

128Kx44

High Speed CMOS Secondary Cache SRAM Module to Support the R4000 CPU

The EDI8F44128C is a single array multichip Static RAM module organized as a 128Kx44 bits. It contains six (6) 128Kx8 SRAMs mounted on an epoxy laminate (FR4) substrate.

It is intended to be used in a set of four to create a 176 bit wide cache memory array.

This module has been developed to match the interface requirements of the R4000 RISC microprocessor which can support a secondary cache up to a maximum addressable density of 256K or 4 Mbytes of Data.

ADVANCE INFORMATION

Features

128Kx44 bit Asynchronous Buffered Address Static Random Access Memory Module

- Designed for R4000 Applications
- Used in a Set of Four for a 176bit Wide Array
- Fast Access Times: 15, 20, and 25ns
- Multiple Ground Pins and Decoupling Capacitors for Maximum Noise Immunity
- TTL Compatible Inputs/Outputs
- Buffered Address and Control Lines

Packages and Pinout Based on JEDEC Proposal

- 80 Pin SIMM Module, Package No. 166
- 80 Pin ZIP Module, Package No. TBD

Single +5V (±10%) Supply Operation

Pin Configuration and Block Diagram

VSS	1	2	VCC
DQ0	3	4	DO1
DQ2	5	6	DO3
DO4	7	8	DO5
DO6	9	10	VSS
DO7	11	12	DO8
DO9	13	14	DO10
DO11	15	16	DO12
DO13	17	18	DO14
VSS	19	20	DQ15
DO16	21	22	DQ17
DO18	23	24	DO19
DO20	25	26	DO21
DO22	27	28	VSS
VCC	29	30	DQ23
DQ24	31	32	DO25
DO26	33	34	DO27
DO28	35	36	DO29
VSS	37	38	DQ30
DQ31	39	40	DQ32
DO33	41	42	DO34
DO36	43	44	VSS
W	45	46	A0
A1	47	48	A2
A3	49	50	A4
A5	51	52	A6
VSS	53	54	VCC
DE	55	56	G
A7	57	58	A8
A9	59	60	A10
A11	61	62	VSS
A12	63	64	A13
A14	65	66	A15
A16	67	68	NC
TE	69	70	T0
VSS	71	72	T1
T2	73	74	VCC
T4	75	76	T3
T6	77	78	VSS
VCC	79	80	VSS

Pin Names

A0-A16

DE

TE

W

G

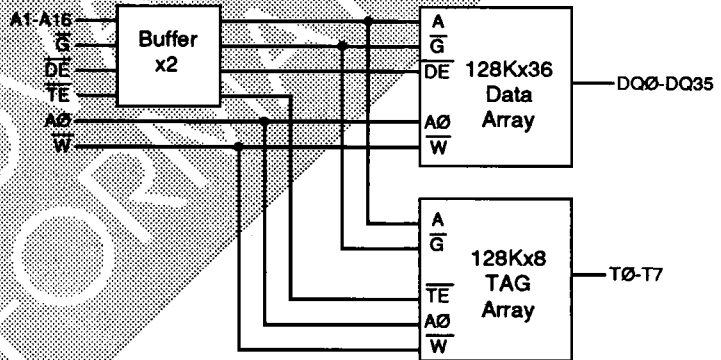
DQ0-DQ35

T0-T7

VCC

VSS

NC



- Address Lines
- Data Chip Enable
- Tag Chip Enable
- Write Enable
- Output Enable
- Common Data Inputs/Outputs
- Common TAG Inputs/Outputs
- Power (+5V±10%)
- Ground
- No Connection

Absolute Maximum Ratings*

Power Supply Voltage	-0.5V to 7.0V
Voltage on any pin relative to VSS/VSSQ for any pin except VCC and VCCQ	-0.5V to VCC +0.5V
Temperature Under Bias	-10°C to +85°C
Operating Temperature TA (Ambient)	0°C to +70°C
Storage Temperature, Plastic	-55°C to +125°C
Power Dissipation(TA=70°C)	25 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
Input High Voltage	VIH	2.2	--	VCC +0.3	V
Input Low Voltage	VIL	-0.5*	--	0.8	V

*VIL(min) = -3.0Vac (pulse width ≤ 20ns)

AC Test Conditions

Input Pulse Levels	0 to 3.0V
Input Rise and Fall Times	3ns
Input and Output Timing Levels	1.5V
Output Load	Figure 1*

* For TEFAQZ, TGHQZ, TLEHQZ

Figure 2

Figure 1

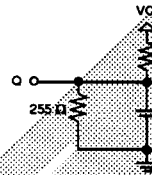
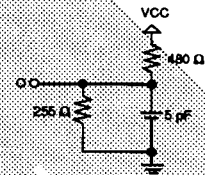


Figure 2



DC Electrical Characteristics

Parameter	Sym	Conditions	Access Time	Min	Typ*	Max	Units
Operating Power Supply Current	ICC1	$\bar{G} = V_{IH}$, All Inputs = $V_{IL} = 0.0V$ and $V_{IH} \geq 3.0V$ $I_{OUT} = 0mA$	15ns			TBD	A
			20ns			1.90	A
			25ns			1.80	A
Standby Current	ICC3	$\bar{E} = V_{IH}$, $E = V_{IL}$, All inputs = V_{IH} or V_{IL} $V_{IL} = 0.0V$, and $V_{IH} \geq 3.0V$, $I_{OUT} = 0mA$				195	mA
Input Leakage Current	ILI	$V_{IN} = 0V$ to V_{CC}		--	--	±50	μA
Output Leakage Current	ILO	$\bar{G} = V_{IH}$		--	--	±50	μA
Output High Voltage	VOH	$I_{OH} = -4.0mA$		2.4			V
Output Low Voltage	VOL	$I_{OL} = 8.0mA$				0.4	V

Capacitance

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

Parameter	Sym	Typ	Max	Unit
Address Lines	CI	6	8	pF
Data Lines	CD/Q	9	15	pF
Control Lines	CC	8	10	pF

These parameters are sampled, not 100% tested.

Ordering Information
Commercial

Part No.	Speed ns	Leads	Package Style	No.
EDI8F44128C15MMC	15	80	SIMM	166
EDI8F44128C20MMC	20	80	SIMM	166
EDI8F44128C25MMC	25	80	SIMM	166
EDI8F44128C15MZC	15	80	ZIP	TBD
EDI8F44128C20MZC	20	80	ZIP	TBD
EDI8F44128C25MZC	25	80	ZIP	TBD

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