

High performance
256/512 Kbyte 3.3V
Cache modules



AS7MC30B(E)3256

AS7MC30B(E)3512

COAST compatible 256/512 Kbyte SRAM cache modules

Preliminary information

Features

- Fully compatible with COAST 1.4, 3.0, 3.x
- 64-bit 3.3V pipelined burst data
 - AS7MC30B(E)3256: 32K words × 64 bits
 - AS7MC30B(E)3512: 64K words × 64 bits
- High speed
 - 6/7 ns clock access time
 - 75/66 MHz bus frequency
- Multiple decoupling capacitors for low noise
- Global write feature
- Support for Intel 82430FX, VX, HX chipset
- HX chipset extended cacheability available for 64MB DRAM (BE version)
- Very low power (AS7MC30BE3256-7)
 - 1470 mW max @ 66 MHz
 - 55 mW max standby
- 10Ω series terminations on data lines
- Socket-compatible with asynchronous and earlier burst modules
- Low cost 160-pin DIMM connection
- Single bank 512KB using 64K × 32 devices

Pin diagram (top view)

GND	81	1	GND
TIO1	82	2	TIO0
TIO7	83	3	TIO2
TIO5	84	4	TIO6
TIO3	85	5	TIO4
NC/TIO9	86	6	NC/TIO8
VCC5	87	7	VCC3
NC/TIO10	88	8	VCC4
CADV	89	9	CADS
GND	90	10	GND
COE	91	11	CWE4
CWE5	92	12	CWE6
CWE7	93	13	CWE0
CWE1	94	14	CWE2
VCC5	95	15	VCC3
CWE3	96	16	CCE
CAB3	97	17	GWE
CALE	98	18	BWE
GND	99	19	GND
NC	100	20	A03
A04	101	21	A07
A06	102	22	A05
A08	103	23	A11
A10	104	24	A16
VCC5	105	25	VCC3
A17	106	26	A18
GND	107	27	GND
A09	108	28	A12
A14	109	29	A13
A15	110	30	ADSP
A19	111	31	ECST
PD0	112	32	ECST
PD2	113	33	PD1
NC	114	34	PD3
GND	115	35	GND
CLK0	116	36	CLK1
GND	117	37	GND
D63	118	38	D62
VCC5	119	39	VCC3
D61	120	40	D60
D59	121	41	D58
D57	122	42	D56

Module

COAST module function reference

Part number	Supported by	Tag ¹	SRAM	Function
AS7MC30B3256	FX, VX, HX	8K×8	7C33232F	256KB
AS7MC30BE3256	HX	8K×11	7C33232F	Extended, 256KB
AS7MC30B3512	FX, VX, HX	16K×8	7C33232F	512KB
AS7MC30B3512A	FX, VX, HX	16K×8	7C36432F	Single bank, 512 KB
AS7MC30BE3512	HX	16K×11	7C33232F	Extended, 512KB
AS7MC30BE3512A	HX	16K×11	7C36432F	Single bank, extended, 512KB

Tag is implemented using any combination of 3.3V or 5V, 8K×8 (for 256KB modules) or 32K×8 (for 512KB modules)

Selection guide

	AS7MC30B(E)3256		AS7MC30B(E)3512		Unit	
	-6	-7	-6	-7		
Minimum cycle time	13.3	15	13.3	15	ns	
Cache size	256K	256K	512K	512K	bytes	
Tag size	8K×8	8K×8	32K×8	32K×8	bits	
Maximum cache clock access time	t _{CD}	6	7	6	7	ns
Recommended system bus frequency	f _{max}	75	66	75	66	MHz
Maximum tag address access time	t _{TAA}	12	15	12	15	ns
Maximum operating current (3.3V supply)	I _{CC}	280	240	560	480	mA
Maximum CMOS standby current (3.3V supply)	I _{SB}	12	12	24	24	mA
Maximum operating current (5V supply)	I _{CC}	115	110	120	115	mA
Maximum CMOS standby current (5V supply)	I _{SB}	2	2	2	2	mA

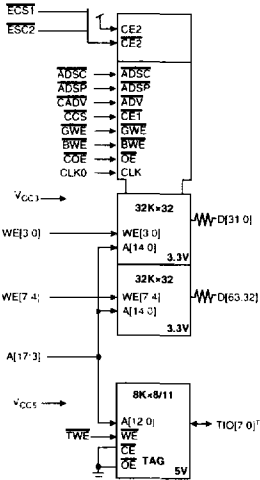
KEY

GND	123	43	GND
D55	124	44	D54
D53	125	45	D52
D51	126	46	D50
D49	127	47	D48
GND	128	48	GND
D47	129	49	D46
D45	130	50	D44
D43	131	51	D42
VCC5	132	52	VCC3
D41	133	53	D40
D39	134	54	D38
D37	135	55	D36
GND	136	56	GND
D35	137	57	D34
D33	138	58	D32
D31	139	59	D30
VCC5	140	60	VCC3
D29	141	61	D28
D27	142	62	D26
D25	143	63	D24
GND	144	64	GND
D23	145	65	D22
D21	146	66	D20
D19	147	67	D18
VCC5	148	68	VCC3
D17	149	69	D16
D15	150	70	D14
D13	151	71	D12
GND	152	72	GND
D11	153	73	D10
D09	154	74	D08
D07	155	75	D06
VCC5	156	76	VCC3
D05	157	77	D04
D03	158	78	D02
D01	159	79	D00
GND	160	80	GND

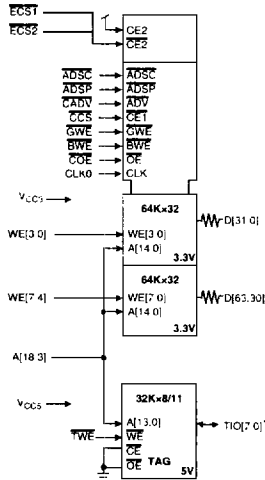


Logic block diagram

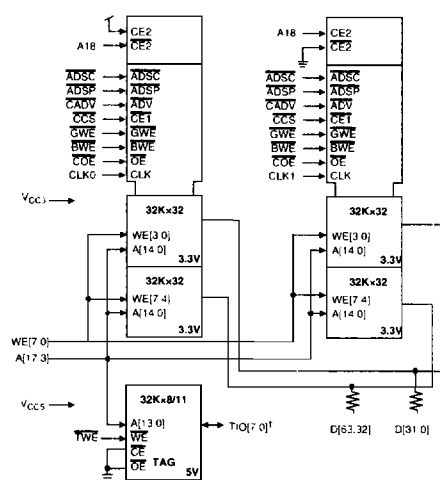
256KB modules



512KB modules, single bank



512KB modules, dual bank



†Modules with extended cacheability (BE) provide 11 tag bits

Functional description

The AS7MC30B(E)3256, AS7MC30B(E)3512, and AS7MC30B(E)3512A are members of Alliance Semiconductor's high performance static RAM module family for the Intel Pentium™ processor and other advanced 3.3V applications. This family provides an upgradable low voltage SRAM solution for personal computer and server cache. Speed grades down to 12 ns cache address access time and 6 ns clock access time are ideal for current and future system requirements.

The AS7MC30B(E)3256 include 256 KBytes of fast static memory, organized as one bank of 32K words × 64 bits. The AS7MC30B(E)3512 includes 512 KBytes of fast static memory organized as two banks of 32K words × 64 bits. The 256K modules use a 5V asynchronous 8K×8 tag, and the 512K modules use a 5V asynchronous 32K × 8 tag. For easy system configuration, modules share identical pinout specifications except for the upper two address bits and four Presence Detect (PD) signals.

The Alliance AS7MC30 family of modules supports all features of the Intel 82430 chipsets, including HX extended cacheability for addressing more than 64MB of DRAM main memory. These modules plug into an inexpensive CELP2×80 connector which occupies less than 1.5 in² of board space (Burdny or equivalent).

Alliance's industry-leading low power CMOS fast static RAMs give these modules excellent power characteristics. These burst modules dissipate less than 55 mW in standby mode, and less than 1470 mW for the 256K byte cache at 66 MHz.

The AS7MC30B(E)3256 and AS7MC30B(E)3512 modules use both 3.3V and 5V power supplies. To ease system design, Alliance SRAM cache modules draw 3.3V power only from V_{CC3} pins on the right side of the connector (pins 1-80), and 5V power only from V_{CC5} pins on the left side of the connector (pins 81-160).

Capacitance

Parameter	Symbol	Signals	Test conditions	Max	Unit
Input capacitance: address	C _{IN1}	A	V _{in} = 0V	10	pF
Input capacitance: ganged control	C _{IN1}	\overline{CE} , \overline{OE} , etc	V _{in} = 0V	10	pF
Input capacitance: write enable	C _{IN1}	\overline{WE} , \overline{TWE}	V _{in} = 0V	10	pF
Data I/O capacitance	C _{I/O1}	D	V _{in} = V _{out} = 0V	12	pF

f = 1 MHz, T_j = room temperature, V_{CC3} = 3.3 ± 0.3V



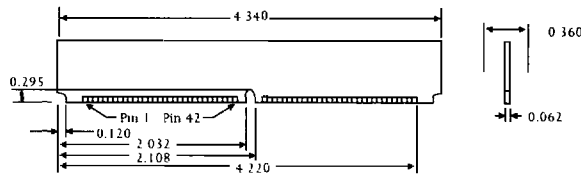
Presence detect

	7MC30B3256/7MC30BE3256	7MC30B3512/7MC30BE3512	7MC30B3512A/7MC30BE3512A
PD3	NC	GND	GND
PD2	GND	NC	NC
PD1	NC	GND	NC
PD0	NC	GND	NC

DC and AC parameters

Refer to the latest Alliance SRAM datasheets for details (AS7C33232F, AS7C36432; Tag: AS7C164 and AS7C256).
AC parameters guaranteed using 0pF test load.

Physical dimensions



Dimensions in inches

Modules are keyed as COASt option 3, allowing placement into systems using FX, VX, or HX chipsets.

Ordering information

Cache size	13.3 ns (75 MHz*)	15 ns (66MHz*)
256KByte	AS7MC30B3256-6	AS7MC30B3256-7
	AS7MC30BE3256-6	AS7MC30BE3256-7
	AS7MC30B3512-6	AS7MC30B3512-7
512KByte	AS7MC30BE3512-6	AS7MC30BE3512-7
	AS7MC30B3512A-6	AS7MC30B3512A-7
	AS7MC30BE3512A-6	AS7MC30BE3512A-7

Part numbering system

AS7M	C30	XX	3	XXXX	X	-X
SRAM module	COASt compatible	B = pipelined burst. BF = burst with extended cacheability	3 = 3.3V supply for data SRAMS	Cache size in KBytes	Other options	Access time

Module