



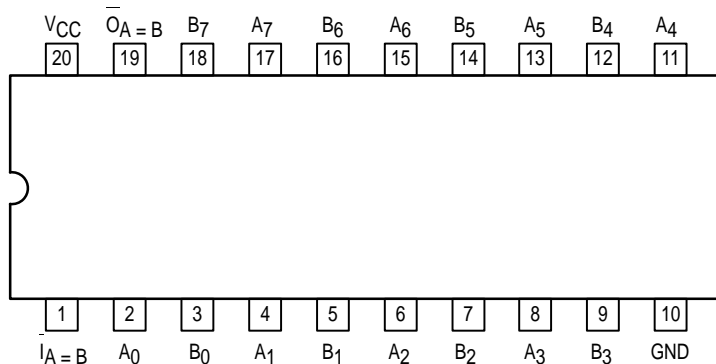
**MOTOROLA**

## 8-BIT IDENTITY COMPARATOR

The MC54/74F521 is an expandable 8-bit comparator. It compares two words of up to eight bits each and provides a LOW output when the two words match bit for bit. The expansion input  $I_A = B$  also serves as an active-LOW enable input.

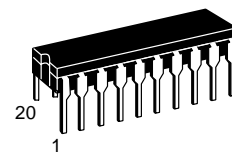
- Compares Two 8-Bit Words in 6.5 ns Typical
- Expandable to Any Word Length
- 20-Pin Package

**CONNECTION DIAGRAM (TOP VIEW)**

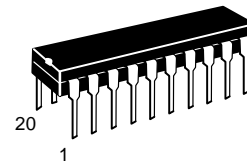


# MC54/74F521

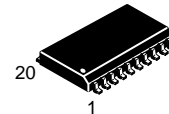
**8-BIT IDENTITY COMPARATOR**  
**FAST™ SCHOTTKY TTL**



**J SUFFIX**  
CERAMIC  
CASE 732-03



**N SUFFIX**  
PLASTIC  
CASE 738-03



**DW SUFFIX**  
SOIC  
CASE 751D-03

### ORDERING INFORMATION

MC54FXXXJ	Ceramic
MC74FXXXN	Plastic
MC74FXXXDW	SOIC

### GUARANTEED OPERATING RANGES

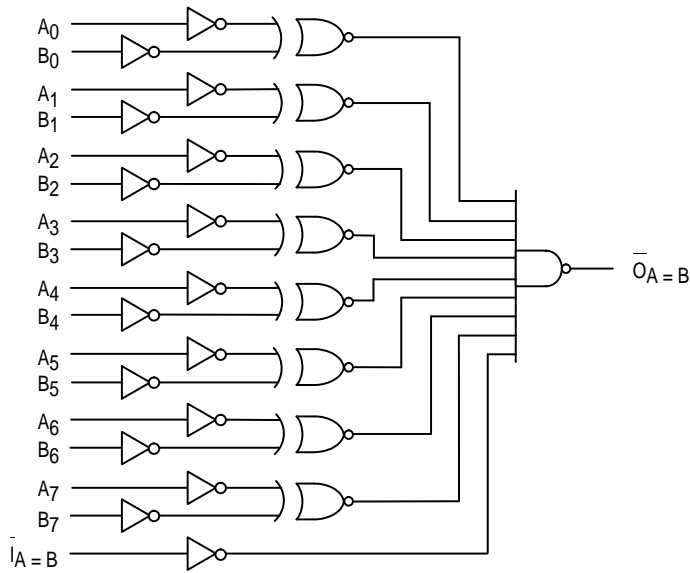
Symbol	Parameter		Min	Typ	Max	Unit
$V_{CC}$	Supply Voltage	54, 74	4.5	5.0	5.5	V
$T_A$	Operating Ambient Temperature Range	54	-55	25	125	°C
		74	0	25	70	
$I_{OH}$	Output Current — High	54, 74			-1.0	mA
$I_{OL}$	Output Current — Low	54, 74			20	mA

LIFETIME BUY

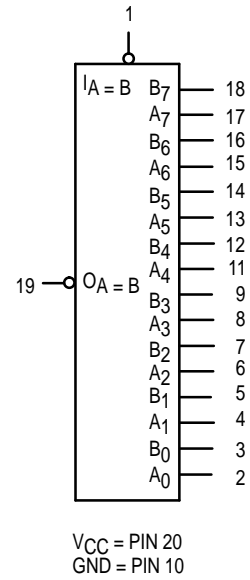
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**LOGIC DIAGRAM**



**LOGIC SYMBOL**



NOTE:  
This diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

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

Symbol	PARAMETER	Limits			Unit	Test Conditions	
		Min	Typ	Max			
$V_{IH}$	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	$I_{IN} = -18 \text{ mA}$	$V_{CC} = \text{MIN}$
$V_{OH}$	Output HIGH Voltage	54, 74	2.5	3.4	V	$I_{OH} = -1.0 \text{ mA}$	$V_{CC} = 4.5 \text{ V}$
		74	2.7	3.4	V	$I_{OH} = -1.0 \text{ mA}$	$V_{CC} = 4.75 \text{ V}$
$V_{OL}$	Output LOW Voltage		0.35	0.5	V	$I_{OL} = 20 \text{ mA}$	$V_{CC} = \text{MIN}$
$I_{IH}$	Input HIGH Current			20	$\mu\text{A}$	$V_{IN} = 2.7 \text{ V}$	$V_{CC} = \text{MAX}$
				100	$\mu\text{A}$	$V_{IN} = 7.0 \text{ V}$	
$I_{IL}$	Input LOW Current			-0.6	mA	$V_{IN} = 0.5 \text{ V}$	$V_{CC} = \text{MAX}$
$I_{OS}$	Output Short Circuit Current (Note 2)	-60		-150	mA	$V_{OUT} = 0 \text{ V}$	$V_{CC} = \text{MAX}$
$I_{CC}$	Power Supply Current		21	32	mA	$I_A = B = \text{GND}$	$V_{CC} = \text{MAX}$

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

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## FUNCTION TABLE

Inputs		Output
$I_A = B$	A, B	$O_A = B$
L	$A = B^*$	L
L	$A \neq B$	H
H	$A = B^*$	H
H	$A \neq B$	H

H = HIGH Voltage Level  
 L = LOW Voltage Level  
 \* $A_0 = B_0, A_1 = B_1, A_2 = B_2$ , etc.

## AC CHARACTERISTICS

Symbol	Parameter	54/74F			54F		74F		Unit
		$T_A = +25^\circ\text{C}$ $V_{CC} = +5.0\text{ V}$ $C_L = 50\text{ pF}$			$T_A = -55^\circ\text{C to } +125^\circ\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ $C_L = 50\text{ pF}$		$T_A = 0^\circ\text{C to } +70^\circ\text{C}$ $V_{CC} = 5.0\text{ V} \pm 10\%$ $C_L = 50\text{ pF}$		
		Min	Typ	Max	Min	Max	Min	Max	
$t_{PLH}$	Propagation Delay $\bar{O}_A = B$	2.5	6.5	10	2.5	15	2.5	11	ns
$t_{PHL}$	$A_n$ or $B_n$ to $\bar{O}_A = B$	3.0	6.5	10	3.0	12	3.0	11	
$t_{PLH}$	Propagation Delay $\bar{I}_A = B$ to $\bar{O}_A = B$	2.5	4.5	6.5	2.5	8.5	2.5	7.5	ns
$t_{PHL}$	$\bar{I}_A = B$ to $\bar{O}_A = B$	3.5	5.0	9.0	3.5	10	3.5	10	

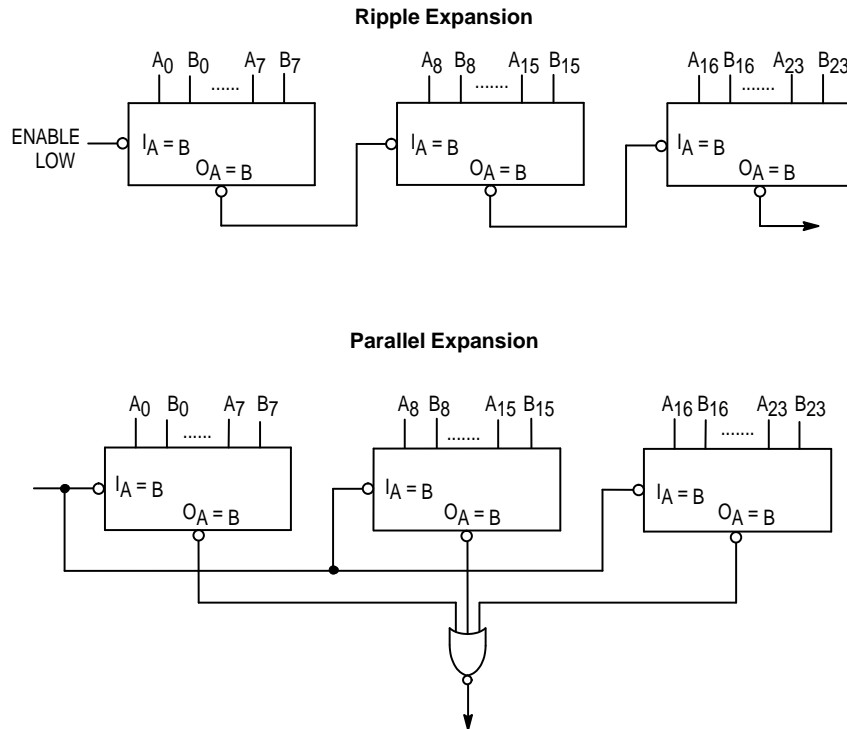


Figure 1. Applications


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