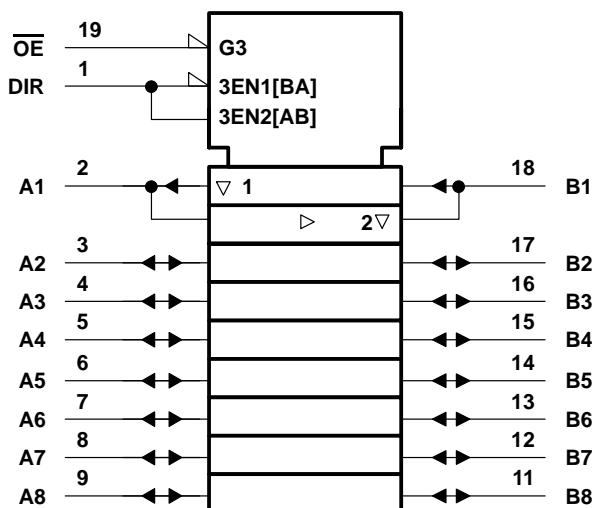


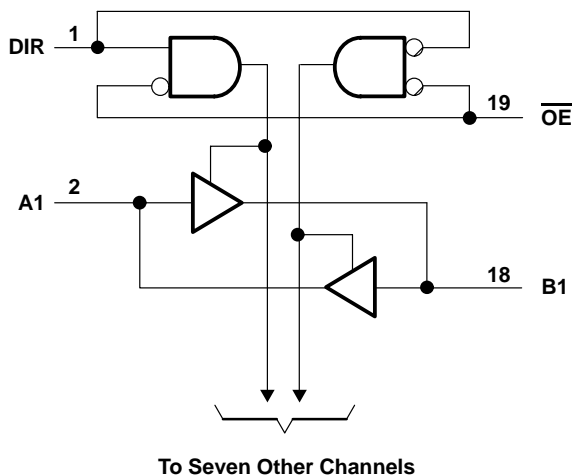
SN54F245, SN74F245 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

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logic symbol†



logic diagram (positive logic)



† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)‡

| | |
|--|--------------------|
| Supply voltage range, V_{CC} | -0.5 V to 7 V |
| Input voltage range, V_I (except I/O ports) (see Note 1) | -1.2 V to 7 V |
| Input current range | -30 mA to 5 mA |
| Voltage range applied to any output in the disabled or power-off state | -0.5 V to 5.5 V |
| Voltage range applied to any output in the high state | -0.5 V to V_{CC} |
| Current into any output in the low state: SN54F245 (A1 thru A8) | 40 mA |
| SN54F245 (B1 thru B8) | 96 mA |
| SN74F245 (A1 thru A8) | 48 mA |
| SN74F245 (B1 thru B8) | 128 mA |
| Operating free-air temperature range: SN54F245 | -55°C to 125°C |
| SN74F245 | 0°C to 70°C |
| Storage temperature range | -65°C to 150°C |

‡ Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTE 1: The input voltage ratings may be exceeded provided the input current ratings are observed.

SN54F245, SN74F245 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

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recommended operating conditions

| | | SN54F245 | | | SN74F245 | | | UNIT |
|----------|--------------------------------|------------|-----|-----|------------|-----|-----|------|
| | | MIN | NOM | MAX | MIN | NOM | MAX | |
| V_{CC} | Supply voltage | 4.5 | 5 | 5.5 | 4.5 | 5 | 5.5 | V |
| V_{IH} | High-level input voltage | 2 | | | 2 | | | V |
| V_{IL} | Low-level input voltage | | | 0.8 | | | 0.8 | V |
| I_{IK} | Input clamp current | | | -18 | | | -18 | mA |
| I_{OH} | High-level output current | A1 thru A8 | | -3 | B1 thru B8 | | -3 | mA |
| | | B1 thru B8 | | -12 | | | -15 | |
| I_{OL} | Low-level output current | A1 thru A8 | | 20 | B1 thru B8 | | 24 | mA |
| | | B1 thru B8 | | 48 | | | 64 | |
| T_A | Operating free-air temperature | -55 | | 125 | 0 | | 70 | °C |

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

| PARAMETER | | TEST CONDITIONS | | SN54F245 | | SN74F245 | | UNIT |
|-------------------|-------------------------|---|--|-----------|------|-----------|------|---------------|
| | | | | MIN | TYP† | MAX | MIN | |
| V_{IK} | | $V_{CC} = 4.5\text{ V}$, $I_I = -18\text{ mA}$ | | -1.2 | | -1.2 | | V |
| V_{OH} | A1 thru A8 | $V_{CC} = 4.5\text{ V}$ | $I_{OH} = -1\text{ mA}$ | 2.5 | 3.4 | 2.5 | 3.4 | V |
| | | | $I_{OH} = -3\text{ mA}$ | 2.4 | 3.3 | 2.4 | 3.3 | |
| | B1 thru B8 | $V_{CC} = 4.5\text{ V}$ | $I_{OH} = -12\text{ mA}$ | 2 | 3.2 | | | |
| | | | $I_{OH} = -15\text{ mA}$ | | | 2 | 3.1 | |
| Any output | | $V_{CC} = 4.75\text{ V}$, | $I_{OH} = -1\text{ mA to } -3\text{ mA}$ | | 2.7 | | | |
| V_{OL} | A1 thru A8 | $V_{CC} = 4.5\text{ V}$ | $I_{OL} = 20\text{ mA}$ | 0.3 0.5 | | | | V |
| | | | $I_{OL} = 24\text{ mA}$ | | | 0.35 0.5 | | |
| | B1 thru B8 | $V_{CC} = 4.5\text{ V}$ | $I_{OL} = 48\text{ mA}$ | 0.38 0.55 | | | | |
| | | | $I_{OL} = 64\text{ mA}$ | | | 0.42 0.55 | | |
| I_I | A and B | $V_{CC} = 5.5\text{ V}$ | $V_I = 5.5\text{ V}$ | 1 | | 1 | | mA |
| | DIR, \overline{OE} | | $V_I = 7\text{ V}$ | 0.1 | | 0.1 | | |
| I_{IH}^\ddagger | A and B | $V_{CC} = 5.5\text{ V}$, | $V_I = 2.7\text{ V}$ | 70 | | 70 | | μA |
| | DIR, \overline{OE} | | | 20 | | 20 | | |
| I_{IL}^\ddagger | A and B | $V_{CC} = 5.5\text{ V}$, | $V_I = 0.5\text{ V}$ | -0.65 | | -0.65 | | mA |
| | DIR, \overline{OE} | | | -1.2 | | -1.2 | | |
| I_{OS}^\S | A1 thru A8 | $V_{CC} = 5.5\text{ V}$, | $V_O = 0$ | -60 | -150 | -60 | -150 | mA |
| | B1 thru B8 | | | -100 | -225 | -100 | -225 | |
| I_{CC} | $V_{CC} = 5.5\text{ V}$ | | Outputs high | 70 | 90 | 70 | 90 | mA |
| | | | Outputs low | 95 | 120 | 95 | 120 | |
| | | | Outputs disabled | 85 | 110 | 85 | 110 | |

† All typical values are at $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$.

‡ For I/O ports, the parameters I_{IH} and I_{IL} include the off-state output current.

§ Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed one second.



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switching characteristics (see Note 2)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | V _{CC} = 5 V, C _L = 50 pF, R _L = 500 Ω, T _A = 25°C | | | V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = MIN to MAX† | | | | UNIT |
|------------------|------------------------|----------------|---|-----|-----|---|-----|----------|-----|------|
| | | | 'F245 | | | SN54F245 | | SN74F245 | | |
| | | | MIN | TYP | MAX | MIN | MAX | MIN | MAX | |
| t _{PLH} | A or B | B or A | 1.7 | 3.8 | 6 | 1.2 | 7.5 | 1.7 | 7 | ns |
| t _{PHL} | | | 1.7 | 4.2 | 6 | 1.2 | 7.5 | 1.7 | 7 | |
| t _{PZH} | $\overline{\text{OE}}$ | A or B | 2.2 | 4.9 | 7 | 1.7 | 9 | 2.2 | 8 | ns |
| t _{PZL} | | | 2.7 | 5.6 | 8 | 2.2 | 10 | 2.7 | 9 | |
| t _{PHZ} | $\overline{\text{OE}}$ | A or B | 2.2 | 4.6 | 6.5 | 1.7 | 9 | 2.2 | 7.5 | ns |
| t _{PLZ} | | | 1.2 | 4.6 | 6.5 | 1.2 | 10 | 1.2 | 7.5 | |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

NOTE 2: Load circuits and waveforms are shown in Section 1.

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