

# Accutec Microcircuit Corporation

## AK5368192W 8,388,608 by 36 Bit CMOS Dynamic Random Access Memory

### DESCRIPTION

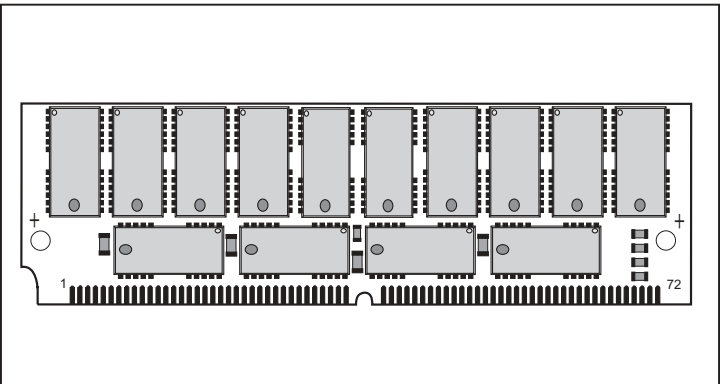
The Accutec AK5368192W high density memory module is a CMOS dynamic RAM organized in 8192K x 36 bit words. The module consists of sixteen standard 4 Meg x 4 DRAMs and eight 4 Meg x 1 DRAMs, each in plastic SOJ packages. The assembly has 14 drams mounted on the front side and 10 drams mounted on the back side of a printed circuit board in a 72 pad leadless SIM configuration.

This configuration allows socket-mounting of large quantities of memory in applications where high density and ease of inserting additional memory are important.

The operation of the AK5368192W is identical to sixteen 4M x 4 plus eight 4M x 1 Drams. There are four CAS lines and four RAS lines. On each bank of 4M x 36, independent byte control is accomplished by four CAS lines. Each separate CAS line controls two 4M x 4 Drams along with a 4M x 1 Dram with data in tied to data out to form a 9 bit byte. Two banks of 36 bits are controlled by the two pairs of RAS lines. An eighteen bit data path can be produced by connecting DQ<sub>0</sub> to DQ<sub>18</sub>, DQ<sub>1</sub> to DQ<sub>19</sub>, etc. and alternately strobing RAS<sub>0</sub> with RAS<sub>1</sub> and RAS<sub>2</sub> with RAS<sub>3</sub>.

### FEATURES

- 8,388,608 x 36 bit organization
- 72 pad Single In-Line Module
- Multiple CAS and RAS lines allow x18 or x36 bit widths
- CAS-before-RAS, RAS-only or hidden refresh
- Power
  - 7.30 Watt Max Active (60nS)
  - 6.68 Watt Max Active (70 nS)
  - 252 mW Max Standby
- Operating free air temperature 0°C to 70°C



- Single 5 Volt Power Supply
- 2048 Refresh Cycles, 32 mSEC
- Available in Fast Page Mode and Static Column mode versions
- Available in leadless (W) or leaded Zip (Z) versions
- Downward compatible with AK5364096W through AK536256W sizes

### EXAMPLES

#### AK5368192WP-70

8Meg x 36 CMOS Dynamic RAM, SIM, Page Mode, Commercial 70 nSEC Access Time

### ADDITIONAL OPTIONS AVAILABLE

- 4 Meg x 36 version, drams on one side only  
Reference Part No. AK5364096W4096 Refresh Cycles, 64 mSEC available for all module sizes

### PIN NOMENCLATURE

DQ <sub>0</sub> - DQ <sub>35</sub>	Data In/Data Out
A <sub>0</sub> - A <sub>10</sub> , 2K Refresh	Address Inputs
A <sub>0</sub> - A <sub>11</sub> , 4K Refresh	Address Inputs
CAS <sub>0</sub> - CAS <sub>3</sub>	Column Address Strobe
RAS <sub>0</sub> - RAS <sub>3</sub>	Row Address Strobe
WE	Write Enable
PD <sub>1</sub> - PD <sub>4</sub>	Presence Detect
Vcc	5v Supply
Vss	Ground
NC	No Connect

### MODULE OPTIONS

Leadless SIM: AK5368192W

Leaded ZIP: AK5368192Z

### PIN ASSIGNMENT

PIN #	SYMBOL	PIN #	SYMBOL	PIN #	SYMBOL	PIN #	SYMBOL
1	Vss	19	A10	37	DQ17	55	DQ12
2	DQ0	20	DQ4	38	DQ35	56	DQ30
3	DQ18	21	DQ22	39	VssV	57	DQ13
4	DQ1	22	DQ5	40	CAS0	58	DQ31
5	DQ19	23	DQ23	41	CAS2	59	Vcc
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	RAS1	63	DQ15
10	Vcc	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	RAS3	51	DQ10	69	PD3
16	A4	34	RAS2	52	DQ28	70	PD4
17	A5	35	DQ26	53	DQ11	71	NC
18	A6	36	DQ8	54	DQ29	72	Vss

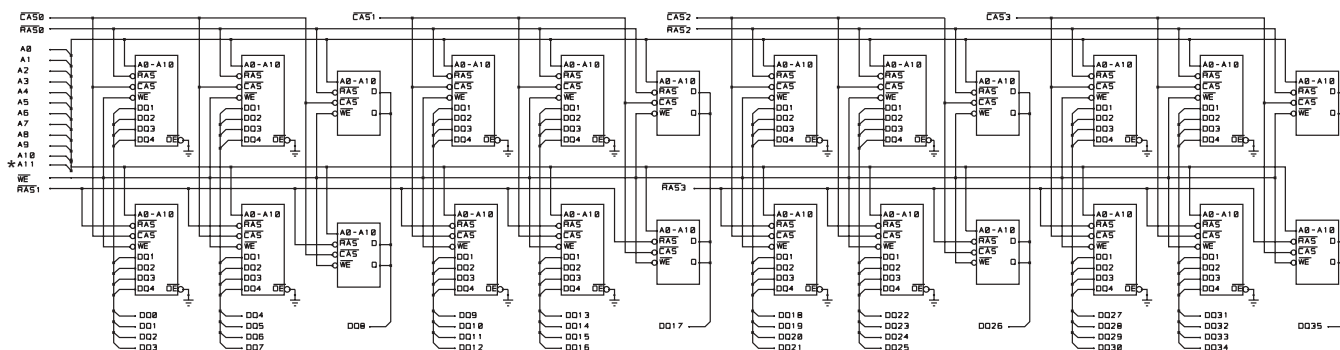
Presence Detect - 8 Meg x 36

	-60	-70
PD1	NC	NC
PD2	Vss	Vss
PD3	NC	Vss
PD4	NC	NC

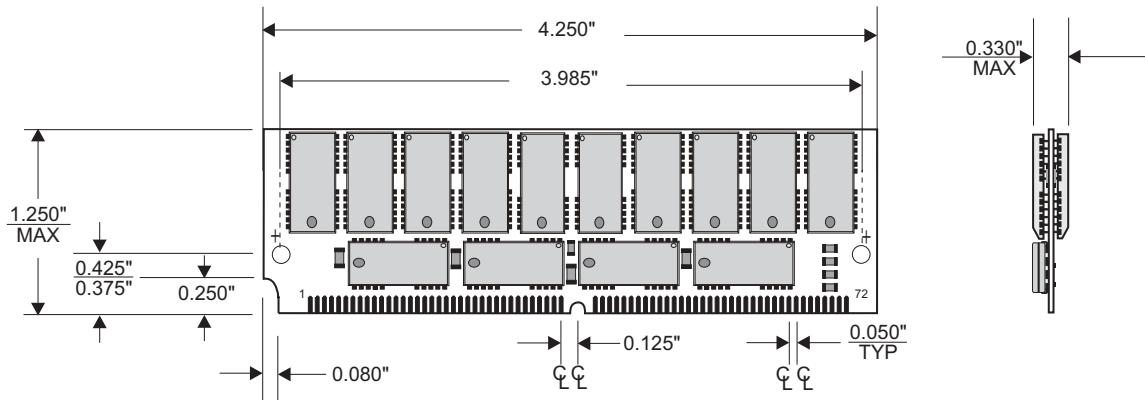
4 Meg x 36

	-60	-70
Vss	Vss	Vss
NC	NC	NC
NC	Vss	Vss
NC	NC	NC

## FUNCTIONAL DIAGRAM



## MECHANICAL DIMENSIONS



## ORDER INFORMATION

### PART NUMBER CODING INTERPRETATION

Position	1	2	3	4	5	6	7	8
1 Product								
AK = Accuthek Memory								
2 Type								
4 = Dynamic RAM								
5 = CMOS Dynamic RAM								
6 = Static RAM								
3 Organization/Word Width								
1 = by 1 16 = by 16								
4 = by 4 32 = by 32								
8 = by 8 36 = by 36								
9 = by 9								
4 Size/Bits Depth								
64 = 64K 4096 = 4 MEG								
256 = 256K 8192 = 8 MEG								
1024 = 1 MEG 16384 = 16 MEG								

The numbers and coding on this page do not include all variations available, but are shown as examples of the most widely used variations. Contact Accuthek if other information is required.

### Position

1 2 3 4 5 6 7 8

#### 5 Package Type

G = Single In-Line Package (SIP)  
S = Single In-Line Module (SIM)  
D = Dual In-Line Package (DIP)  
W = .050 inch Pitch Edge Connect  
Z = Zig-Zag In-Line Package (ZIP)

#### 6 Special Designation

P = Page Mode  
N = Nibble Mode  
K = Static Column Mode  
W = Write Per Bit Mode  
V = Video Ram

#### 7 Separator

- = Commercial 0°C to +70°C  
M = Military Equivalent Screened (-55°C to +125°C)  
I = Industrial Temperature Tested (-45°C to +85°C)  
X = Burned In

#### 8 Speed (first two significant digits)

DRAMS	SRAMS
60 = 60 nS	8 = 8 nS
70 = 70 nS	12 = 12 nS
80 = 80 nS	15 = 15 nS



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