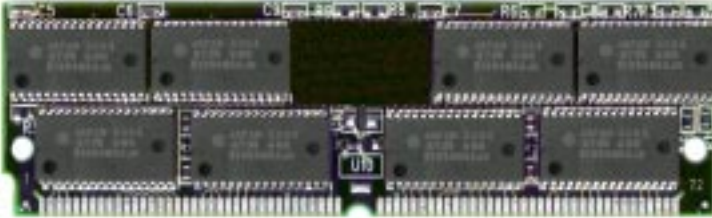
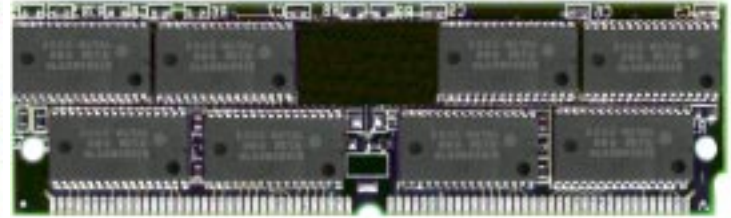


FRONT VIEW



BACK VIEW



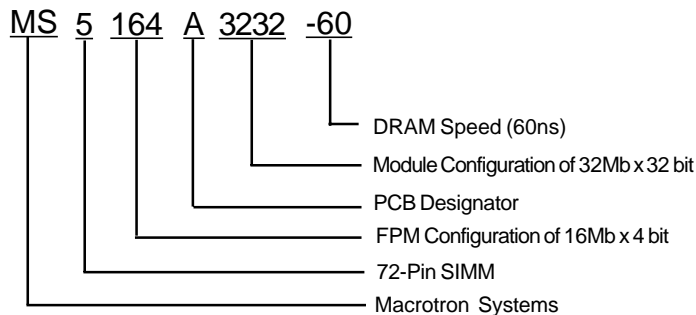
### GENERAL DESCRIPTION

The Macrotron MS5164A3232 is a 32M bit x 32 bit Fast Page Mode Dynamic RAM (FPM) high density memory module. It consists of sixteen CMOS 16M x 4 bit FPM DRAMs in SOJ packages and a voltage regulator on a 72-pin glass-epoxy substrate with gold leads. Decoupling capacitors are mounted on the printed circuit board in parallel for each DRAM. The product is a Single In-line Memory Module and is intended for mounting into 72-pin edge connector sockets.

### FEATURES

- 32 Megabit by 32 bit (128 Megabyte) FPM DRAM Module
- JEDEC-standard 72-pin single in-line memory module (SIMM) with Presence Detect (PD)
- Utilizes 60ns DRAM components
- Nonbuffered
- Single +5.0V power supply with regulator
- TTL compatible inputs and outputs
- CAS-before-RAS and Hidden Refresh capability
- RAS-only refresh capability

### PART NUMBER DESIGNATOR



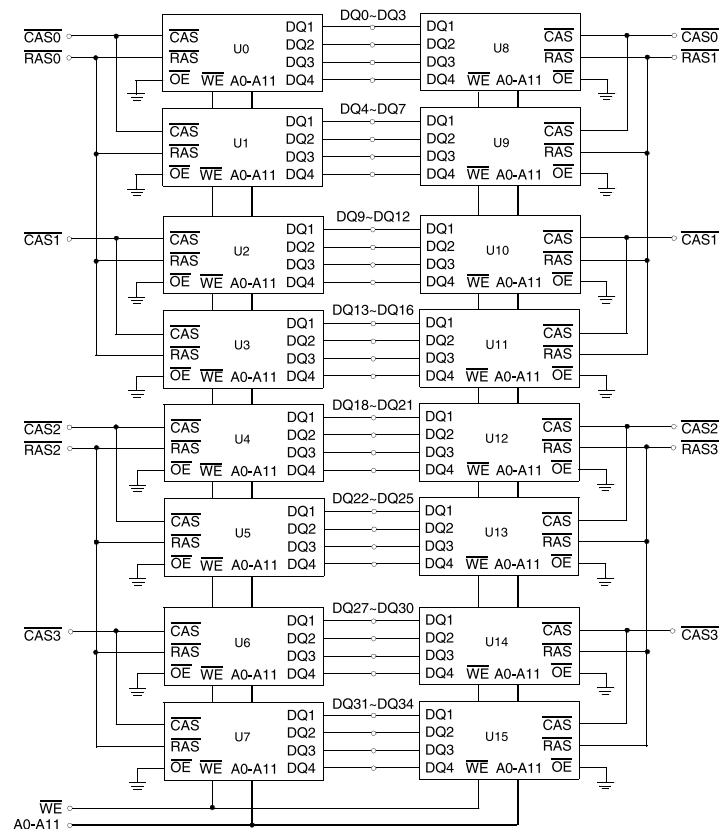
### KEY TIMING PARAMETERS

PARAMETER	VALUE	UNIT
tRAC	60	ns
tCAC	15	ns
tRC	110	ns

### PIN CONFIGURATIONS

PIN	SYMBOL	PIN	SYMBOL	PIN	SYMBOL	PIN	SYMBOL
1	VSS	19	A10	37	NC	55	DQ12
2	DQ0	20	DQ4	38	NC	56	DQ30
3	DQ18	21	DQ22	39	VSS	57	DQ13
4	DQ18	22	DQ5	40	CAS0	58	DQ31
5	DQ19	23	DQ23	41	CAS2	59	VDD
6	DQ2	24	DQ6	42	CAS3	60	DQ32
7	DQ20	25	DQ24	43	CAS1	61	DQ14
8	DQ3	26	DQ7	44	RAS0	62	DQ33
9	DQ21	27	DQ25	45	NC	63	DQ15
10	VDD	28	A7	46	NC	64	DQ34
11	NC	29	A11	47	WE	65	DQ16
12	A0	30	VCC	48	NC	66	NC
13	A1	31	A8	49	DQ9	67	PD1
14	A2	32	A9	50	DQ27	68	PD2
15	A3	33	NC	51	DQ10	69	PD3
16	A4	34	RAS2	52	DQ28	70	PD4
17	A5	35	NC	53	DQ11	71	NC
18	A6	36	NC	54	DQ29	72	VSS

### FUNCTIONAL BLOCK DIAGRAM



### PIN NAMES

PIN NAME	FUNCTION
A0~A12	Address Input (4K Ref)
DQ0~7, DQ9~16, DQ18~25, DQ27~34	Data Input / Data Output
WE	Read/Write Enable
RAS0, RAS2	Row Address Strobe
CAS0~CAS3	Column Address Strobe
PD1~PD4	Write Enable
DQM0~7	DQM
VSS	Ground
VDD	Power (+5V)
NC	No Connection

