



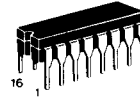
# MOTOROLA

## MC10H119

### 4-WIDE 4-3-3-3-INPUT "OR-AND" GATE

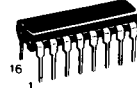
The MC10H119 is a 4-wide 4-3-3-3-input OR/AND gate with one input from two gates common to pin 10. This MECL 10H part is a functional/pinout duplication of the standard MECL 10K family part, with 100% improvement in propagation delay, and no increase in power-supply current.

- Propagation Delay, 1.0 ns Typical
- Power Dissipation 100 mW/Gate Typical (same as MECL 10K)
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K-Compatible



**L SUFFIX**  
CERAMIC PACKAGE  
CASE 620

**P SUFFIX**  
PLASTIC PACKAGE  
CASE 648



**FN SUFFIX**  
PLCC  
CASE 775

### MAXIMUM RATINGS

Characteristic	Symbol	Rating	Unit
Power Supply ( $V_{CC} = 0$ )	$V_{EE}$	-8.0 to 0	Vdc
Input Voltage ( $V_{CC} = 0$ )	$V_I$	0 to $V_{EE}$	Vdc
Output Current — Continuous	$I_{out}$	50	mA
— Surge		100	
Operating Temperature Range	$T_A$	0-75	°C
Storage Temperature Range — Plastic	$T_{stg}$	-55 to 150	°C
— Ceramic		-55 to 165	°C

### ELECTRICAL CHARACTERISTICS ( $V_{EE} = -5.2 \text{ V} \pm 5\%$ ) (See Note)

Characteristic	Symbol	0°		25°		75°		Unit
		Min	Max	Min	Max	Min	Max	
Power Supply Current	$I_E$	—	29	—	26	—	29	mA
Input Current High Pins 3, 4, 5, 6, 7, 9 11, 12, 13, 14, 15 Pin 10	$I_{inH}$	—	500 610	—	295 360	—	295 360	$\mu\text{A}$
Input Current Low	$I_{inL}$	0.5	—	0.5	—	0.3	—	$\mu\text{A}$
High Output Voltage	$V_{OH}$	-1.02	-0.84	-0.98	-0.81	-0.92	-0.735	Vdc
Low Output Voltage	$V_{OL}$	-1.95	-1.63	-1.95	-1.63	-1.95	-1.60	Vdc
High Input Voltage	$V_{IH}$	-1.17	-0.84	-1.13	-0.81	-1.07	-0.735	Vdc
Low Input Voltage	$V_{IL}$	-1.95	-1.48	-1.95	-1.48	-1.95	-1.45	Vdc

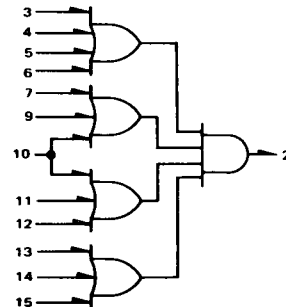
### AC PARAMETERS

Propagation Delay Pin 10 Only	$t_{pd}$	0.75	2.2	0.75	2.25	0.8	2.35	ns
Exclude Pin 10		0.75	2.0	0.75	2.0	0.8	2.15	
Rise Time	$t_r$	0.8	1.9	0.8	2.0	0.8	2.1	ns
Fall Time	$t_f$	0.8	1.9	0.8	2.0	0.8	2.1	ns

#### NOTE:

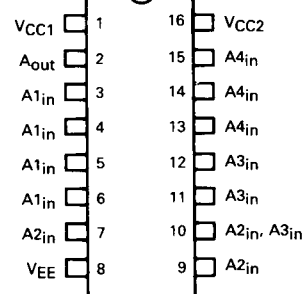
Each MECL 10H series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 50-ohm resistor to -2.0 volts.

### LOGIC DIAGRAM



$V_{CC1} = \text{Pin 1}$   
 $V_{CC2} = \text{Pin 16}$   
 $V_{EE} = \text{Pin 8}$

### DIP PIN ASSIGNMENT



Pin assignment is for Dual-in-line Package.  
For PLCC pin assignment, see tables on page 1-35.