

ACCUTEK

MICROCIRCUIT CORPORATION

AK5322048N

2,097,152 Word by 32 Bit CMOS

Dynamic Random Access Memory

DESCRIPTION

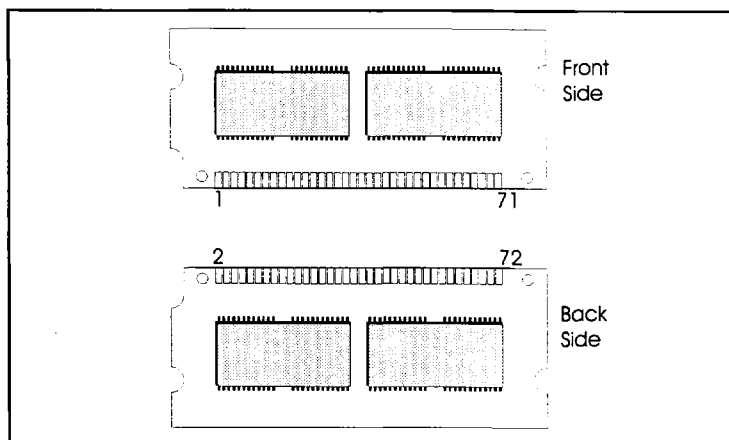
The Accuthek AK5322048N high density memory module is a CMOS dynamic RAM organized in 2048K x 32 bit words. The module consists of four standard 1 Meg x 16 DRAMs in plastic TSOP packages. The assembly has 2 drams mounted on each side of a printed circuit board in a 72 pad leadless Dual Row Sodim configuration.

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 AK5322048A is identical to four 1M x 16 Drams. There are four $\overline{\text{CAS}}$ lines and four $\overline{\text{RAS}}$ lines. On each bank of 1M x 32, independent byte control is accomplished by four $\overline{\text{CAS}}$ lines. Each separate $\overline{\text{CAS}}$ line controls one byte of the 1M x 16 Dram. Two banks of 32 bits are controlled by the two pairs of $\overline{\text{RAS}}$ lines. A sixteen bit data path can be produced by connecting DQ_0 to DQ_{16} , DQ_1 to DQ_{17} etc. and alternately strobing $\overline{\text{RAS}}_0$ with $\overline{\text{RAS}}_1$ and $\overline{\text{RAS}}_2$ with $\overline{\text{RAS}}_3$.

FEATURES

- 2,097,152 x 32 bit organization
- 72 pad Dual Row Sodim Module
- Multiple $\overline{\text{CAS}}$ and $\overline{\text{RAS}}$ lines allow x16 or x32 bit widths
- $\overline{\text{CAS}}$ -before- $\overline{\text{RAS}}$, $\overline{\text{RAS}}$ -only or hidden refresh
- Operating free air temperature 0°C to 70°C
- Single 5 Volt Power Supply
- 1024 Refresh Cycles, 16 mSEC



- Available in Fast Page Mode and Static Column Mode versions
- Power
 - 1.80 Watt Max Active (60nS)
 - 1.66 Watt Max Active (70 nS)
 - 1.44 Watt Max Active (80 nS)
 - 22 mW Max StandbyAvailable

ADDITIONAL OPTIONS AVAILABLE

1 Meg x 32 version, AK5321024N

PIN NOMENCLATURE

DQ ₀ - DQ ₃₁	Data In/Data Out
A ₀ - A ₉	Address Inputs
$\overline{\text{CAS}}_0$ - $\overline{\text{CAS}}_3$	Column Address Strobe
$\overline{\text{RAS}}_0$ - $\overline{\text{RAS}}_3$	Row Address Strobe
WE	Write Enable
PD ₀ - PD ₆	Presence Detect
Vcc	5v Supply
Vss	Ground
NC	No Connect

PIN ASSIGNMENT

PIN #	SYMBOL	PIN #	SYMBOL	PIN #	SYMBOL	PIN #	SYMBOL
1	Vss	19	NC	37	DQ16	55	NC
2	DQ0	20	NC	38	DQ17	56	DQ24
3	DQ1	21	DQ8	39	Vss	57	DQ25
4	DQ2	22	DQ9	40	$\overline{\text{CAS}}_0$	58	DQ26
5	DQ3	23	DQ10	41	$\overline{\text{CAS}}_2$	59	DQ28
6	DQ4	24	DQ11	42	$\overline{\text{CAS}}_3$	60	DQ27
7	DQ5	25	DQ12	43	$\overline{\text{CAS}}_1$	61	Vcc
8	DQ6	26	DQ13	44	$\overline{\text{RAS}}_0$	62	DQ29
9	DQ7	27	DQ14	45	$\overline{\text{RAS}}_1$	63	DQ30
10	Vcc	28	A7	46	NC	64	DQ31
11	PD0	29	NC	47	WE	65	NC
12	A0	30	Vcc	48	NC	66	PD1
13	A1	31	A8	49	DQ18	67	PD2
14	A2	32	A9	50	DQ19	68	PD3
15	A3	33	$\overline{\text{RAS}}_3$	51	DQ20	69	PD4
16	A4	34	$\overline{\text{RAS}}_2$	52	DQ21	70	PD5
17	A5	35	DQ15	53	DQ22	71	PD6
18	A6	36	NC	54	DQ23	72	Vss

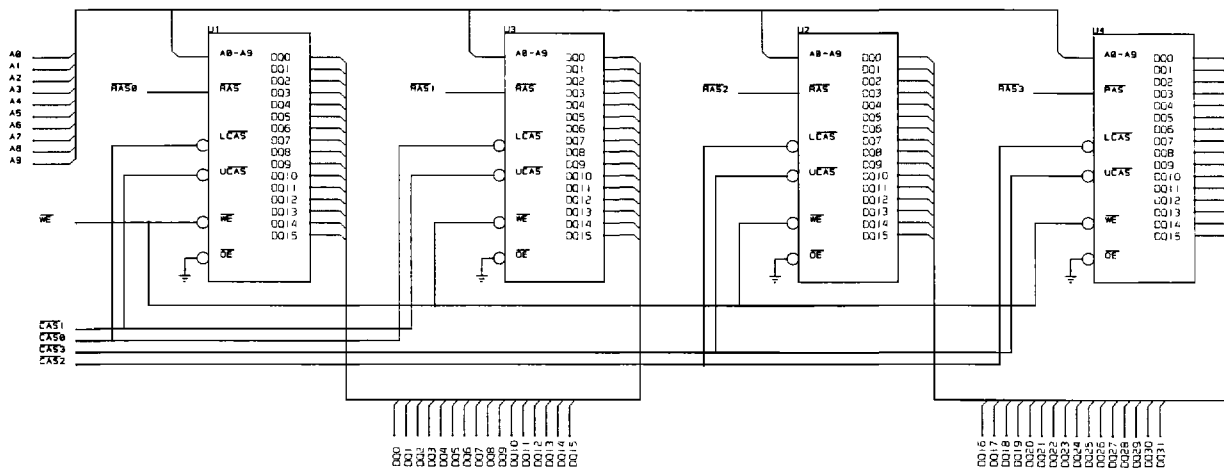
Presence Detect -

Access Time	PD ₀	PD ₁	PD ₂	PD ₃	PD ₄	PD ₅	PD ₆
-60	NC	Vss	Vss	Vss	NC	NC	NC
-70	NC	Vss	Vss	Vss	Vss	NC	NC

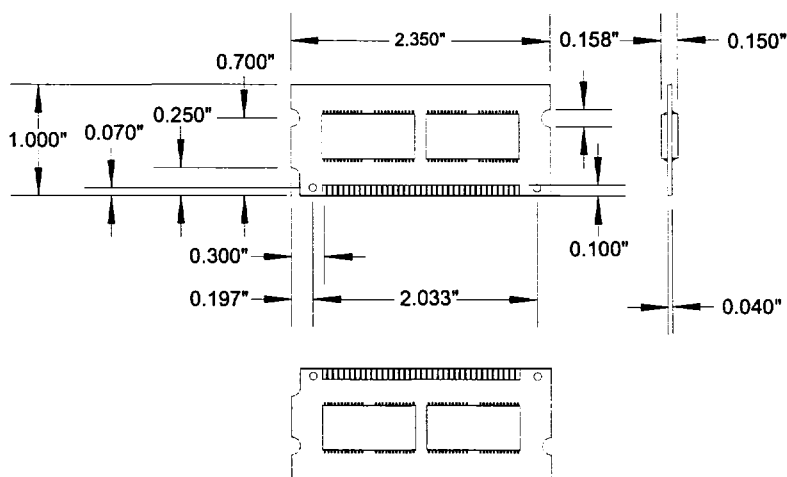
MODULE OPTIONS

Leadless SODIM: AK5322048N

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
N = Dual Row Sodim
Z = Zig-Zag In-Line Package (ZIP)

6 Special Designation

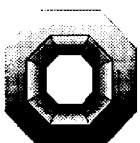
P = Page Mode
N = Nibble Mode
K = Static Column Mode
W = Write Per Bit Mode
V = Video Ram

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	12 = 12 nS
70 = 70 nS	15 = 15 nS
80 = 80 nS	20 = 20 nS



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