ACCUTEK
MICROCIRCUIT CORPORATION

AK594096AS / AK594096AG
4,194,304 Word x 9 Bit CMOS Dynamic Random Access Memory

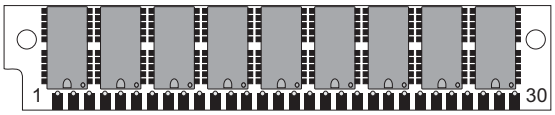
DESCRIPTION

The Accutek AK594096A high density memory module is a CMOS random access memory organized in 4 Meg x 9 bit words. The assembly consists of nine standard 4 Meg x 1 DRAMs in plastic leaded chip carriers (SOJ) mounted on the front side of a printed circuit board. The module can be configured as a leadless 30 pad SIM or a leaded 30 pin SIP. The module is only 0.800 inches high (same height as a standard 1 Meg module), making it ideally suited for applications with low height restrictions.

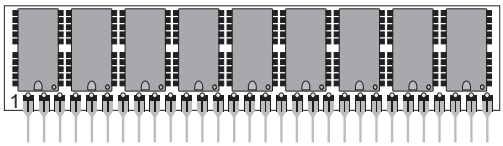
The operation of the AK594096A is identical to nine 4 Meg x 1 DRAMs. For the lower eight bits data input is tied to the data output and brought out separately for each device, with common $\overline{RAS}$, $\overline{CAS}$ control. This common I/O feature dictates the use of early-write cycles to prevent contention of D and Q. Since the Write-Enable ($\overline{WE}$) signal must always go low before $\overline{CAS}$ in a write cycle, Read-Write and Read-Modify-Write operation is not possible. For the ninth bit, the data input (D_9) and the data output (Q_9) pins are brought out separately and controlled by a separate $\overline{PCAS}$ for that bit. Bit nine is generally used for parity.

Front View

30-Pin SIM



30-Pin SIP



FEATURES

- 4,194,304 x 9 bit organization
- Optional 30 Pad leadless SIM (Single In-Line Module) or 30 Pin leaded SIP (Single In-Line Package)
- JEDEC standard pinout
- Common $\overline{CAS}$ and $\overline{RAS}$ control for the lower eight bits
- Separate $\overline{PCAS}$ for control for D_9 and Q_9
- $\overline{CAS}$-before-$\overline{RAS}$ refresh
- Power
  4.45 Watt Max Active (80 nSEC)
  3.96 Watt Max Active (100 nSEC)
  49.5 mW Max Standby
- Operating free air temperature 0^0C to 70^0C
- Upward compatible with AK5916384
- Downward compatible with AK591024, AK59256

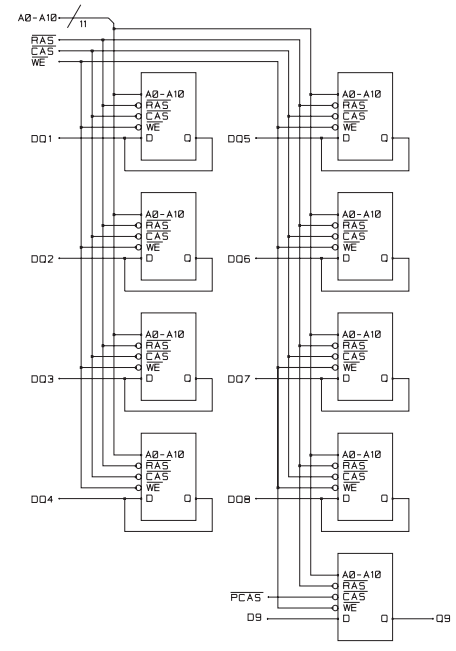
PIN NOMENCLATURE

DQ_1 - DQ_8	Data In / Data Out
D_9	Data In 9
Q_9	Data Out 9
A_0 - A_{10}	Address Inputs
$\overline{CAS}$, $\overline{PCAS}$	Column Address Strobe
$\overline{RAS}$	Row Address Strobe
$\overline{WE}$	Write Enable
Vcc	5v Supply
Vss	Ground
NC	No Connect

PIN ASSIGNMENT

PIN #	SYMBOL	PIN #	SYMBOL
1	Vcc	16	DQ5
2	$\overline{CAS}$	17	A8
3	DQ1	18	A9
4	A0	19	A10
5	A1	20	DQ6
6	DQ2	21	$\overline{WE}$
7	A2	22	Vss
8	A3	23	DQ7
9	Vss	24	NC
10	DQ3	25	DQ8
11	A4	26	Q9
12	A5	27	$\overline{RAS}$
13	DQ4	28	$\overline{PCAS}$
14	A6	29	D9
15	A7	30	Vcc

FUNCTIONAL DIAGRAM



MODULE OPTIONS

Leadless SIM: AK594096AS
Leaded SIP: AK594096AG

ORDERING INFORMATION

PART NUMBER CODING INTERPRETATION

Position	1	2	3	4	5	6	7	8

1 Product

AK = Accutek 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

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

8 Speed (first two significant digits)

DRAMS			SRAMS		
50	=	50 nS	8	=	8 nS
60	=	60 nS	10	=	10 nS
70	=	70 nS	12	=	12 nS
80	=	80 nS	15	=	15 nS

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

EXAMPLES:

AK594096ASP-80

4 Meg x 9, 80 nSEC DRAM 30 pin SIM Configuration, Page Mode

AK594096AGP-70

4 Meg x 9, 70 nSEC Dram 30 pin SIP Configuration, Page Mode

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MECHANICAL DIMENSIONS

Inches