



MOTOROLA

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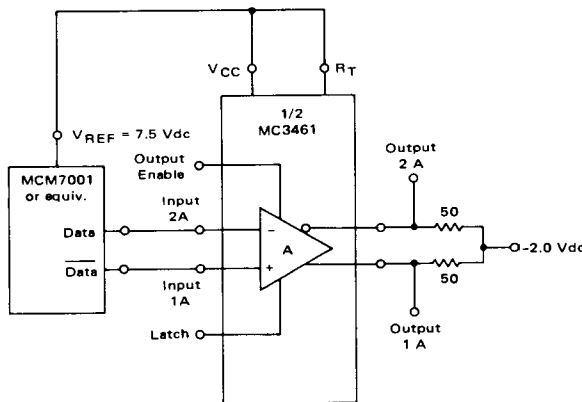
HIGH-SPEED NMOS/MECL SENSE AMPLIFIER

The MC3461 is a dual current sense amplifier with MECL 10,000 compatible control inputs and open emitter complementary outputs. The device is designed for use with Motorola MCM7001 or Intel 2105 NMOS 1K RAMs. A common latch input retains information in the amplifier at the time of latch closure. Separate channel output enables are provided to force the outputs to predetermined states until amplifier information exchange is desired.

When the latch input goes to a logic "0" the outputs are locked in their present state unless the output enable is at, goes to, logic "1". In this event, the Output 1 and Output 2 remain at, or go to, logic "0" and logic "1" respectively.

- Complete NMOS Sense Amplifier – No External Components Required
- Minimum Propagation Delay –
Amplifier Response - 5.0 ns Typ
Enable Response - 2.5 ns Typ
Latch Response - 1.0 ns Typ
- Power Supplies Compatible With MCM7001/MECL 10,000 Systems
- Amplifier Input Termination Voltage Range from Gnd to VREF Supply on MCM7001

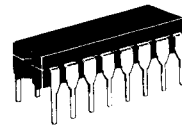
APPLICATION WITH MCM7001 MEMORY



MC3461

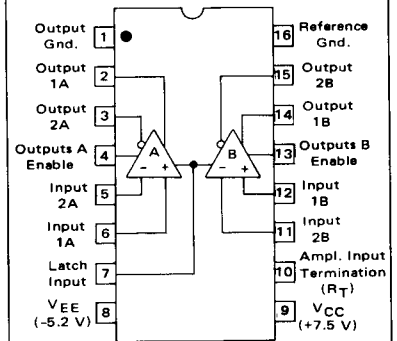
DUAL NMOS MEMORY SENSE AMPLIFIER

SILICON MONOLITHIC INTEGRATED CIRCUIT



L SUFFIX
CERAMIC PACKAGE
CASE 620

PIN CONNECTIONS



TRUTH TABLE for latch input at logic 1

Input	Output Enable	Output 1	Output 2
I(1) ≥ -200 μA	0	0	1
I(2) = 0 μA	1	0	1
I(1) = 0 μA	0	1	0
I(2) ≥ 200 μA	1	0	1

Negative Currents Defined as Flowing into Device Pin.

MAXIMUM RATINGS (Unless otherwise noted, T_A = 25°C)

Rating	Symbol	Value	Unit
Power Supply Voltages	V _{CC}	8.5	V
	V _{EE}	-6.0	V
Termination Voltage	V _T	0 to V _{CC}	-
Operating Ambient Temperature Range	T _A	0 to 75	°C
Package Power Dissipation	P _D	1000	mW
Still Air		6.7	mW/°C
Derate above 25°C		2000	mW
Transverse Air flow ≥ 500 linear fpm		13.3	mW/°C
Derate above 25°C			

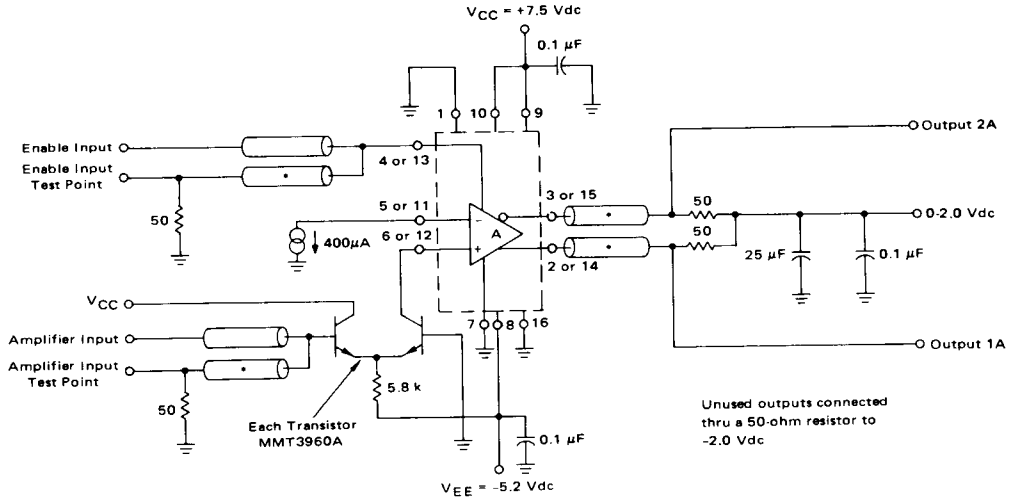
ELECTRICAL CHARACTERISTICS

This device has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 50-ohm resistor to -2.0 volts. Test procedures are shown for only one sense amplifier. The other half is tested in the same manner.

Characteristic	Symbol	Pin Under Test	TEST VOLTAGE/CURRENT VALUES (Volts)													
			+25°C					-75°C								
			Min	Max	Typ	Max	Min	Max	Unit	I _{Lmax}	V _{IHmin}	V _{IHmax}	V _{ILmin}	V _{ILmax}	V _{CC}	V _{EE}
Power Supply Drain Current	I _{CC} I _{EE}	9 8	-	-	40 -50	59 -73	-	-	mAdc	6.12 6.12	-	-	-	9.10 9.10	8 8	1.16 1.16
Input Current	I _{inH} I _{inL}	4 7	-	-	-	500 500	-	-	µAdc	5.11 5.11	4 4	-	-	9.10 9.10	8 8	1.16 1.16
Logic "1" Output Voltage	V _{OH}	3	-1.010	-0.850	-	-	-0.810	-0.900	Vdc	5.11	5.11	7	-	9.10	8	1.16
Logic "0" Output Voltage	V _{OL}	2	-	-	-	-	-	-	Vdc	5	5	7.4	-	9.10	8	1.16
Logic "1" Threshold Voltage	V _{OH1}	3	-1.030	-	-	-	-	-	Vdc	5	5	7.4	-	9.10	8	1.16
Logic "0" Threshold Voltage	V _{OL1}	3	-	-	-	-	-	-	Vdc	5	5	7.4	-	9.10	8	1.16
Switching Times (50-ohm load) Propagation Delay	t _{PH} t _{PL} t _{PHL} t _{PLH}	2 2 3 3	-	-	5.0	10.0	-	-	ns	-	-	-	-	9.10	8	1.16
Enable	t _{PH} t _{PL} t _{PHL} t _{PLH}	3 3 2 2	-	-	2.5	5.0	-	-	ns	-	-	-	-	9.10	8	1.16

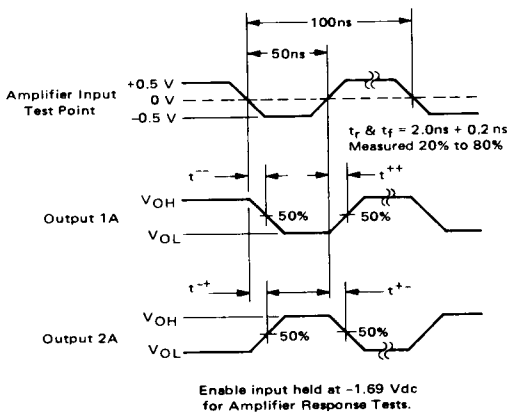
*Negative currents are defined as currents leaving the device.

FIGURE 1 – SWITCHING RESPONSE TEST CIRCUIT AND WAVEFORMS @ 25°C
(Other Section Tested Similarly)



*Denotes equal lengths of 50-ohm coaxial cable. Wire length should be $\leq 1/4''$ from test point to pin or BNC connector.

Amplifier Response Waveforms



Enable Response Waveforms

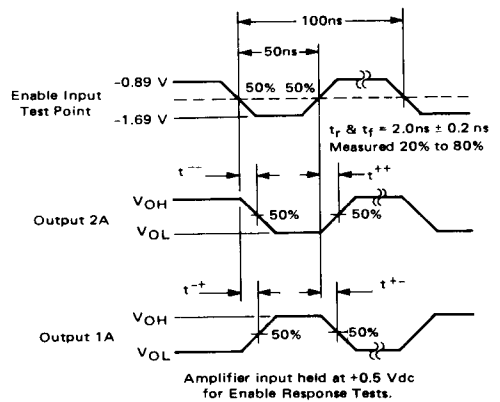


FIGURE 2 - 32K x 2 MEMORY BOARD (MECL SYSTEM)

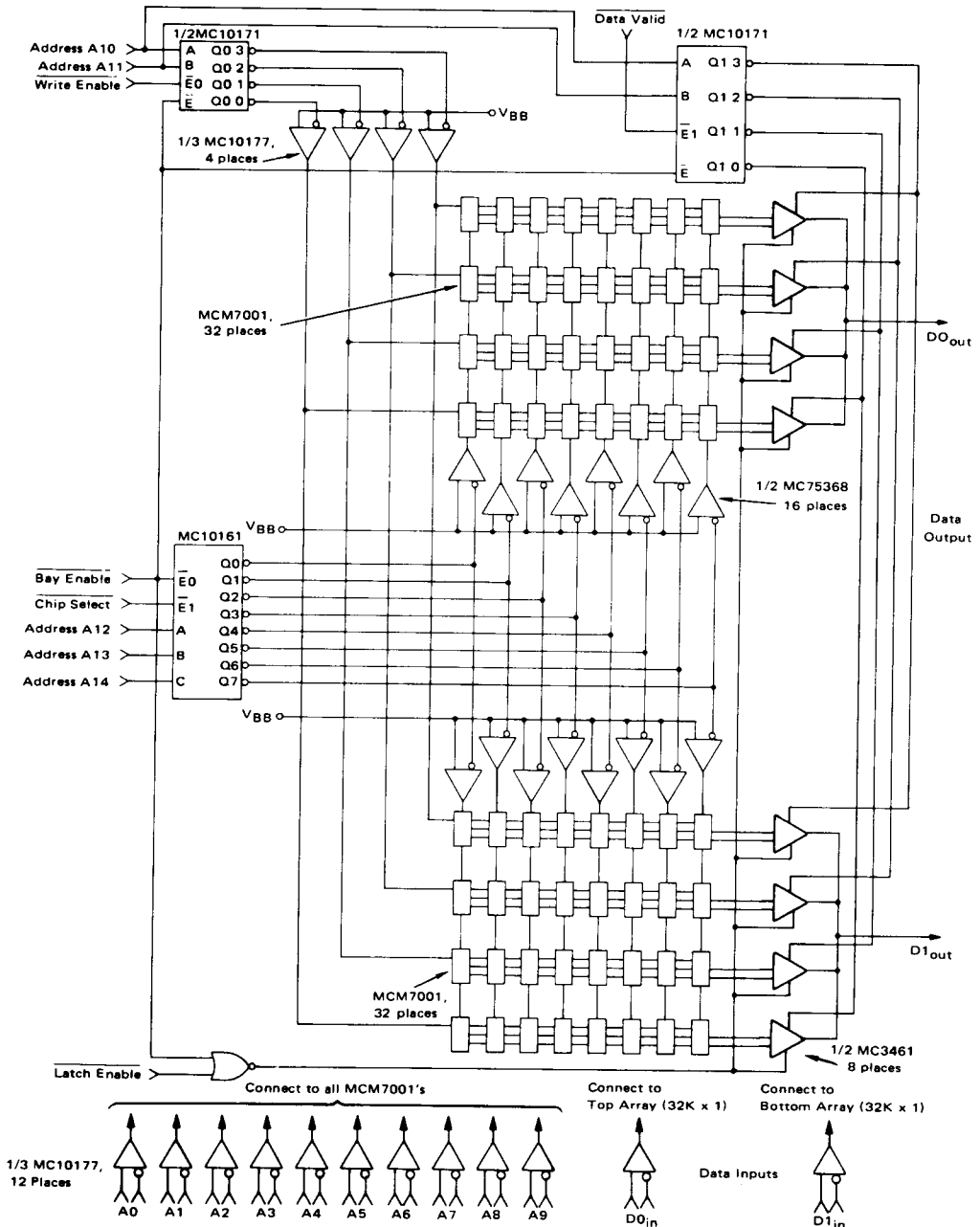
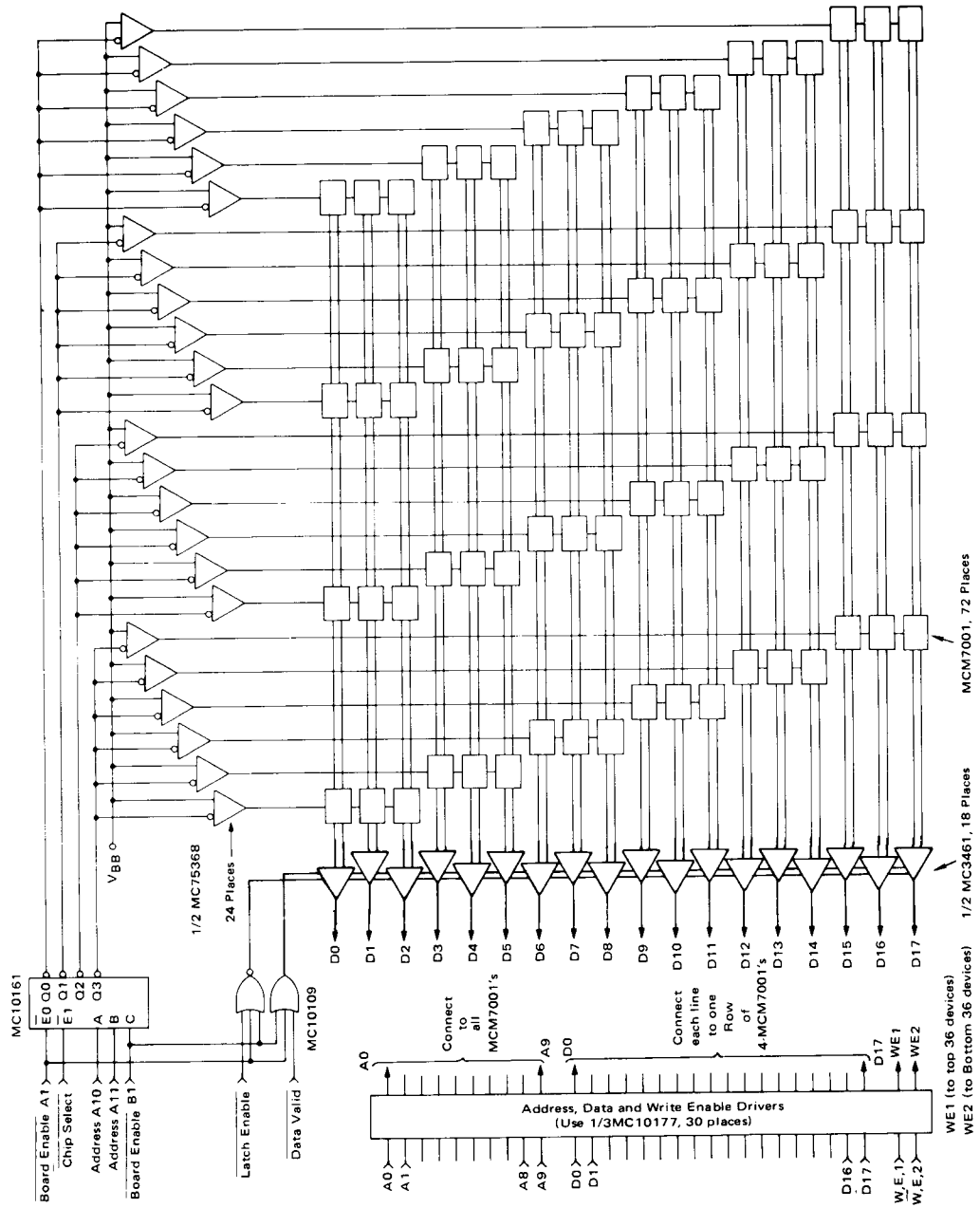


FIGURE 3 - 4K x 18 MEMORY BOARD (MECL SYSTEM)

4



REPRESENTATIVE CIRCUIT SCHEMATIC

