

### DESCRIPTION

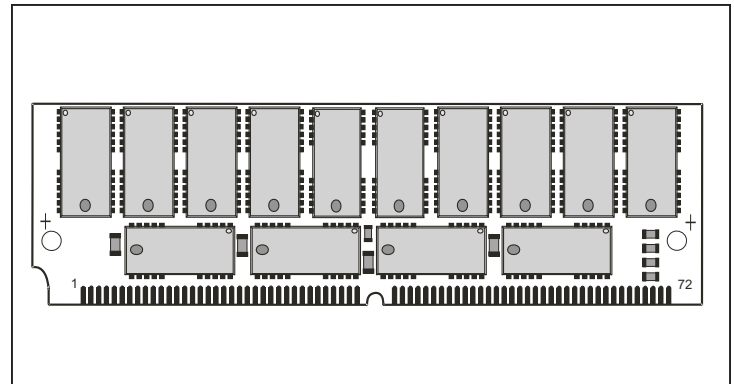
The Accutek AK5368192W high density memory module is a CMOS dynamic RAM organized in 8192K x 36 bit words. The module consists of sixteen standard 4 Meg x 4 DRAMs and eight 4 Meg x 1 DRAMs, each in plastic SOJ packages. The assembly has 14 dramms mounted on the front side and 10 dramms mounted on the 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  $\overline{\text{CAS}}$  lines and four  $\overline{\text{RAS}}$  lines. On each bank of 4M x 36, independent byte control is accomplished by four  $\overline{\text{CAS}}$  lines. Each separate  $\overline{\text{CAS}}$  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  $\overline{\text{RAS}}$  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>1</sub> with 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
$\overline{\text{CAS}}_0$ - $\overline{\text{CAS}}_3$	Column Address Strobe
$\overline{\text{RAS}}_0$ - $\overline{\text{RAS}}_3$	Row Address Strobe
$\overline{\text{WE}}$	Write Enable
PD <sub>1</sub> - PD <sub>4</sub>	Presence Detect
V <sub>cc</sub>	5v Supply
V <sub>ss</sub>	Ground
NC	No Connect

### PIN ASSIGNMENT

PIN #	SYMBOL	PIN #	SYMBOL	PIN #	SYMBOL	PIN #	SYMBOL
1	V <sub>ss</sub>	19	A10	37	DQ17	55	DQ12
2	DQ0	20	DQ4	38	DQ35	56	DQ30
3	DQ18	21	DQ22	39	V <sub>ssV</sub>	57	DQ13
4	DQ1	22	DQ5	40	$\overline{\text{CAS}}_0$	58	DQ31
5	DQ19	23	DQ23	41	$\overline{\text{CAS}}_2$	59	V <sub>cc</sub>
6	DQ2	24	DQ6	42	$\overline{\text{CAS}}_3$	60	DQ32
7	DQ20	25	DQ24	43	$\overline{\text{CAS}}_1$	61	DQ14
8	DQ3	26	DQ7	44	$\overline{\text{RAS}}_0$	62	DQ33
9	DQ21	27	DQ25	45	$\overline{\text{RAS}}_1$	63	DQ15
10	V <sub>cc</sub>	28	A7	46	NC	64	DQ34
11	NC	29	A11	47	$\overline{\text{WE}}$	65	DQ16
12	A0	30	V <sub>cc</sub>	48	NC	66	NC
13	A1	31	A8	49	DQ9	67	PD1
14	A2	32	A9	50	DQ27	68	PD2
15	A3	33	$\overline{\text{RAS}}_3$	51	DQ10	69	PD3
16	A4	34	$\overline{\text{RAS}}_2$	52	DQ28	70	PD4
17	A5	35	DQ26	53	DQ11	71	NC
18	A6	36	DQ8	54	DQ29	72	V <sub>ss</sub>

### MODULE OPTIONS

Leadless SIM: AK5368192W

Leaded ZIP: AK5368192Z

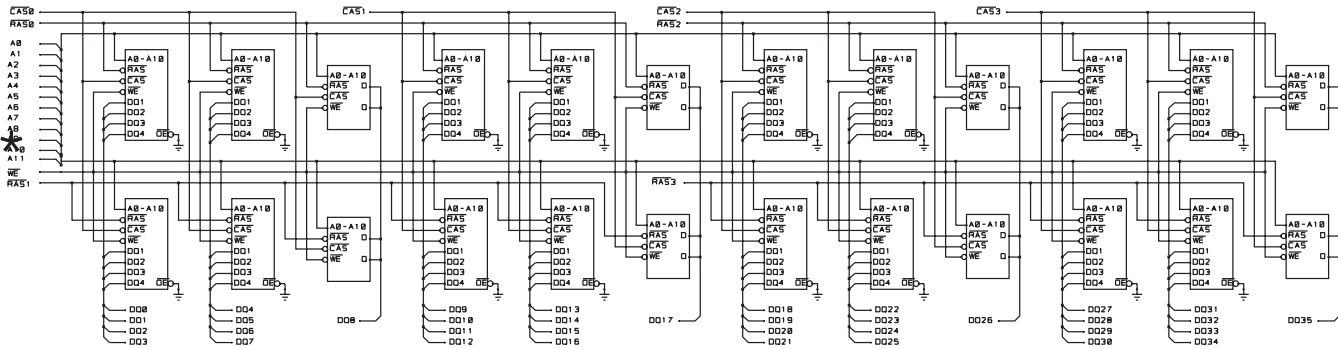
Presence Detect - 8 Meg x 36

	-60	-70
PD1	NC	NC
PD2	V <sub>ss</sub>	V <sub>ss</sub>
PD3	NC	V <sub>ss</sub>
PD4	NC	NC

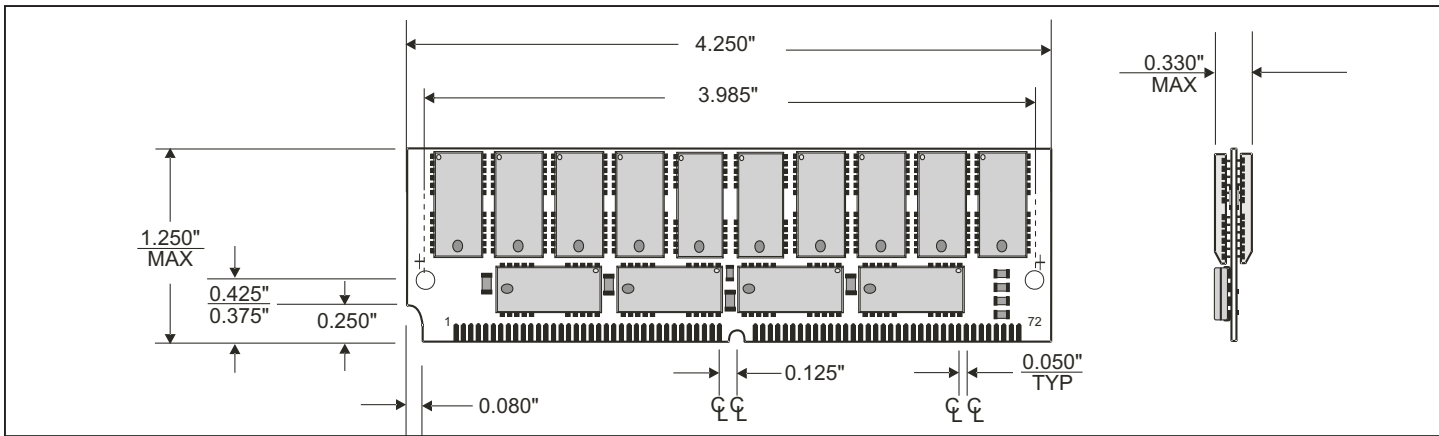
4 Meg x 36

	-60	-70
	V <sub>ss</sub>	V <sub>ss</sub>
	NC	NC
	NC	V <sub>ss</sub>
	NC	NC

# FUNCTIONAL DIAGRAM



# MECHANICAL DIMENSIONS



# ORDER INFORMATION

# PART NUMBER CODING INTERPRETATION

Position	1	2	3	4	5	6	7	8
<b>1 Product</b>								
<b>AK = Accuthek Memory</b>								
<b>2 Type</b>								
4 = Dynamic RAM								
5 = CMOS Dynamic RAM								
6 = Static RAM								
<b>3 Organization/Word Width</b>								
1 = by 1 16 = by 16								
4 = by 4 32 = by 32								
8 = by 8 36 = by 36								
9 = by 9								
<b>4 Size/Bits Depth</b>								
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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