# *Irvine Sensors Corporation*
Microelectronics Products Division

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128 Mbit Synchronous DRAM Memory Stack

Features:

- Low Profile: same PCB area as a single device
- Provides a cost-effective emulation of a 128 Mbit SDRAM by using 2 low cost 64 Mbit SDRAMs.
- Low cost, economical for volume commercial applications

- JEDEC Standard 3.3V power supply
- Auto & self refresh
- Four Bank Architecture
- 64ms refresh period (4K Cycle)
- Available in 100Mhz and 125Mhz versions
- Utilizes Samsung KM44S16030C TSOPs

- 2 x 4 x 4M x 4 Organization
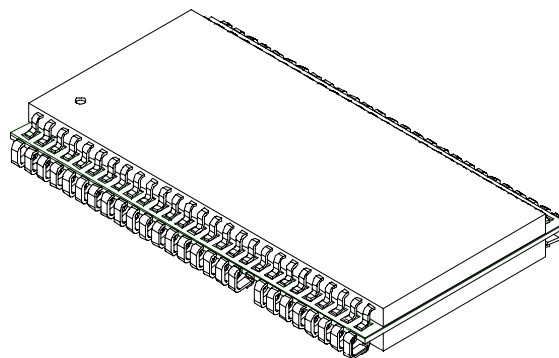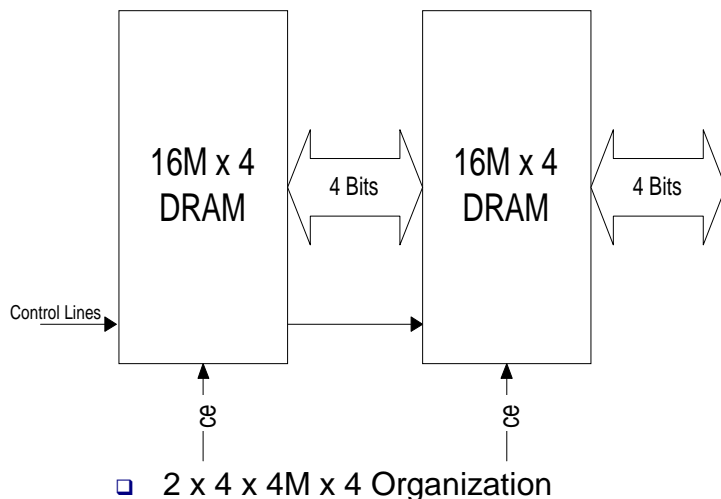
Dimensions: 0.827"L x 0.529"W x 0.100"H

General Description

The Irvine Sensor's Microelectronics Products Division's 128 Mbit SDRAM memory stack provides a cost-effective interim alternative to the monolithic 128 Mbit SDRAM. Utilizing low cost readily available 64 Mbit devices and designed to be compatible with future 128 Mbit monolithic devices. This device provides system designers with a low cost, currently available, device for cost sensitive high density memory applications. PCB's can be designed for 128Mbit devices today and be easily upgraded to monolithic devices when they become cost effective.

This device is 134,217,728 bits synchronous high data rate Dynamic RAM organized as 2 x 4 x 4,194,304 words 4 bits, fabricated with SAMSUNG's high performance CMOS technology. Synchronous design allows precise cycle control with the use of system clock.

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I/O transactions are possible on every clock cycle. Range of operating frequencies, programmable burst length and programmable latencies allow the same device to be useful for a variety of high bandwidth, high performance memory system applications.

Samsung's detailed data sheet is available at the following Internet website:
http://www.usa.samsungsemi.com/

Significant Parameters

Parameter	Min	Typ	Max	Unit
Supply Voltage	3.0	3.3	3.6	Volts
Operating Current (100MHz)	-	-	92	mA
Operating Current (125MHz)	-	-	107	mA
Stand-by Current	-	-	4	mA
Clock Cycle Time (100 MHz)	10	-	-	ns
Clock Cycle Time (125MHz)	8	-	-	ns
Temperature range	0	-	+70	°C

Pin Numbering

Pin #	Name	Name	Pin#
1	Vcc	Vss	54
2	N/C	N/C	53
3	Vccq	Vssq	52
4	N/C	N/C	51
5	DQ0	DQ3	50
6	Vssq	Vccq	49
7	N/C	N/C	48
8	N/C	N/C	47
9	Vccq	Vssq	46
10	N/C	N/C	45
11	DQ1	DQ2	44
12	Vssq	Vccq	43
13	N/C	N/C	42
14	Vcc	Vss	41
15	CS-B	NC/RFU	40
16	WE	DQM	39
17	CAS	CLK	38
18	RAS	CKE	37
19	CS-A	N/C	36
20	BA0	A11	35
21	BA1	A9	34
22	A10/AP	A8	33
23	A0	A7	32
24	A1	A6	31
25	A2	A5	30
26	A3	A4	29
27	Vcc	Vss	28