1024Kx32 Static RAM CMOS, High Speed Module

FEATURES

- 1024Kx32 bit CMOS Static RAM
  - Access Times: 15, 20, and 25ns
  - Individual Byte Selects
  - Fully Static, No Clocks
  - TTL Compatible I/O
- High Density Package
  - 72 Pin ZIP, No. 175
  - 72 lead SIMM, No. 176 (Angle)
  - 72 lead SIMM, No. 356 (Straight)
  - Common Data Inputs and Outputs
- Single +5V (±10%) Supply Operation

*This product is subject to change without notice.

DESCRIPTION

The EDI8F321024C is a high speed 32 megabit Static RAM module organized as 1024K words by 32 bits. This module is constructed from eight 1024Kx4 Static RAMs in SOJ packages on an epoxy laminate (FR4) board.

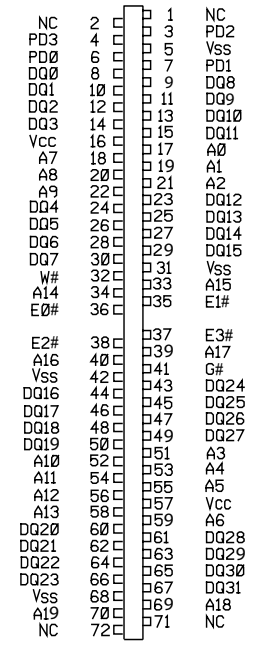
Four chip enables (EØ#-E3#) are used to independently enable the four bytes. Reading or writing can be executed on individual bytes or any combination of multiple bytes through proper use of selects.

The EDI8F321024C is offered in 72 pin ZIP and 72 lead SIMM packages, which enable 32 megabits of memory to be placed in less than 1.3 square inches of board space.

All inputs and outputs are TTL compatible and operate from a single 5V supply. Fully asynchronous circuitry requires no clocks or refreshing for operation and provides equal access and cycle times for ease of use.

Pins PD1- PD4, are used to identify module memory density in applications where alternate modules can be interchanged.

FIG. 1 PIN CONFIGURATIONS AND BLOCK DIAGRAM

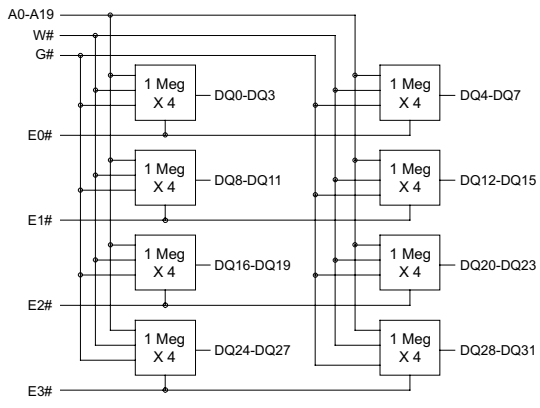


PD0 AND PD2 = GROUND
PD1 AND PD3 = OPEN

8F321024C Pin Config.

PIN NAMES

A0-A19	Address Inputs
E0#-E3#	Chip Enables
W#	Write Enable
G#	Output Enable
DQ0-DQ31	Common Data Input/Output
Vcc	Power (+5V±10%)
Vss	Ground
NC	No Connection



8F321024C Blk Dia.

ABSOLUTE MAXIMUM RATINGS*

Voltage on any pin relative to V_{SS}	-0.5V to 7.0V
Operating Temperature T_A (Ambient) Commercial Industrial	 0°C to +70°C -40°C to +85°C
Storage Temperature, Plastic	-55°C to +125°C
Power Dissipation	7.0 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	V_{CC}	4.5	5.0	5.5	V
Supply Voltage	V_{SS}	0	0	0	V
Input High Voltage	V_{IH}	2.2	–	6.0	V
Input Low Voltage	V_{IL}	-0.3	–	0.8	V

AC TEST CONDITIONS

Input Pulse Levels	V_{SS} to 3.0V
Input Rise and Fall Times	5ns
Input and Output Timing Levels	1.5V
Output Load	1TTL, CL = 30pF

(Note: For t_{EHQZ},t_{GHQZ} and t_{WLQZ}, CL = 5pF)

DC ELECTRICAL CHARACTERISTICS

Parameter	Sym	Conditions	Min	Typ	Max	Units
Operating Power Supply Current	I_{CC1}	W#, E# = V_{IL}, II/O = 0mA, Min Cycle			1280	mA
Standby (TTL) Power Supply Current	I_{CC2}	E# ≥ V_{IH}, V_{IN} ≤ V_{IL} or V_{IN} ≥ V_{IH}			480	mA
Full Standby Power Supply Current CMOS	I_{CC3}	E# ≥ V_{CC}-0.2V V_{IN} ≥ V_{CC}-0.2V or V_{IN} ≤ 0.2V			80	mA
Input Leakage Current	I_{LI}	V_{IN} = 0V to V_{CC}	–	–	±80	µA
Output Leakage Current	I_{LO}	V I/O = 0V to V_{CC}	–	–	±20	µA
Output High Voltage	V_{OH}	I_{OH} = -4.0mA	2.4	–	–	V
Output Low Voltage	V_{OL}	I_{OL} = 8.0mA	–	–	0.4	V

*Typical: T_A = 25°C, V_{CC} = 5.0V

TRUTH TABLE

E#	W#	G#	Mode	Output	Power
H	X	X	Standby	HIGH Z	I_{CC2}/I_{CC3}
L	H	L	Read	D_{OUT}	I_{CC1}
L	L	X	Write	D_{IN}	I_{CC1}
L	H	H	Output Deselect	HIGH Z	I_{CC1}

CAPACITANCE

(f=1.0MHz, V_{IN}=V_{CC} or V_{SS})

Parameter	Sym	Max	Unit
Address Lines	CI	60	pF
Data Lines	CD/Q	20	pF
Chip Enable Line	CC	20	pF
Write Line	CN	60	pF

These parameters are sampled, not 100% tested.

AC CHARACTERISTICS READ CYCLE

Parameter	Symbol		15ns		20ns		25ns		Units
	JEDEC	Alt.	Min	Max	Min	Max	Min	Max	
Read Cycle Time	t_{AVAV}	t_{RC}	15		20		25		ns
Address Access Time	t_{AVQV}	t_{AA}		15		20		25	ns
Chip Enable Access	t_{ELQV}	t_{ACS}		15		20		25	ns
Chip Enable to Output in Low Z (1)	t_{ELQX}	t_{CLZ}	3		3		3		ns
Chip Disable to Output in High Z (1)	t_{EHQZ}	t_{CHZ}		7		10		12	ns
Output Hold from Address Change	t_{AVQX}	t_{OH}	3		3		3		ns
Output Enable to Output Valid	t_{GLQV}	t_{OE}		7		8		10	ns
Output Enable to Output in Low Z (1)	t_{GLQX}	t_{OLZ}	0		0		0		ns
Output Disable to Output in High Z(1)	t_{GHQZ}	t_{OHZ}		7		8		10	ns

Note 1: Parameter guaranteed, but not tested.

FIG.
READ CYCLE 1 - W# HIGH, G#, E# LOW

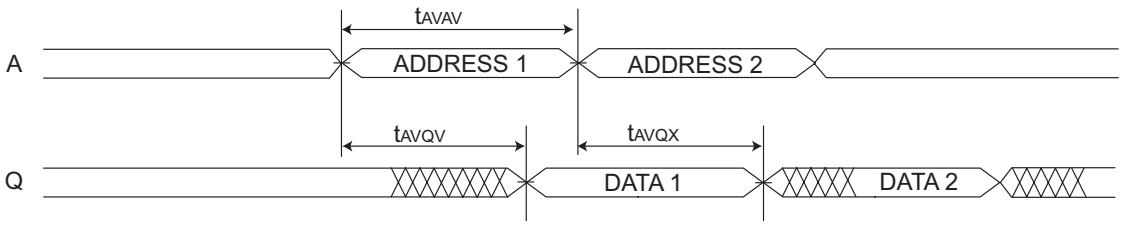
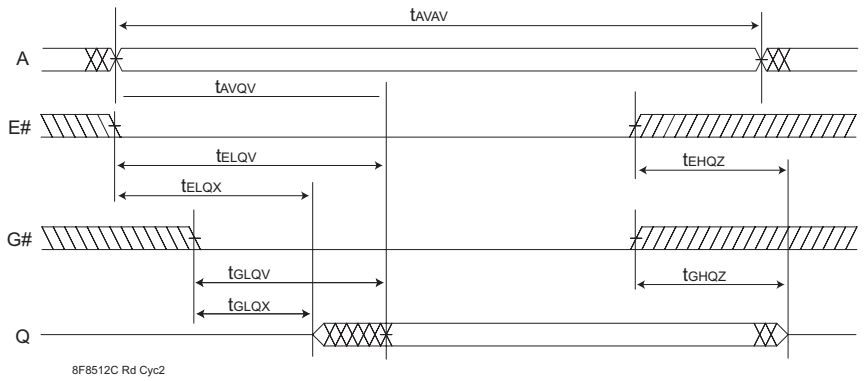


FIG. 3
READ CYCLE 2 - W# HIGH



AC CHARACTERISTICS WRITE CYCLE

	Symbol		15ns		20ns		25ns		
Parameter	**JEDEC**	**Alt.**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Units**
Write Cycle Time	t_{AVAV}	t_{WC}	15		20		25		ns
Chip Enable to End of Write	t_{ELWH} t_{WLEH}	t_{CW} t_{CW}	10 10		15 15		20 20		ns ns
Address Setup Time	t_{AVWL} t_{AVEL}	t_{AS} t_{AS}	0 0		0 0		0 0		ns ns
Address Valid to End of Write	t_{AVWH} t_{AVEH}	t_{AW} t_{AW}	10 10		15 15		20 20		ns ns
Write Pulse Width	t_{WLWH} t_{ELEH}	t_{WP} t_{WP}	12 12		15 15		20 20		ns ns
Write Recovery Time	t_{WHAX} t_{EHAX}	t_{WR} t_{WR}	0 0		0 0		0 0		ns ns
Data Hold Time	t_{WHDX} t_{EHDX}	t_{DH} t_{DH}	3 3		3 3		0 0		ns ns
Write to Output in High Z (1)	t_{WLQZ}	t_{WHZ}	0	7	0	8	0	12	ns
Data to Write Time	t_{DVWH} t_{DVEH}	t_{DW} t_{DW}	7 7		12 12		15 15		ns ns
Output Active from End of Write (1)	t_{WHQX}	t_{WLZ}	3		3		3		ns

Note 1: Parameter guaranteed, but not tested.

FIG. 4
WRITE CYCLE 1 - W# CONTROLLED

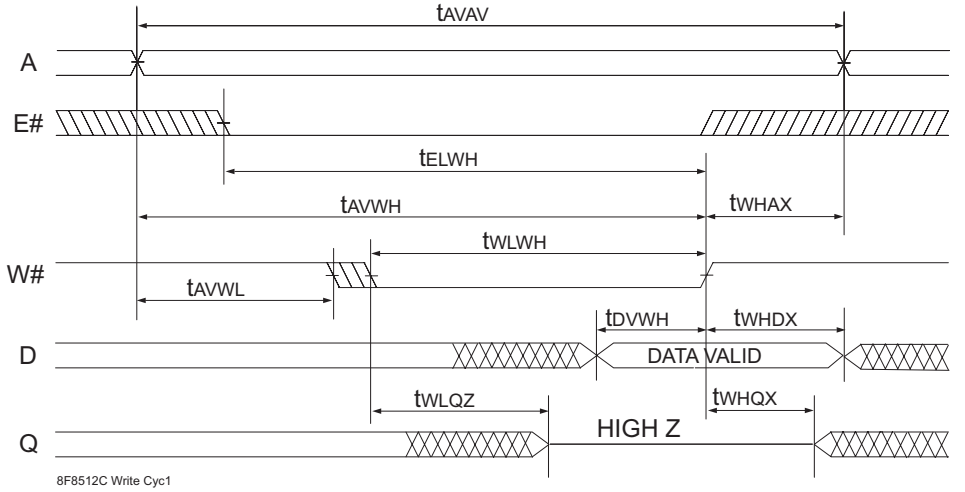
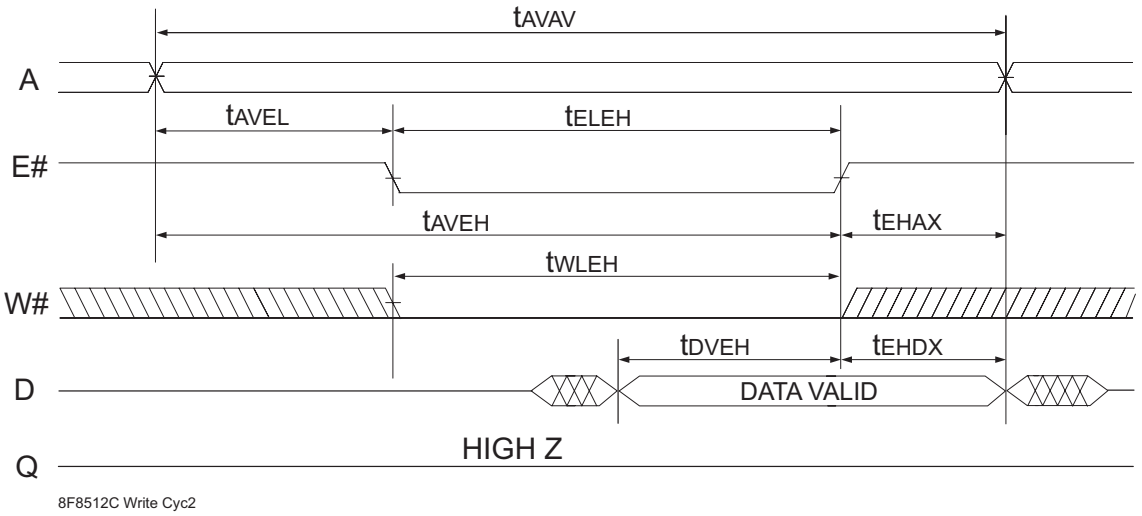


FIG. 5

WRITE CYCLE 2 - E# CONTROLLED



ORDERING INFORMATION

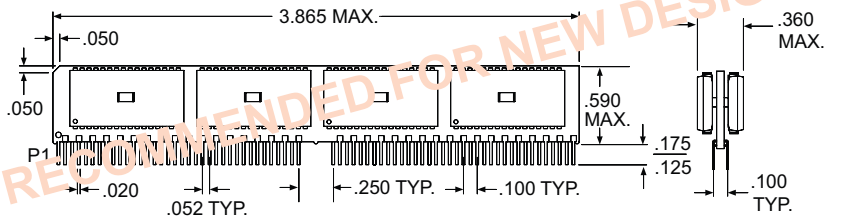
Part Number	Speed (ns)	Package No.
EDI8F321024C15MNC	15	176
EDI8F321024C20MNC	20	176
EDI8F321024C25MNC	25	176

Note: To order gold SIMM option, change "EDIF" to "EDIG".

Part Number	Speed (ns)	Package No.
EDI8F321024C15MZC	15	175
EDI8F321024C20MZC	20	175
EDI8F321024C25MZC	25	175
EDI8F321024C15MMC	15	356
EDI8F321024C20MMC	20	356
EDI8F321024C25MMC	25	356

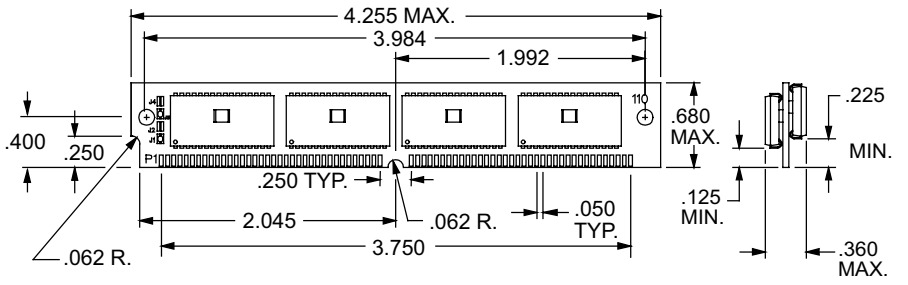
PACKAGE DESCRIPTIONS

PACKAGE NO.175: 72 PIN ZIP



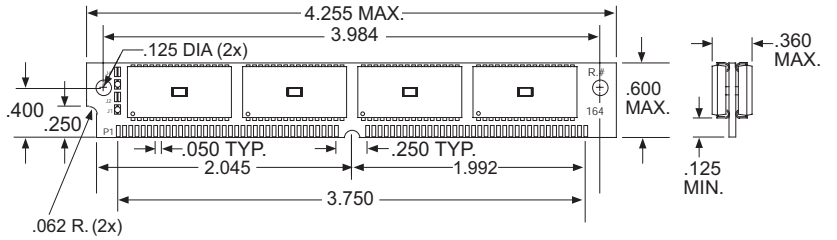
175-8F321024C Pkg.

PACKAGE NO. 176: 72 LEAD ANGLED SIMM



176-8F321024C Pkg.

PACKAGE NO. 356: 72 PIN SIMM



356-8F321024C Pkg.

ALL DIMENSIONS ARE IN INCHES