65		70		80		ns
	TELEH	TCW	50		65		70		80		ns
Address Setup Time	TAVWL	TAS	0		0		0		0		ns
	TAVEL	TAS	0		0		0		0		ns
Address Valid to End of Write	TAVWH	TAW	50		65		70		80		ns
	TAVEH	TAW	50		65		70		80		ns
Write Pulse Width	TWLWH	TWP	45		65		70		80		ns
	TWLEH	TWP	45		65		70		80		ns
Write Recovery Time	TWHAX	TWR	5		5		5		5		ns
	TEHAX	TWR	5		5		5		5		ns
Data Hold Time	TWHDX	TDH	0		0		0		0		ns
	TEHDX	TDH	0		0		0		0		ns
Write to Output in High Z (1)	TWLQZ	TWHZ	25		0	30	0	35	0	40	ns
Data to Write Time	TDVWH	TDW	25		30		35		40		ns
	TDVEH	TDW	25		30		35		40		ns
Output Active from End of Write (1)	TWHQX	TWLZ	5		5		5		5		ns

Note 1: Parameter guaranteed, but not tested.

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



WRITE CYCLE 2 $\overline{E}$ CONTROLLED

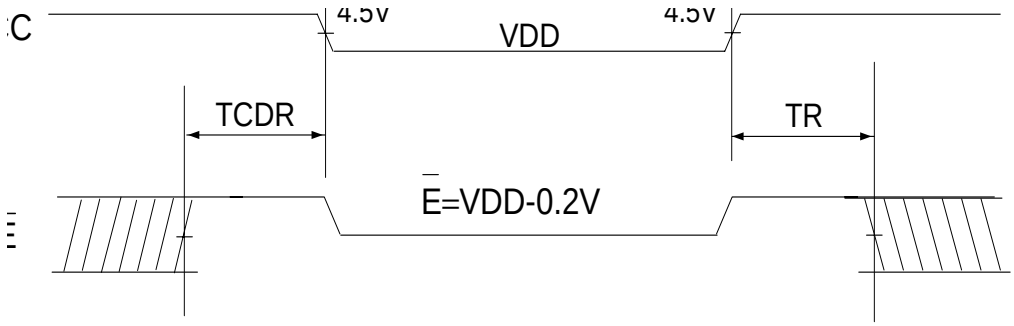


DATA RETENTION CHARACTERISTICS (LP VERSION ONLY)

Characteristic	Sym	Test Conditions	VDD	Min	Typ	Max		Unit
						70°C	85°C	
Data Retention Voltage	VDD	$\overline{E} \geq$ VDD -0.2V VIN $\geq$ VDD -0.2V or VIN $\leq$ 0.2V		2	–	–	–	V
Data Retention Quiescent Current	ICCDR		2V	–		100	130	µA
			3V	–		160	210	µA
Chip Disable to Data Retention Time	TCDR(1)			0	–	–	–	ns
Operation Recovery Time	TR (1)			TAVAV*	–	–	–	ns

Note: Parameter guaranteed, but not tested
* Read Cycle Time

DATA RETENTION - $\overline{E}$ CONTROLLED



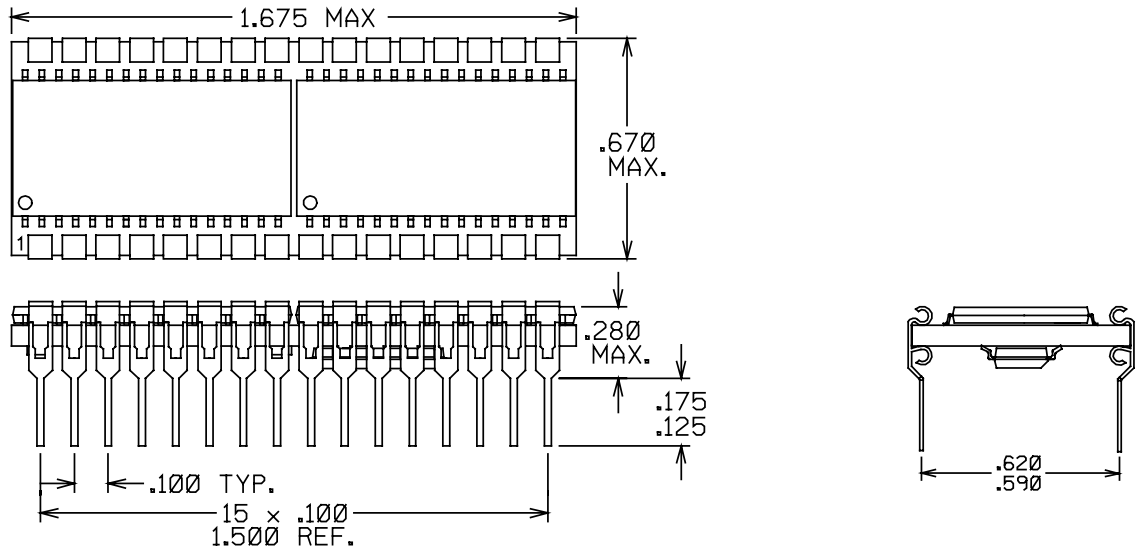
ORDERING INFORMATION

Standard Power	Low Power with Data Retention	Speed (ns)	Package No.
EDI8F81027C55B6C	EDI8F81027LP55B6C	55	352
EDI8F81027C70B6C	EDI8F81027LP70B6C	70	352
EDI8F81027C85B6C	EDI8F81027LP85B6C	85	352
EDI8F81027C100B6C	EDI8F81027LP100B6C	100	352

Note: To order an Industrial grade product substitute the letter C in the Suffix with the letter I, eg. EDI8F81027C70B6C becomes EDI8F81027C70B6I.

PACKAGE DESCRIPTION

PACKAGE NO. 352: 32 PIN DIP



ALL DIMENSIONS ARE IN INCHES