

ECL 1024-BIT BIPOLAR RANDOM ACCESS MEMORY

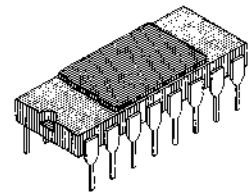
DESCRIPTION

The Fujitsu MBM10415AH is a fully decoded 1024-bit ECL read/write random access memory designed for high-speed scratch pad, control and buffer storage applications. It is organized as 1024 words by one bit, and features on-chip voltage compensation for improved noise margin.

The MBM10415AH offers extremely small cell and chip sizes, realized through the use of Fujitsu's patented DOPOS

(Doped Polysilicon), as well as IOP (Isolation by Oxide and Polysilicon) processing. As a result, very fast access time with high yields and outstanding device reliability are achieved in volume production.

Operation for the MBM10415AH is specified over a temperature range of from 0°C to 75°C (ambient). It also features frit-sealed 16-pin dual in-line packaging, and is fully compatible with industry-standard 10K-series ECL families.

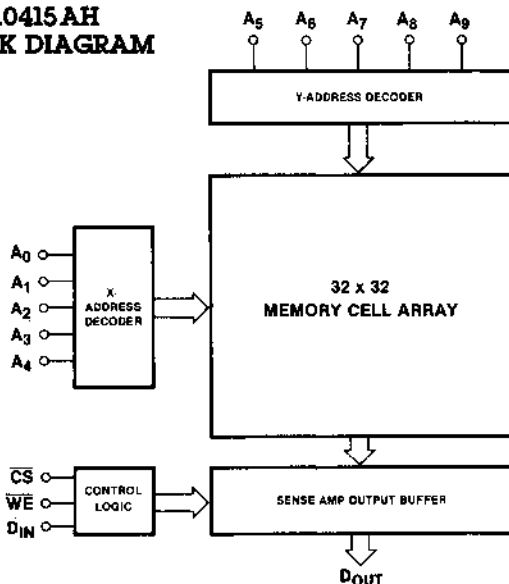


**CERAMIC PACKAGE
DIP-16C-F01**

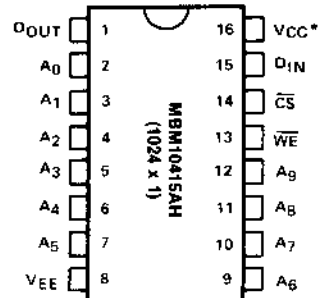
FEATURES

- 1024 words x 1-bit organization
- On-chip voltage compensation for improved noise margin
- Fully compatible with industry-standard 10K-series ECL families
- Address access time:
MBM10415AH: 20 ns Max.
- Chip select access time:
MBM10415AH: 8 ns Max.
- Open emitter output for ease of memory expansion
- Low power dissipation of 0.5mW/bit
- DOPOS and IOP processing
- Pin compatible with F10415 and MCM10146

MBM10415AH BLOCK DIAGRAM



PIN ASSIGNMENT



*VCC grounded

Small geometry bipolar integrated circuits are occasionally susceptible to damage from static voltages or electric fields. It is therefore advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this device.

TRUTH TABLE

INPUT			OUTPUT	MODE
CS	WE	D _{IN}		
H	X	X	L	DISABLED
L	L	L	L	WRITE "L"
L	L	H	L	WRITE "H"
L	H	X	D _{OUT}	READ

H = HIGH VOLTAGE LEVEL
L = LOW VOLTAGE LEVEL
X = DON'T CARE

MBM10415AH

ABSOLUTE MAXIMUM RATINGS (See Note)

Rating	Symbol	Value	Unit
V _{EE} Pin Potential to Ground Pin (V _{CC})	V _{EE}	+0.5 to -7.0	V
Input Voltage	V _{IN}	+0.5 to V _{EE}	V
Output Current (DC, Output High)	I _{OUT}	-30	mA
Temperature Under Bias	T _A	-55 to +125	°C
Storage Temperature	T _{stg}	-65 to +150	°C

Note: Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet.

GUARANTEED OPERATING CONDITIONS

(Referenced to V_{CC})

Parameter	Symbol	Min	Typ	Max	Unit	Ambient Temperature
Supply Voltage	V _{EE}	-5.46	-5.2	-4.94	V	0°C to +75°C

CAPACITANCE

Parameter	Symbol	Min	Typ	Max	Unit
Input Pin Capacitance	C _{IN}	—	4	5	pF
Output Pin Capacitance	C _{OUT}	—	7	8	pF

DC CHARACTERISTICS

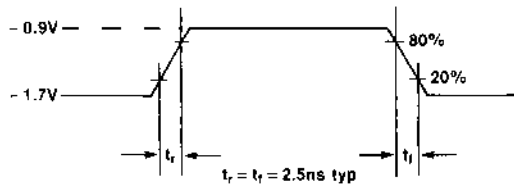
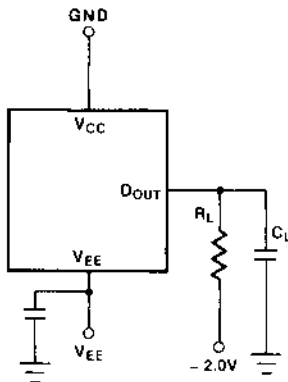
(V_{CC} = 0V, V_{EE} = -5.2V, Output load = 50Ω to -2.0V and Airflow ≥ 2.5 m/s unless otherwise noted.)

Parameter	Symbol	Min	Typ	Max	Unit	T _A
Output High Voltage (V _{IN} = V _{IH max.} or V _{IL min.})	V _{OH}	-1000 -960 -900	—	-840 -810 -720	mV	0°C 25°C 75°C
Output Low Voltage (V _{IN} = V _{IH max.} or V _{IL min.})	V _{OL}	-1870 -1850 -1830	—	-1665 -1650 -1625	mV	0°C 25°C 75°C
Output High Voltage (V _{IN} = V _{IH min.} or V _{IL max.})	V _{OHC}	-1020 -980 -920	—	—	mV	0°C 25°C 75°C
Output Low Voltage (V _{IN} = V _{IH min.} or V _{IL max.})	V _{OLC}	—	—	-1645 -1630 -1605	mV	0°C 25°C 75°C
Input High Voltage (Guaranteed Input Voltage High for All Inputs)	V _{IH}	-1145 -1105 -1045	—	-840 -810 -720	mV	0°C 25°C 75°C
Input Low Voltage (Guaranteed Input Voltage Low for All Inputs)	V _{IL}	-1870 -1850 -1830	—	-1490 -1475 -1450	mV	0°C 25°C 75°C
Input High Current (V _{IN} = V _{IH max.})	I _{IH}	—	—	220	μA	0° to 75°C
Input Low Current (V _{IN} = V _{IL min.})	I _{IL}	-50	—	—	μA	0° to 75°C
CS Input Low Current (V _{IN} = V _{IL min.})	I _{IL}	0.5	—	170	μA	0° to 75°C
Power Supply Current (All inputs and Outputs Open)	I _{EE}	-125 -150	—	—	mA	75°C 0°C

AC CHARACTERISTICS

(Full Guaranteed Operating Ranges, Output Load = 50Ω to -2.0V and 30pf to GND and Airflow ≥ 2.5 m/s unless otherwise noted.)

AC TEST CONDITIONS



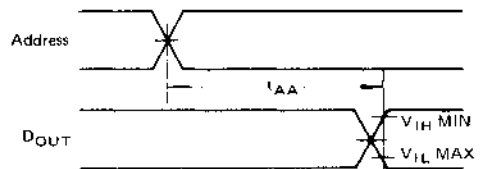
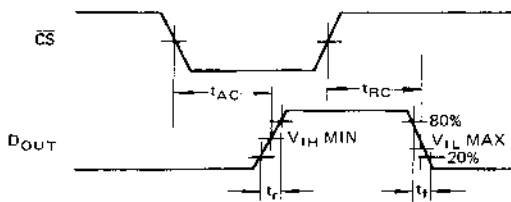
Output Load: $R_L = 50\Omega$
 $C_L = 30pF$
 (including jig and stray capacitance)

NOTE: All timing measurements referenced to 50% input levels.

READ CYCLE

Parameter	Symbol	MBM10415AH		Unit
		Typ	Max	
Address Access Time	t_{AA}	13	20	ns
Chip Select Access Time	t_{AC}	5	8	ns
Chip Select Recovery Time	t_{RB}	5	8	ns

READ CYCLE

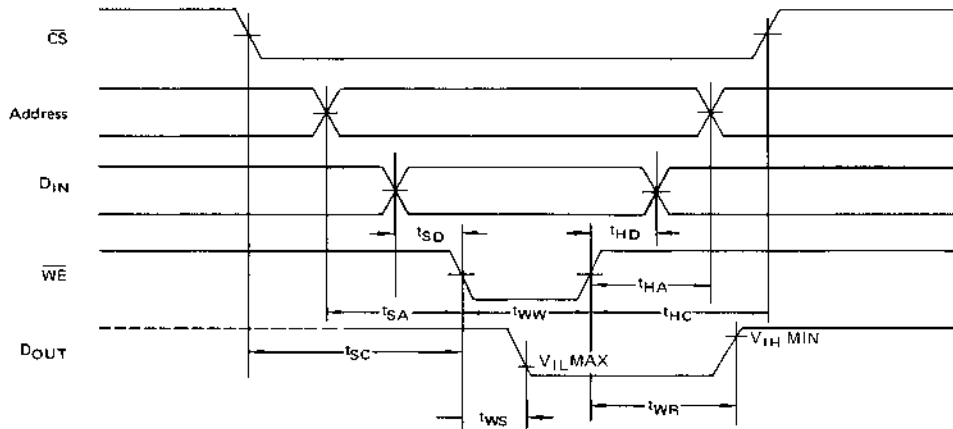


MBM10415AH

WRITE CYCLE

Parameter	Symbol	MBM10415AH			Unit
		Min	Typ	Max	
Write Pulse Width	t_{WW}	14	9	—	ns
Write Disable Time	t_{WS}	—	5	10	ns
Write Recovery Time	t_{WR}	—	5	10	ns
Address Set Up Time	t_{SA}	5	3	—	ns
Chip Select Set Up Time	t_{SC}	4	0	—	ns
Data Set Up Time	t_{SD}	4	0	—	ns
Address Hold Time	t_{HA}	3	0	—	ns
Chip Select Hold Time	t_{HC}	4	0	—	ns
Data Hold Time	t_{HD}	4	0	—	ns

WRITE CYCLE



RISE TIME AND FALL TIME

Parameter	Symbol	MBM10415AH			Unit
		Min	Typ	Max	
Output Rise Time	t_r	—	5	—	ns
Output Fall Time	t_f	—	5	—	ns

APPLICATIONS INFORMATION

LARGE SYSTEM APPLICATION

16K WORDS x n BIT
MEMORY SYSTEM

