

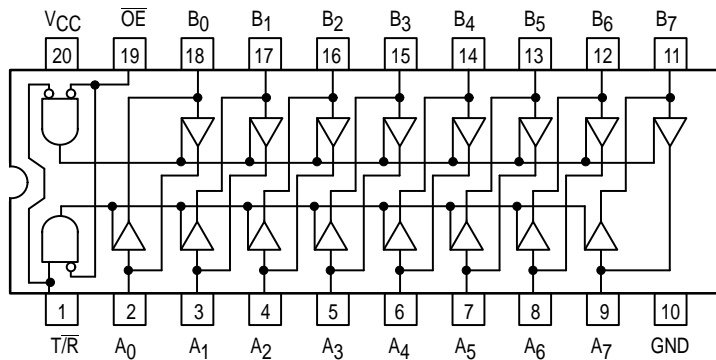


# OCTAL BIDIRECTIONAL TRANSCEIVER WITH 3-STATE INPUTS/OUTPUTS

The MC54/74F245 contains eight noninverting bidirectional buffers with 3-state outputs and is intended for bus-oriented applications. Current sinking capability is 24 mA at the A ports and 64 mA 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-Z condition.

- Noninverting Buffers
- Bidirectional Data Path
- B Outputs Sink 64 mA
- ESD > 4000 Volts

CONNECTION DIAGRAM (TOP VIEW)



FUNCTION TABLE

Inputs		Output
OE	T/R	
L	L	Bus B Data to Bus A
L	H	Bus A Data to Bus B
H	X	High-Z State

H = HIGH Voltage Level  
L = LOW Voltage Level  
X = Don't Care

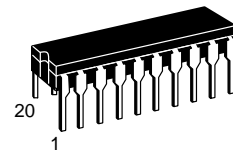
GUARANTEED OPERATING RANGES

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	A <sub>n</sub> Outputs	54, 74			−3.0	mA
I <sub>OL</sub>	Output Current — Low	A <sub>n</sub> Outputs	74			24	mA
			54			20	mA
I <sub>OH</sub>	Output Current — High	B <sub>n</sub> Outputs	54			−12	mA
			74			−15	
I <sub>OL</sub>	Output Current — Low	B <sub>n</sub> Outputs	54			48	mA
			74			64	

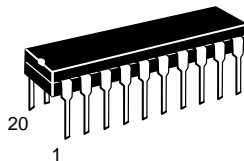
MC54/74F245

OCTAL BIDIRECTIONAL  
TRANSCEIVER WITH 3-STATE  
INPUTS/OUTPUTS

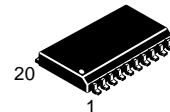
FAST™ SCHOTTKY TTL



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

# MC54/74F245

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

Symbol	Parameter		Limits			Unit	Test Conditions	
			Min	Typ	Max			
V <sub>IH</sub>	Input HIGH Voltage		2.0			V	Guaranteed Input HIGH Voltage	
V <sub>IL</sub>	Input LOW Voltage				0.8	V	Guaranteed Input LOW Voltage	
V <sub>IK</sub>	Input Clamp Diode Voltage				-1.2	V	I <sub>IN</sub> = -18 mA	V <sub>CC</sub> = MIN
V <sub>OH</sub>	Output HIGH Voltage, A <sub>n</sub> Outputs	54, 74	2.4	3.3		V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.50 V
		74	2.7	3.3		V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.75 V
V <sub>OH</sub>	Output HIGH Voltage, B <sub>n</sub> Outputs	54, 74	2.4	3.4		V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.50 V
		74	2.7	3.4		V	I <sub>OH</sub> = -3.0 mA	V <sub>CC</sub> = 4.75 V
		54	2.0			V	I <sub>OH</sub> = -12 mA	V <sub>CC</sub> = 4.50 V
		74	2.0			V	I <sub>OH</sub> = -15 mA	
V <sub>OL</sub>	Output LOW Voltage, A <sub>n</sub> Outputs	54		0.35	0.5	V	I <sub>OL</sub> = 20 mA	V <sub>CC</sub> = MIN
		74		0.35	0.5	V	I <sub>OL</sub> = 24 mA	
V <sub>OL</sub>	Output LOW Voltage, B <sub>n</sub> Outputs	54			0.55	V	I <sub>OL</sub> = 48 mA	V <sub>CC</sub> = MIN
		74			0.55	V	I <sub>OL</sub> = 64 mA	
I <sub>OZH</sub> + I <sub>IH</sub>	Output Off Current HIGH				70	μA	V <sub>OUT</sub> = 2.7 V	V <sub>CC</sub> = MAX
I <sub>OZL</sub> + I <sub>IL</sub>	Output Off Current LOW				-650	mA	V <sub>OUT</sub> = 0.5 V	V <sub>CC</sub> = MAX
I <sub>IH</sub>	Input HIGH Current	OE, T/R Inputs			20	μA	V <sub>IN</sub> = 2.7 V	V <sub>CC</sub> = MAX
		OE, T/R Inputs			100	μA	V <sub>IN</sub> = 7.0 V	
		A <sub>n</sub> , B <sub>n</sub> Inputs			1.0	mA	V <sub>IN</sub> = 5.5 V	
I <sub>IL</sub>	Input LOW Current	T/R Input			-0.8	mA	V <sub>IN</sub> = 0.5 V	V <sub>CC</sub> = MAX
		OE Input			-1.2	mA		
I <sub>OS</sub>	Output Short Circuit Current (Note 2)	A <sub>n</sub> Outputs	-60		-150	mA	V <sub>OUT</sub> = GND	V <sub>CC</sub> = MAX
		B <sub>n</sub> Outputs	-100		-225	mA	V <sub>OUT</sub> = GND	V <sub>CC</sub> = MAX
I <sub>CCH</sub>	Power Supply Current HIGH				90	mA	V <sub>CC</sub> = MAX, Outputs HIGH	
I <sub>CCL</sub>	Power Supply Current LOW				120	mA	V <sub>CC</sub> = MAX, Outputs LOW	
I <sub>CCZ</sub>	Power Supply Current OFF				110	mA	V <sub>CC</sub> = MAX, Outputs OFF	

### 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.

## AC CHARACTERISTICS

Symbol	Parameter	54/74F		54F		74F		Unit
		T <sub>A</sub> = +25°C V <sub>CC</sub> = +5.0 V C <sub>L</sub> = 50 pF		T <sub>A</sub> = -55°C to +125°C V <sub>CC</sub> = 5.0 V ± 10% C <sub>L</sub> = 50 pF		T <sub>A</sub> = 0°C to +70°C V <sub>CC</sub> = 5.0 V ± 10% C <sub>L</sub> = 50 pF		
		Min	Max	Min	Max	Min	Max	
t <sub>PLH</sub>	Propagation Delay	2.5	6.0	2.5	8.0	2.5	7.0	ns
t <sub>PHL</sub>	A <sub>n</sub> to B <sub>n</sub> or B <sub>n</sub> to A <sub>n</sub>	2.5	6.0	2.5	8.0	2.5	7.0	
t <sub>PZH</sub>	Output Enable Time	3.0	7.0	3.0	9.0	3.0	8.0	ns
t <sub>PZL</sub>		3.5	8.0	3.5	10	3.5	9.0	
t <sub>PHZ</sub>	Output Disable Time	2.5	6.5	2.5	8.5	2.5	7.5	ns
t <sub>PLZ</sub>		2.0	6.5	2.0	8.5	2.0	7.5	