Features

1024Kx32 bit CMOS Static
Random Access Memory

- Access Times: 12, 15ns
- Individual Byte Selects
- Fully Static, No Clocks
- TTL Compatible I/O

High Density Package

- 72 lead SIMM, No. 176 (Angle)
- 72 lead SIMM, No. 356 (Straight)
- Common Data Inputs and Outputs

Single +5V (±10%) Supply Operation

1024Kx32 Static RAM
CMOS, High Speed Module

The EDI8F321024CA 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 ($\overline{E}$Ø-$\overline{E}$3) 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 EDI8F321024CA is offered in a 72 lead SIMM package, 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.

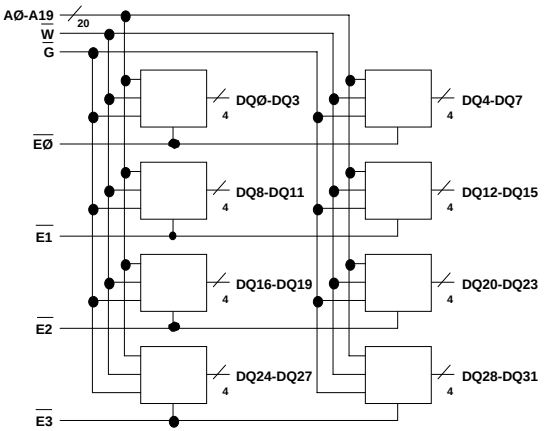
Pin Configurations and Block Diagram

NC	2	1	NC
PD4	4	3	PD3
PD1	6	5	VSS
DQØ	8	7	PD2
DQ1	10	9	DQ8
DQ2	12	11	DQ9
DQ3	14	13	DQ10
VCC	16	15	DQ11
A7	18	17	AØ
A8	20	19	A1
A9	22	21	A2
DQ4	24	23	DQ12
DQ5	26	25	DQ13
DQ6	28	27	DQ14
DQ7	30	29	DQ15
W	32	31	VSS
A14	34	33	A15
EØ	36	35	E1
$\overline{E}$2	38	37	$\overline{E}$3
A16	40	39	A17
VSS	42	41	G
DQ16	44	43	DQ24
DQ17	46	45	DQ25
DQ18	48	47	DQ26
DQ19	50	49	DQ27
A10	52	51	A3
A11	54	53	A4
A12	56	55	A5
A13	58	57	VCC
DQ20	60	59	A6
DQ21	62	61	DQ28
DQ22	64	63	DQ29
DQ23	66	65	DQ30
VSS	68	67	DQ31
A19	70	69	A18
NC	72	71	NC

PD1 & PD3 = VSS
PD2 & PD4 = Open

Pin Names

AØ-A19	Address Inputs
$\overline{E}$Ø-$\overline{E}$3	Chip Enables
$\overline{W}$	Write Enable
$\overline{G}$	Output Enable
DQØ-DQ31	Common Data Input/Output
VCC	Power (+5V±10%)
VSS	Ground
NC	No Connection



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	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	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,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			1600	mA
Standby (TTL) Power Supply Current	ICC2	$\overline{E}$ ³ VIH, VIN £ VIL or VIN ³ VIH			600	mA
Full Standby Power Supply Current CMOS	ICC3	$\overline{E}$ ³ VCC-0.2V VIN ³ VCC-0.2V or VIN £ 0.2V			90	mA
Input Leakage Current	ILI	VIN = 0V to VCC	--	--	±80	µA
Output Leakage Current	ILO	V I/O = 0V to VCC	--	--	±20	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

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

Capacitance

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

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

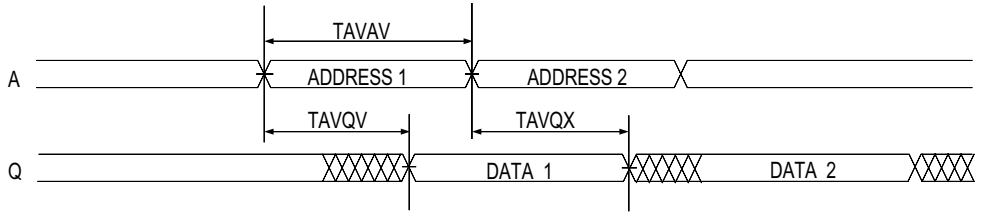
These parameters are sampled, not 100% tested.

AC Characteristics Read Cycle

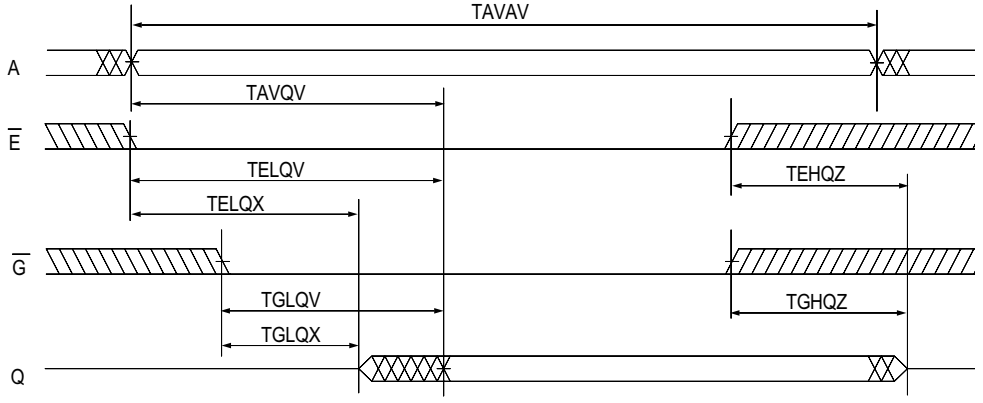
	Symbol		12ns		15ns		
Parameter	**JEDEC**	**Alt.**	**Min**	**Max**	**Min**	**Max**	**Units**
Read Cycle Time	TAVAV	TRC	12		15		ns
Address Access Time	TAVQV	TAA		12		15	ns
Chip Enable Access	TELQV	TACS		12		15	ns
Chip Enable to Output in Low Z (1)	TELQX	TCLZ	3		3		ns
Chip Disable to Output in High Z (1)	TEHQZ	TCHZ		6		7	ns
Output Hold from Address Change	TAVQX	TOH	3		3		ns
Output Enable to Output Valid	TGLQV	TOE		6		7	ns
Output Enable to Output in Low Z (1)	TGLQX	TOLZ	0		0		ns
Output Disable to Output in High Z(1)	TGHQZ	TOHZ		6		7	ns

Note 1: Parameter guaranteed, but not tested.

Read Cycle 1 - $\overline{W}$ High, $\overline{G}$, $\overline{E}$ Low



Read Cycle 2 - $\overline{W}$ High

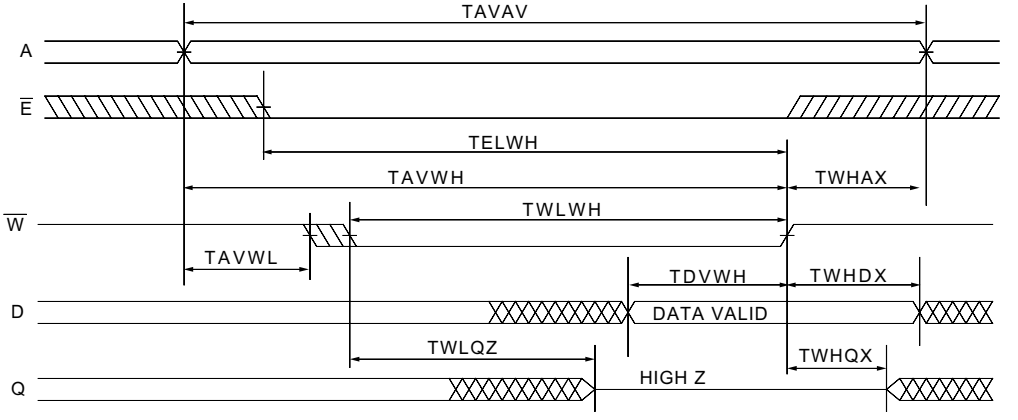


AC Characteristics Write Cycle

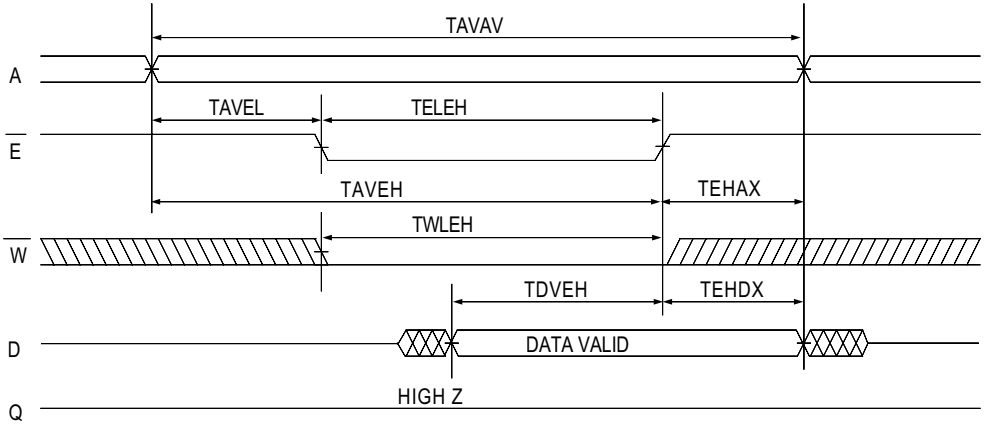
	Symbol		15ns		17ns		
Parameter	**JEDEC**	**Alt.**	**Min**	**Max**	**Min**	**Max**	**Units**
Write Cycle Time	TAVAV	TWC	15		15		ns
Chip Enable to End of Write	TELWH	TCW	10		12		ns
	TWLEH	TCW	10		12		ns
Address Setup Time	TAVWL	TAS	0		0		ns
	TAVEL	TAS	0		0		ns
Address Valid to End of Write	TAVWH	TAW	10		12		ns
	TAVEH	TAW	10		12		ns
Write Pulse Width	TWLWH	TWP	10		12		ns
	TELEH	TWP	10		12		ns
Write Recovery Time	TWHAX	TWR	0		0		ns
	TEHAX	TWR	0		0		ns
Data Hold Time	TWHDX	TDH	0		0		ns
	TEHDX	TDH	0		0		ns
Write to Output in High Z (1)	TWLQZ	TWHZ	0	7	0	8	ns
Data to Write Time	TDVWH	TDW	7		10		ns
	TDVEH	TDW	7		10		ns
Output Active from End of Write (1)	TWHQX	TWLZ	3		3		ns

Note 1: Parameter guaranteed, but not tested.

Write Cycle 1 - $\overline{W}$ Controlled



Write Cycle 2 - $\bar{E}$ Controlled



Ordering Information

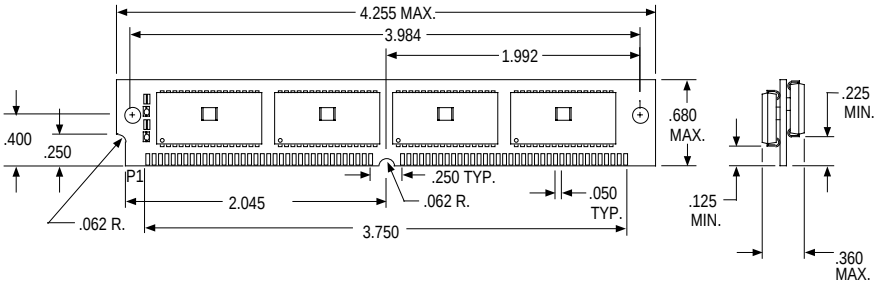
Part Number	Speed (ns)	Package No.
EDI8F321024CA12MNC	12	176
EDI8F321024CA15MNC	15	176
EDI8G321024CA12MNC	12	176
EDI8G321024CA15MNC	15	176

Part Number	Speed (ns)	Package No.
EDI8F321024CA12MMC	12	356
EDI8F321024CA15MMC	15	356
EDI8G321024CA12MMC	12	356
EDI8G321024CA15MMC	15	356

Note: To order gold SIMM option refer to "EDI8G321024CXXMNC"; to order tin plated contacts option refer to "EDI8F321024CXXMNC".

Package Descriptions

Package No. 176
72 Lead Angled SIMM



Package No. 356
72 Pin SIMM