

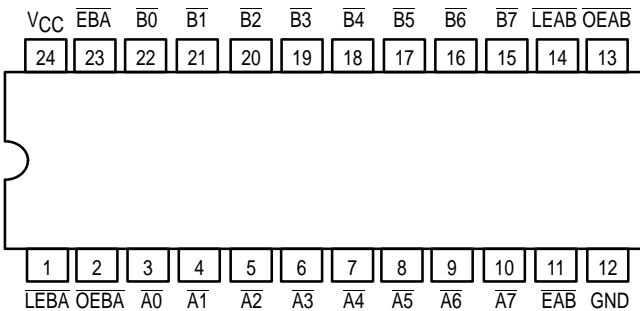


OCTAL REGISTERED TRANSCEIVER, INVERTING, 3-STATE

The MC74F544 Octal Registered Transceivers contain two sets of D-Type latches for temporary storage of data flowing in either direction. Separate Latch Enable (\overline{LEAB} , \overline{LEBA}) and Enable (\overline{OEAB} , \overline{OEBA}) inputs are provided for each register to permit independent control of inputting and outputting in either direction of data flow. The MC74F544 has an inverting data path. The A outputs are guaranteed to sink 24 mA while the B outputs are rated for 64 mA.

- Combines 74F245 and 74F373 Type Functions in One Chip
- 8-Bit Octal Transceiver
- Inverting
- Back-to-Back Registers for Storage
- Separate Controls for Data Flow in Each Direction
- Glitchless Outputs During 3-State Power Up or Power Down Operation
- High Impedance Outputs in Power Off State
- A Outputs Sink 24 mA and Source 3.0 mA
- B Outputs Sink 64 mA and Source 15 mA
- See F543 for Noninverting Version
- ESD Protection > 4000 Volts

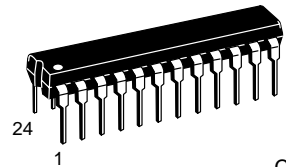
PIN ASSIGNMENT



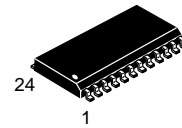
MC74F544

OCTAL REGISTERED
TRANSCEIVER, INVERTING,
3-STATE

FAST™ SCHOTTKY TTL



N SUFFIX
PLASTIC
CASE 724-03



DW SUFFIX
SOIC
CASE 751E-03

ORDERING INFORMATION

MC74FXXXN Plastic
MC74FXXXDW SOIC

GUARANTEED OPERATING RANGES

Symbol	Parameter	74	Min	Typ	Max	Unit
V _{CC}	DC Supply Voltage	74	4.5	5.0	5.5	V
T _A	Operating Ambient Temperature Range	74	0	25	70	°C
I _{OH}	Output Current — High	74	—	—	-3.0/-15	mA
I _{OL}	Output Current — Low	74	—	—	24/64	mA

MC74F544

FUNCTION TABLE

Inputs				Outputs	Status
$\overline{OE}X\overline{X}$	$\overline{E}X\overline{X}$	$\overline{LE}X\overline{X}$	Data		
H	X	X	X	Z	Outputs disabled
X	H	X	X	Z	Outputs disabled
L	↑	L	l	Z	Outputs disabled
L	↑	L	h	Z	Data latched
L	L	↑	l	H	Data latched
L	L	↑	h	L	
L	L	L	L	H	Transparent
L	L	L	H	L	
L	L	H	X	NC	Hold

H = HIGH voltage level; h = HIGH state must be present one set-up time before the LOW-to-HIGH transition of $\overline{LE}X\overline{X}$ or $\overline{E}X\overline{X}$ (XX = AB or BA); L = LOW voltage level; l = LOW state must be present one set-up time before the LOW-to-HIGH transition of $\overline{LE}X\overline{X}$ or $\overline{E}X\overline{X}$ (XX = AB or BA); X = Don't care; Z = HIGH impedance state; NC = No Change.

FUNCTIONAL DESCRIPTION

The MC74F544 contains two sets of eight D-type latches, with separate input and controls for each set. For data flow from A to B, for example, the A-to-B Enable ($\overline{E}A\overline{B}$) input must be LOW in order to enter data from $\overline{A}0\text{--}\overline{A}7$ or take data from $\overline{B}0\text{--}\overline{B}7$, as indicated in the Function Table. With $\overline{E}A\overline{B}$ LOW, a LOW signal on the A-to-B latch enable ($\overline{LE}A\overline{B}$) input makes the A-to-B latches transparent; a subsequent LOW-to-HIGH

transition of the $\overline{LE}A\overline{B}$ signal puts the A latches in the storage mode and their outputs no longer change with the A inputs. With $\overline{E}A\overline{B}$ and $\overline{OE}A\overline{B}$ both LOW, the 3-State B output buffers are active and reflect the inverted data present at the output of the A latches. Control of data flow from B to A is similar, but using the $\overline{E}B\overline{A}$, $\overline{LE}B\overline{A}$, and $\overline{OE}B\overline{A}$ inputs.

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter		Limits			Unit	Test Conditions (Note 1)		
			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		—	-0.73	-1.2	V	$V_{CC} = \text{MIN}$, $I_{IN} = -18 \text{ mA}$		
V_{OH}	Output HIGH Voltage	$A0\text{--}A7$	74	2.4	—	—	V	$I_{OH} = -3.0 \text{ mA}$	$V_{CC} = 4.5 \text{ V}$
		$\overline{B}0\text{--}\overline{B}7$	74	2.0	—	—			$V_{CC} = 4.75 \text{ V}$
V_{OL}	Output LOW Voltage	$A0\text{--}A7$	74	—	0.35	0.5	V	$I_{OL} = 24 \text{ mA}$	$V_{CC} = \text{MIN}$
		$\overline{B}0\text{--}\overline{B}7$	74	—	0.4	0.55			
I_{IH}	Input HIGH Current	I/O Pins	—	—	1.0	mA	$V_{CC} = \text{MAX}$, $V_{IN} = 5.5 \text{ V}$		
		Control Pins	—	—	100	μA	$V_{CC} = \text{MAX}$, $V_{IN} = 7.0 \text{ V}$		
		Control Pins	—	—	20	μA	$V_{CC} = \text{MAX}$, $V_{IN} = 2.7 \text{ V}$		
		I/O Pins	—	—	70	μA			
I_{IL}	Input LOW Current	$\overline{E}A\overline{B}$, $\overline{E}B\overline{A}$	—	—	-1.2	mA	$V_{CC} = \text{MAX}$, $V_{IN} = 0.5 \text{ V}$		
		Other Inputs	—	—	-0.6				
I_{OZH}	Off-State Output Current		—	—	70	μA	$V_{CC} = \text{MAX}$, $V_{OUT} = 2.7 \text{ V}$		
I_{OZL}	Off-State Output Current, Low-Level Voltage Applied		—	—	-600	μA	$V_{CC} = \text{MAX}$, $V_{OUT} = 0.5 \text{ V}$		
I_{OS}	Output Short Circuit Current (Note 2)	\overline{A}_n Outputs	—	-60	-150	mA	$V_{CC} = \text{MAX}$, $V_{OUT} = 0 \text{ V}$		
		\overline{B}_n Outputs	—	-100	-225				
I_{CC}	Total Supply Current	I_{CCH}	—	70	105	mA	$V_{CC} = \text{MAX}$		
		I_{CCL}	—	95	130				
		I_{CCZ}	—	95	125				

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.

MC74F544

AC ELECTRICAL CHARACTERISTICS

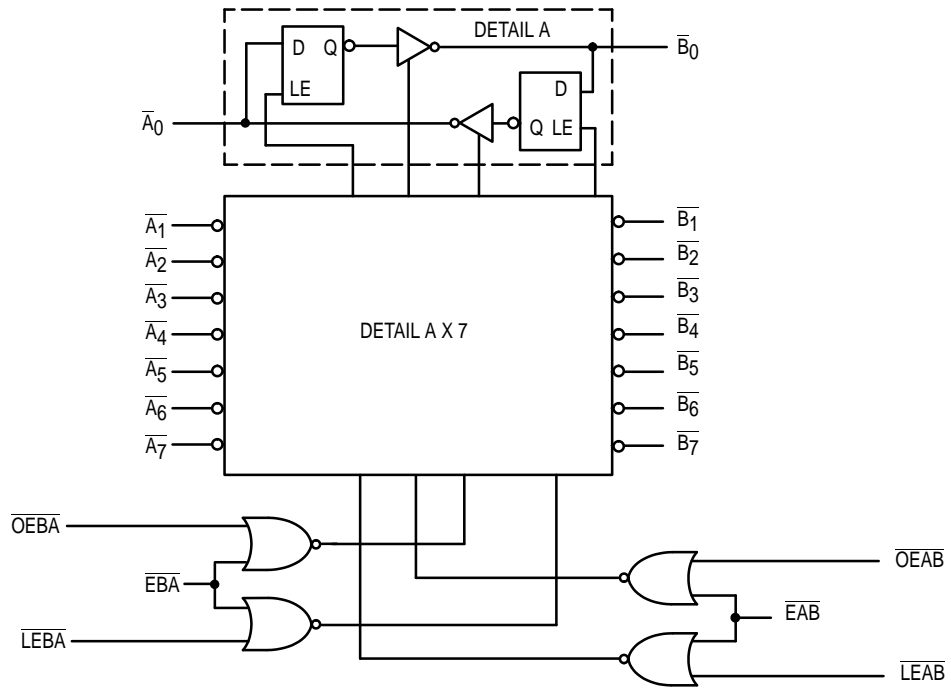
Symbol	Parameter	74F			74F		Unit
		T _A = +25°C V _{CC} = +5.0 V C _L = 50 pF			T _A = 0 °C to +70°C V _{CC} = +5.0 V ±10% C _L = 50 pF		
		Min	Typ	Max	Min	Max	
t _{PLH} t _{PHL}	Propagation Delay Transparent Mode \overline{A}_n to \overline{B}_n or \overline{B}_n to \overline{A}_n	2.0 2.0	— —	9.5 6.5	2.0 2.0	10.5 7.5	ns
t _{PLH} t _{PHL}	Propagation Delay \overline{LEBA} to \overline{A}_n	6.0 4.0	— —	13 9.5	6.0 4.0	14.5 10.5	ns
t _{PLH} t _{PHL}	Propagation Delay \overline{LEAB} to \overline{B}_n	6.0 4.0	— —	13 9.5	6.0 4.0	14.5 10.5	ns
t _{PZH} t _{PZL}	Output Enable Time \overline{OEBA} or \overline{OEAB} to \overline{A}_n or \overline{B}_n \overline{EBA} or \overline{EAB} to \overline{A}_n or \overline{B}_n	3.0 4.0	— —	9.0 10.5	3.0 4.0	10 12	ns
t _{PHZ} t _{PLZ}	Output Disable Time \overline{OEBA} or \overline{OEAB} to \overline{A}_n or \overline{B}_n \overline{EBA} or \overline{EAB} to \overline{A}_n or \overline{B}_n	1.5 1.5	— —	8.0 7.5	1.5 1.5	9.0 8.5	ns

AC OPERATING REQUIREMENTS

Symbol	Parameter	74F			74F			Unit
		T _A = +25°C V _{CC} = +5.0 V C _L = 50 pF			T _A = 0°C to +70°C V _{CC} = +5.0 V ±10% C _L = 50 pF			
		Min	Typ	Max	Min	Typ	Max	
t _{s(H)} t _{s(L)}	Setup Time, HIGH or LOW \overline{A}_n or \overline{B}_n to \overline{LEBA} or \overline{LEAB}	3.0 3.0	— —	— —	3.0 3.0	— —	— —	ns
t _{h(H)} t _{h(L)}	Hold Time, HIGH or LOW \overline{A}_n to \overline{B}_n to \overline{LEBA} or \overline{LEAB}	3.0 3.0	— —	— —	3.0 3.0	— —	— —	ns
t _{w(L)}	Latch Enable, B to A Pulse Width, LOW	6.0	—	—	7.5	—	—	ns

MC74F544

LOGIC DIAGRAM



NOTE:

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