

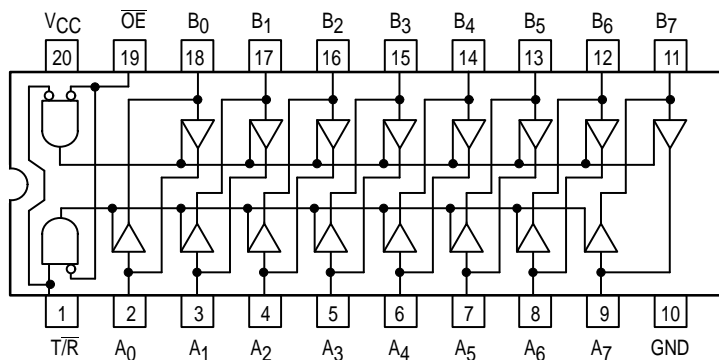


# OCTAL BIDIRECTIONAL TRANSCEIVER WITH 3-STATE INPUTS/OUTPUTS

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

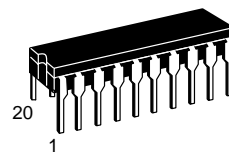
GUARANTEED OPERATING RANGES

| Symbol | Parameter                           |            | Min    | Typ | Max  | Unit |
|--------|-------------------------------------|------------|--------|-----|------|------|
| VCC    | Supply Voltage                      | 54, 74     | 4.5    | 5.0 | 5.5  | V    |
| TA     | Operating Ambient Temperature Range | 54         | -55    | 25  | 125  | °C   |
|        |                                     | 74         | 0      | 25  | 70   |      |
| IOH    | Output Current — High               | An Outputs | 54, 74 |     | -3.0 | mA   |
|        |                                     |            | 74     |     | 24   |      |
| IOL    | Output Current — Low                | An Outputs | 54     |     | 20   | mA   |
|        |                                     |            | 74     |     |      |      |
| IOH    | Output Current — High               | Bn Outputs | 54     |     | -12  | mA   |
|        |                                     |            | 74     |     | -15  |      |
| IOL    | Output Current — Low                | Bn Outputs | 54     |     | 48   | mA   |
|        |                                     |            | 74     |     | 64   |      |

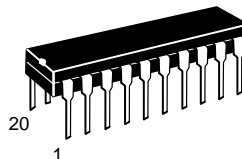
MC54/74F245

OCTAL BIDIRECTIONAL TRANSCEIVER WITH 3-STATE INPUTS/OUTPUTS

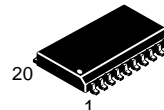
FAST™ SCHOTTKY TTL



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:

- 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.

## AC CHARACTERISTICS

| Symbol           | Parameter  | 54/74F   |     | 54F   |     | 74F  |     | Unit |
|------------------|--|--|-----|---|-----|--|-----|------|
|                  |  | T <sub>A</sub> = +25°C<br>V <sub>CC</sub> = +5.0 V<br>C <sub>L</sub> = 50 pF |     | T <sub>A</sub> = -55°C to +125°C<br>V <sub>CC</sub> = 5.0 V ± 10%<br>C <sub>L</sub> = 50 pF |     | T <sub>A</sub> = 0°C to +70°C<br>V <sub>CC</sub> = 5.0 V ± 10%<br>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 |      |