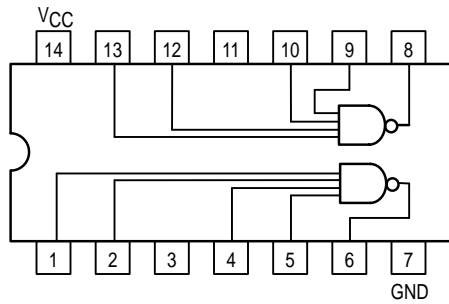




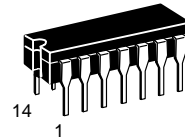
**MOTOROLA**

# DUAL 4-INPUT NAND GATE

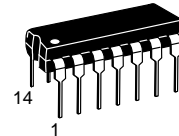


**MC54/74F20**

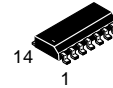
**DUAL 4-INPUT NAND GATE**  
**FAST™ SCHOTTKY TTL**



**J SUFFIX**  
CERAMIC  
CASE 632-08



**N SUFFIX**  
PLASTIC  
CASE 646-06



**D SUFFIX**  
SOIC  
CASE 751A-02

### ORDERING INFORMATION

MC54FXXJ	Ceramic
MC74FXXN	Plastic
MC74FXXD	SOIC

### GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit
V <sub>CC</sub>	Supply Voltage	54, 74	4.5	5.0	5.5	V
T <sub>A</sub>	Operating Ambient Temperature Range	54	-55	25	125	°C
		74	0	25	70	
I <sub>OH</sub>	Output Current — High	54, 74			-1.0	mA
I <sub>OL</sub>	Output Current — Low	54, 74			20	mA

# MC54/74F20

## DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter	Limits			Unit	Test Conditions
		Min	Typ	Max		
V <sub>IH</sub>	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage
V <sub>IL</sub>	Input LOW Voltage			0.8	V	Guaranteed Input LOW Voltage
V <sub>IK</sub>	Input Clamp Diode Voltage			-1.2	V	V <sub>CC</sub> = MIN, I <sub>IN</sub> = -18 mA
V <sub>OH</sub>	Output HIGH Voltage	54, 74	2.5		V	I <sub>OH</sub> = -1.0 mA, V <sub>CC</sub> = 4.50 V
		74	2.7		V	I <sub>OH</sub> = -1.0 mA, V <sub>CC</sub> = 4.75 V
V <sub>OL</sub>	Output LOW Voltage			0.5	V	I <sub>OL</sub> = 20 mA, V <sub>CC</sub> = MIN
I <sub>IH</sub>	Input HIGH Current			20	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V
				0.1	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 7.0 V
I <sub>IL</sub>	Input LOW Current			-0.6	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.5 V
I <sub>OS</sub>	Output Short Circuit Current (Note 2)	-60		-150	mA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 0 V
I <sub>CC</sub>	Power Supply Current Total, Output HIGH			1.4	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = GND
	Total, Output LOW			5.1	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = Open

### NOTES:

- For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.
- Not more than one output should be shorted at a time, nor for more than 1 second.

## AC CHARACTERISTICS

Symbol	Parameter	54/74F		54F		74F		Unit
		T <sub>A</sub> = +25°C		T <sub>A</sub> = -55°C to +125°C		T <sub>A</sub> = 0°C to 70°C		
		V <sub>CC</sub> = +5.0 V C <sub>L</sub> = 50 pF		V <sub>CC</sub> = 5.0 V ± 10% C <sub>L</sub> = 50 pF		V <sub>CC</sub> = 5.0 V ± 10% C <sub>L</sub> = 50 pF		
Min	Max	Min	Max	Min	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay	2.4	5.0	2.0	7.0	2.4	6.0	ns
t <sub>PHL</sub>	Propagation Delay	1.5	4.3	1.5	6.5	1.5	5.3	ns