

# AK632128AW / AK632128AZ 131,072 x 32 Bit CMOS/BiCMOS Static Random Access Memory

## DESCRIPTION

The Accuthek AK632128A SRAM Module consists of fast high performance SRAMs mounted on a low height, 64 pin SIM or ZIP PCB. The module utilizes four 32 pin 128K x 8 SRAMs in 300 mil SOJ packages and four decoupling capacitors mounted on the front side of a printed circuit board.

The SRAMs used have common I/O functions and single output enable functions. Also, four separate chip select ( $\overline{CE}$ ) connections are used to independently enable the four bytes. The modules can be supplied in a variety of access time values from 7nSEC to 35nSEC in CMOS or BiCMOS technology.

The Accuthek module is designed to have a maximum seated height of 0.600 inch SIM or 0.520 inch ZIP to provide for the lowest height off the board. Each conforms to JEDEC-standard sizes and pin-out configurations. Using two pins for module density identification, PD<sub>0</sub> and PD<sub>1</sub>, minimizes interchangeability and design considerations when changing from one module size to the other in customer applications.

## FEATURES

- 131,072 x 32 bit organization
- JEDEC Standard 64 pin SIM or ZIP format
- Access times as fast as 7nSEC
- TTL compatible inputs and outputs
- Very low profile, 0.600 inch MAX seated height SIM Version
- Very low profile, 0.520 inch MAX seated height ZIP Version
- Single 5 volt power supply - AK632128AW, AK632128AZ

## PIN NOMENCLATURE

|                                     |                  |
|-------------------------------------|------------------|
| A0 - A16                            | Address Inputs   |
| $\overline{CE}_1 - \overline{CE}_4$ | Chip Enable      |
| DQ <sub>1</sub> - DQ <sub>32</sub>  | Data In/Data Out |
| $\overline{OE}$                     | Output Enable    |
| PD <sub>0</sub> - PD <sub>1</sub>   | Presence Detect  |
| Vcc                                 | Power Supply     |
| Vss                                 | Ground           |
| $\overline{WE}$                     | Write Enable     |
| NC                                  | No Connect       |

## MODULE OPTIONS

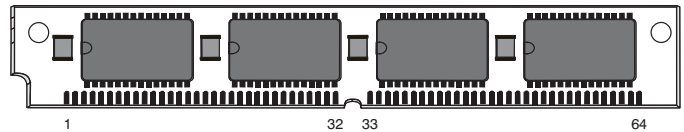
|                          |
|--------------------------|
| Leadless SIM: AK632128AW |
| Leaded ZIP: AK632128AZ   |

## PIN ASSIGNMENT

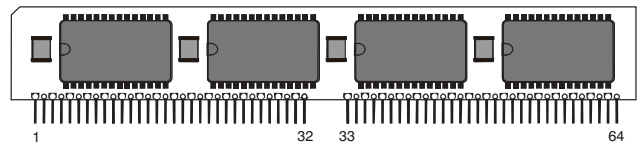
| PIN # | SYMBOL          | PIN # | SYMBOL            | PIN # | SYMBOL            | PIN # | SYMBOL |
|-------|-----------------|-------|-------------------|-------|-------------------|-------|--------|
| 1     | Vss             | 17    | A2                | 33    | $\overline{CE}_4$ | 49    | A4     |
| 2     | PD <sub>0</sub> | 18    | A9                | 34    | $\overline{CE}_3$ | 50    | A11    |
| 3     | PD <sub>1</sub> | 19    | DQ13              | 35    | NC                | 51    | A5     |
| 4     | DQ1             | 20    | DQ5               | 36    | A16               | 52    | A12    |
| 5     | DQ9             | 21    | DQ14              | 37    | $\overline{OE}$   | 53    | Vcc    |
| 6     | DQ2             | 22    | DQ6               | 38    | Vss               | 54    | A13    |
| 7     | DQ10            | 23    | DQ15              | 39    | DQ25              | 55    | A6     |
| 8     | DQ3             | 24    | DQ7               | 40    | DQ17              | 56    | DQ21   |
| 9     | DQ11            | 25    | DQ16              | 41    | DQ26              | 57    | DQ29   |
| 10    | DQ4             | 26    | DQ8               | 42    | DQ18              | 58    | DQ22   |
| 11    | DQ12            | 27    | Vss               | 43    | DQ27              | 59    | DQ30   |
| 12    | Vcc             | 28    | $\overline{WE}$   | 44    | DQ19              | 60    | DQ23   |
| 13    | A0              | 29    | A15               | 45    | DQ28              | 61    | DQ31   |
| 14    | A7              | 30    | A14               | 46    | DQ20              | 62    | DQ24   |
| 15    | A1              | 31    | $\overline{CE}_2$ | 47    | A3                | 63    | DQ32   |
| 16    | A8              | 32    | $\overline{CE}_1$ | 48    | A10               | 64    | Vss    |

PD<sub>0</sub> = Open  
PD<sub>1</sub> = Open

## Top View 64-Pin SIMM



## 64-Pin ZIP

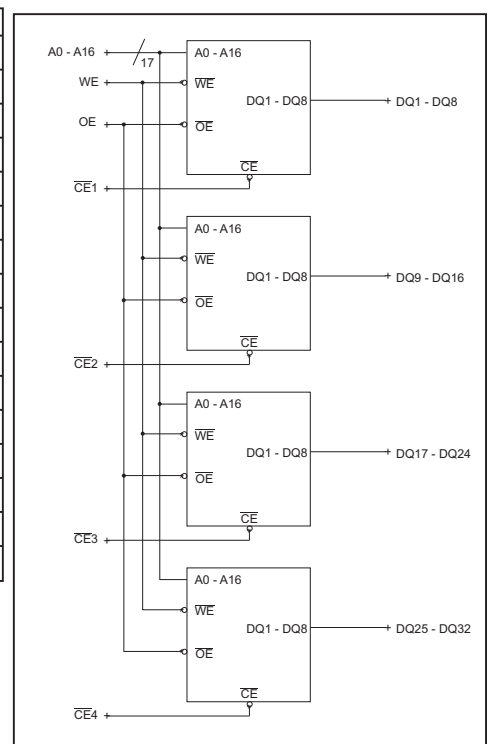


- Single 3.3 volt power supply - AK632128AW/3.3, AK632128AZ/3.3
- Common I/O, single  $\overline{OE}$  functions with four separate chip selects ( $\overline{CE}$ )
- Presence Detect PD<sub>0</sub> and PD<sub>1</sub> for identifying module density
- Downward compatible with 32K x 32 (AK63232) and 64K x 32 (AK63264)
- Upward compatible with 256K x 32 (AK632256), 512K x 32 (AK632512) and 1 Meg x 32 (AK6321024)
- Operating free air temperature 0° to 70°C

## ELECTRICAL SPECIFICATIONS

Timing diagrams and basic electrical characteristics are those of the standard 128K x 8 SRAMs used to construct these modules. Accuthek's module design allows the flexibility of selecting industry-compatible 128K x 8 SRAMs from at least seven semiconductor manufacturers.

## FUNCTIONAL DIAGRAM



## ORDERING 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                     |   |   |   |   |   |   |   |
| 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                   |   |   |   |   |   |   |   |
|          | 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 shown as examples of the most widely used variations. Contact Accuthek if other information is required.

### EXAMPLES:

#### AK632128AW-10

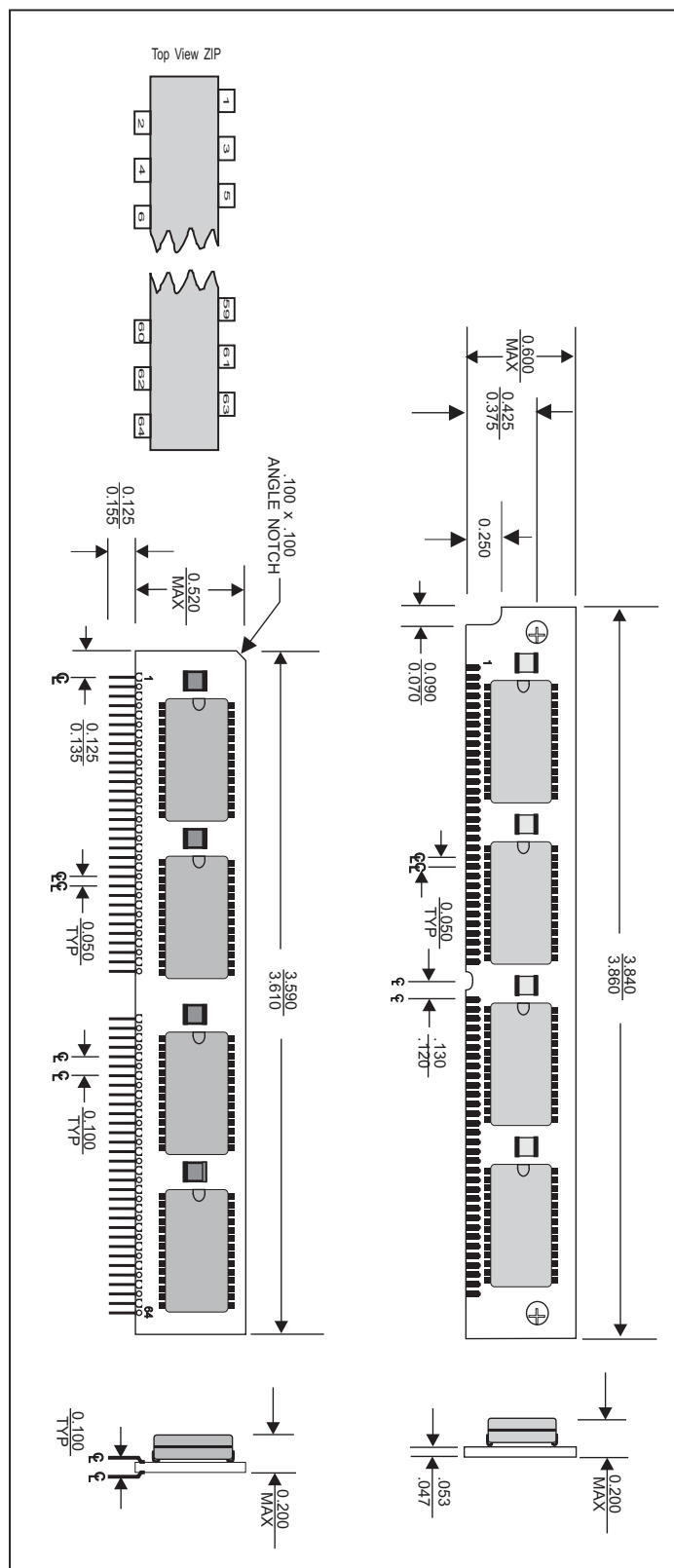
128K x 32, 15 nSEC SRAM Module, SIM Configuration

#### AK632128AZ-12

128K x 32, 12 nSEC SRAM Module, ZIP Configuration

## MECHANICAL DIMENSIONS

Inches



Accuthek reserves the right to make changes in specifications at any time and without notice. Accuthek does not assume any responsibility for the use of any circuitry described; no circuit patent licenses are implied. Preliminary data sheets contain minimum and maximum limits based upon design objectives, which are subject to change upon full characterization over the specific operating conditions.