

54F/74F588

Octal Bidirectional Transceiver With 3-State Inputs/Outputs and IEEE-488 Termination Resistors

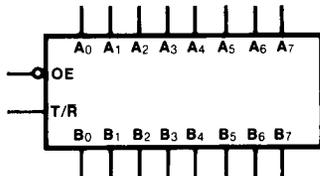
Description

The 'F588 contains eight non-inverting bidirectional buffers with 3-state outputs and is intended for bus-oriented applications. The B ports have termination resistors as specified in the IEEE-488 specifications. Current sinking capability is 20 mA at the A ports and 48mA at the B ports. The Transmit/Receive (T/R) input determines the direction of data flow through the bidirectional transceiver. Transmit (active HIGH) enables data from A ports to B ports; Receive (active LOW) enables data from B ports to A ports. The Output Enable input, when HIGH, disables both A and B ports by placing them in a high impedance condition.

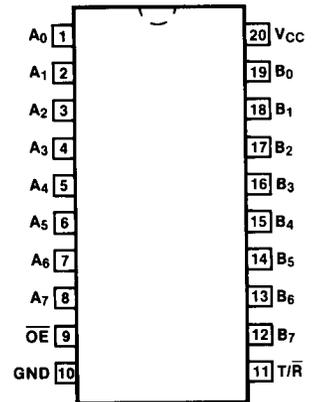
- Non-Inverting Buffers
- Bidirectional Data Path
- B Outputs Sink 48 mA, Source 15 mA

Ordering Code: See Section 5

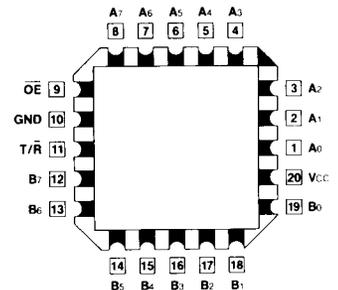
Logic Symbol



Connection Diagrams



Pin Assignment for DIP and SOIC



Pin Assignment for LCC and PCC

Input Loading/Fan-Out: See Section 3 for U.L. definitions

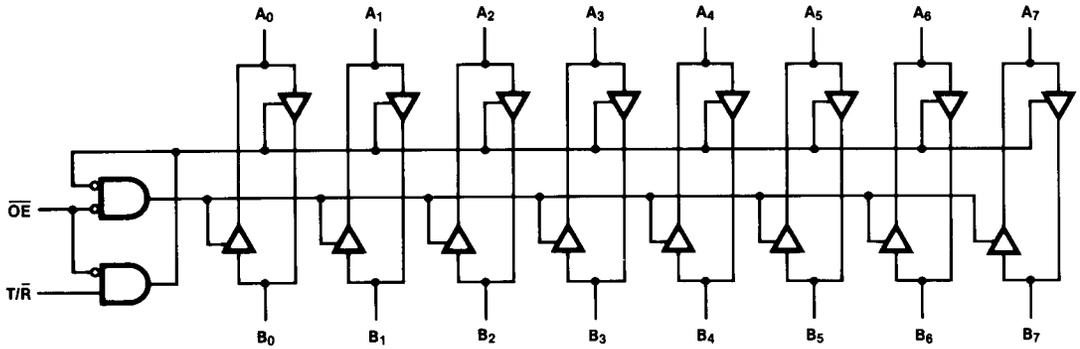
Pin Names	Description	54F/74F(U.L.) HIGH/LOW
OE	Output Enable Input (Active LOW)	0.5/0.75
T/R	Transmit/Receive Control Input	0.5/0.75
A ₀ -A ₇	A Port Inputs or 3-State Outputs	1.75/0.406 75/12.5
B ₀ -B ₇	B Port Inputs or 3-State Outputs	T*/2.0 75/15 (12.5)

*T = Resistive Termination per IEEE-488 Standard

Truth Table

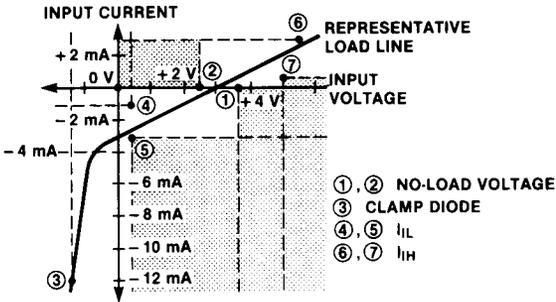
Inputs		Outputs
\overline{OE}	T/R	
L	L	Bus B Data to Bus A
L	H	Bus A Data to Bus B
H	X	High Impedance

Logic Diagram



Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.

B Port Input Characteristic with T/R LOW



DC Characteristics over Operating Temperature Range (unless otherwise specified)

Symbol	Parameter		54F/74F			Units	Conditions	
			Min	Typ	Max			
V_{OH}	Output HIGH Voltage A_0 - A_7 , B_0 - B_7		2.4			V	$I_{OH} = -3.0$ mA, $V_{CC} = \text{Min}$ $V_{IN} = V_{IH}$, $\overline{OE} = \text{LOW}$ $T/\overline{R} = \text{HIGH}$	
V_{OL}	Output LOW Voltage	XM	0.55			V	$I_{OL} = 48$ mA	$\overline{OE} = \text{LOW}$
	B_0 - B_7	XC					$I_{OL} = 64$ mA	$T/\overline{R} = \text{HIGH}$
V_{NL}	No-load Voltage B_0 - B_7		2.5 ²	3.7 ¹		V	$T/\overline{R} = \text{LOW}$, $I_{OUT} = 0$	
V_{CD}	Input Clamp Diode Voltage		-1.2 ³			V	$I_{IN} = -18$ mA $V_{CC} = \text{Min}$	
I_{IH}	Input HIGH Current Breakdown Test, A_0 - A_7		-1.0			mA	$V_{IN} = 5.5$ V	
I_{IH}	Input HIGH Current B_0 - B_7		0.7 ⁷	2.5 ⁶		mA	$V_{IN} = 5.0$ V, $T/\overline{R} = \text{LOW}$ $V_{IN} = 5.5$ V, $T/\overline{R} = \text{LOW}$	
I_{IL}	Input LOW Current B_0 - B_7		1.3	3.2 ⁵		mA	$V_{IN} = 0.4$ V, $T/\overline{R} = \text{LOW}$	
$I_{IH} + I_{OZH}$	3-State Output OFF Current HIGH, A_0 - A_7		70			μA	$V_{IN} = 2.7$ V, $T/\overline{R} = \text{LOW}$ $V_{CC} = \text{Max}$	
I_{CCH} I_{CCL} I_{CCZ}	Power Supply Current			67 90 83	100 135 125	mA	$\overline{OE} = \text{LOW}$, $V_{CC} = \text{Max}$ $A_n = \text{LOW}$, $T/\overline{R} = \text{HIGH}$ $\overline{OE} = \text{HIGH}$, $V_{CC} = \text{Max}$	

AC Characteristics: See Section 3 for waveforms and load configurations

Symbol	Parameter	54F/74F			54F		74F		Units	Fig. No.
		$T_A = +25^\circ\text{C}$ $V_{CC} = +5.0$ V $C_L = 50$ pF			T_A , $V_{CC} = \text{Mil}$ $C_L = 50$ pF		T_A , $V_{CC} = \text{Com}$ $C_L = 50$ pF			
		Min	Typ	Max	Min	Max	Min	Max		
t_{PLH} t_{PHL}	Propagation Delay A to B or B to A	2.5 2.5	4.5 5.0	6.0 6.5			2.5 2.5	7.0 7.5	ns	3-1 3-4
t_{PZH} t_{PZL}	Output Enable Time T/\overline{R} or \overline{OE} to A or B	2.5 2.5	5.0 7.0	7.0 9.0			2.5 2.5	8.0 10.0	ns	3-1 3-2 3-13
t_{PHZ} t_{PLZ}	Output Disable Time T/\overline{R} or \overline{OE} to A or B	2.5 2.5	5.5 5.5	7.0 7.0			2.5 2.5	8.0 8.0		