

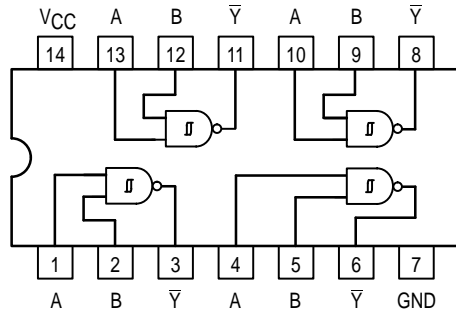


# MC54/74F132

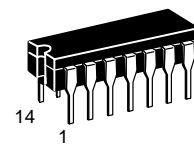
## QUAD 2-INPUT NAND SCHMITT TRIGGER

The MC54/74F132 contains four 2-input NAND gates which accept standard TTL input signals and provide standard TTL output levels. They are capable of transforming slowly changing input signals into sharply defined, jitter-free output signals. In addition, they have greater noise margin than conventional NAND gates.

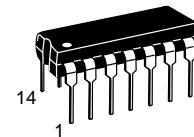
Each circuit contains a 2-input Schmitt trigger followed by a Darlington level shifter and a phase splitter driving a TTL totem-pole output. The Schmitt trigger uses positive feedback to effectively speed up slow input transitions and provide different input threshold voltages for positive and negative-going transitions. This hysteresis between the positive-going and negative-going input threshold (typically 800 mV) is determined by resistor ratios and is essentially insensitive to temperature and supply voltage variations.



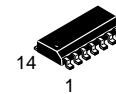
### QUAD 2-INPUT NAND SCHMITT TRIGGER FAST™ SHOTTKY TTL



**J SUFFIX**  
CERAMIC  
CASE 632-08



**N SUFFIX**  
PLASTIC  
CASE 646-06



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

#### ORDERING INFORMATION

MC54FXXXJ Ceramic  
MC74FXXXN Plastic  
MC74FXXXD 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

#### FUNCTION TABLE

Inputs		Output
A	B	Y-bar
L	L	H
L	H	H
H	L	H
H	H	L

H = HIGH Voltage level  
L = LOW voltage level

# MC54/74F132

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

Symbol	Parameter	Limits			Unit	Test Conditions	
		Min	Typ	Max			
$V_{T+}$	Positive-Going Threshold Voltage	1.5		2.0	V	$V_{CC} = 5.0\text{ V}$	
$V_{T-}$	Negative-Going Threshold Voltage	0.7		1.1	V	$V_{CC} = 5.0\text{ V}$	
$V_{T+}-V_{T-}$	Hysteresis	0.4	0.8		V	$V_{CC} = 5.0\text{ V}$	
$V_{IH}$	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	$V_{CC} = \text{MIN}$ , $I_{IN} = -18\text{ mA}$	
$V_{OH}$	Output HIGH Voltage	54,74	2.5		V	$I_{OH} = -1.0\text{ mA}$ , $V_{CC} = 4.50\text{ V}$	
		74	2.7		V	$I_{OH} = -1.0\text{ mA}$ , $V_{CC} = 4.75\text{ V}$	
$V_{OL}$	Output LOW Voltage			0.5	V	$I_{OL} = 20\text{ mA}$ , $V_{CC} = \text{MIN}$	
$I_{T+}$	Input Current at Positive-Going Threshold		0		$\mu\text{A}$	$V_{CC} = 5.0\text{ V}$ , $V_{IN} = V_{T+}$	
$I_{T-}$	Input Current at Negative-Going Threshold		-350		$\mu\text{A}$	$V_{CC} = 5.0\text{ V}$ , $V_{IN} = V_{T-}$	
$I_{IH}$	Input HIGH Current			20	$\mu\text{A}$	$V_{CC} = \text{MAX}$ , $V_{IN} = 2.7\text{ V}$	
				0.1	mA	$V_{CC} = \text{MAX}$ , $V_{IN} = 7.0\text{ V}$	
$I_{IL}$	Input LOW Current			-0.6	mA	$V_{CC} = \text{MAX}$ , $V_{IN} = 0.5\text{ V}$	
$I_{OS}$	Output Short Circuit Current (Note 2)	-60		-150	mA	$V_{CC} = \text{MAX}$ , $V_{OUT} = 0\text{ V}$	
$I_{CC}$	Total, Supply Current	$I_{CCH}$		8.5	12	mA	$V_{IN} = \text{GND}$ , $V_{CC} = \text{MAX}$
		$I_{CCL}$		13	19.5		$V_{IN} = 4.5\text{ V}$

### 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 ELECTRICAL 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	3.5	5.5	7.0	3.5	9.0	3.5	8.0	ns
$t_{PHL}$	A, B to $\bar{Y}$	3.0	5.0	6.5	3.0	8.0	3.0	7.0	