MOTOROLA

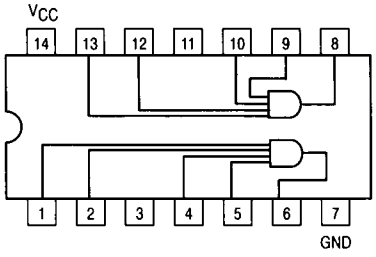
DUAL 4-INPUT AND GATE

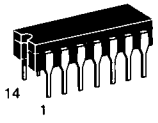
MC54/74F21

DUAL 4-INPUT AND GATE

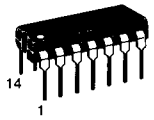
FAST™ SCHOTTKY TTL

CONNECTION DIAGRAM





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

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GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit
V_{CC}	Supply Voltage	54, 74	4.5	5.0	5.5	V
T_A	Operating Ambient Temperature Range	54	–55	25	125	°C
		74	0	25	70	
I_{OH}	Output Current — High	54, 74			–1.0	mA
I_{OL}	Output Current — Low	54, 74			20	mA

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter		Limits Min	Typ	Max	Unit	Test Conditions	
V_{IH}	Input HIGH Voltage		2.0			V	Guaranteed Input HIGH Voltage	
V_{IL}	Input LOW Voltage				0.8	V	Guaranteed Input LOW Voltage	
V_{IK}	Input Clamp Diode Voltage				−1.2	V	V_{CC} = MIN, I_{IN} = −18 mA	
V_{OH}	Output HIGH Voltage	54, 74	2.5			V	I_{OH} = −1.0 mA	V_{CC} = 4.50 V
		74	2.7			V	I_{OH} = −1.0 mA	V_{CC} = 4.75 V
V_{OL}	Output LOW Voltage				0.5	V	I_{OL} = 20 mA	V_{CC} = MIN
I_{IH}	Input HIGH Current				20	µA	V_{CC} = MAX, V_{IN} = 2.7 V	
					0.1	mA	V_{CC} = MAX, V_{IN} = 7.0 V	
I_{IL}	Input LOW Current				−0.6	mA	V_{CC} = MAX, V_{IN} = 0.5 V	
I_{OS}	Output Short Circuit Current (Note 2)		−60		−150	mA	V_{CC} = MAX, V_{OUT} = 0 V	
I_{CC}	Power Supply Current Total, Output HIGH				4.1	mA	V_{CC} = MAX, V_{IN} = Open	
	Total, Output LOW				6.4	mA	V_{CC} = MAX, V_{IN} = GND	

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

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AC CHARACTERISTICS

Symbol	Parameter	54/74F T_A = +25°C V_{CC} = +5.0 V C_L = 50 pF Min	Max	54F T_A = −55°C to +125°C V_{CC} = 5.0 V ± 10% C_L = 50 pF Min	Max	74F T_A = 0°C to 70°C V_{CC} = 5.0 V ± 10% C_L = 50 pF Min	Max	Unit
t_{PLH}	Propagation Delay	2.0	5.6	2.0	7.5	2.0	6.6	ns
t_{PHL}	Propagation Delay	2.5	5.3	2.0	7.5	2.5	6.3	ns