

SN54F245, SN74F245 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

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- Package Options Include Plastic Small-Outline (SOIC) and Shrink Small-Outline (SSOP) Packages, Ceramic Chip Carriers, and Plastic and Ceramic DIPs

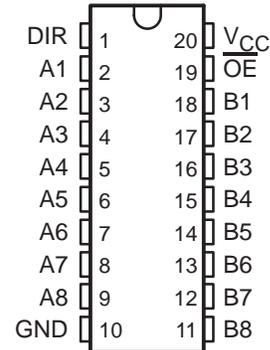
description

These octal bus transceivers are designed for asynchronous communication between data buses. The devices transmit data from the A bus to the B bus or from the B bus to the A bus depending upon the logic level at the direction-control (DIR) input. The output enable (\overline{OE}) input can be used to disable the device so the buses are effectively isolated.

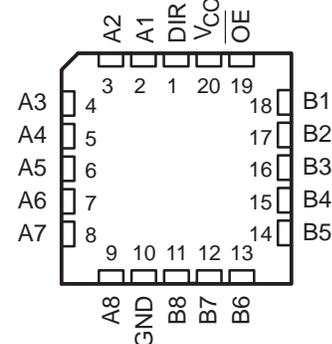
The SN74F245 is available in TI's shrink small-outline package (DB), which provides the same I/O pin count and functionality of standard small-outline packages in less than half the printed-circuit-board area.

The SN54F245 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74F245 is characterized for operation from 0°C to 70°C .

SN54F245 . . . J PACKAGE
SN74F245 . . . DB, DW, OR N PACKAGE
(TOP VIEW)



SN54F245 . . . FK PACKAGE
(TOP VIEW)



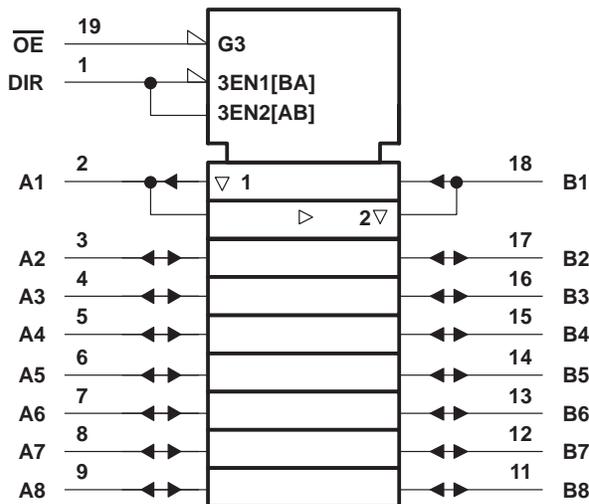
FUNCTION TABLE

| INPUTS | | OPERATION |
|-----------------|-----|-----------------|
| \overline{OE} | DIR | |
| L | L | B data to A bus |
| L | H | A data to B bus |
| H | X | Isolation |

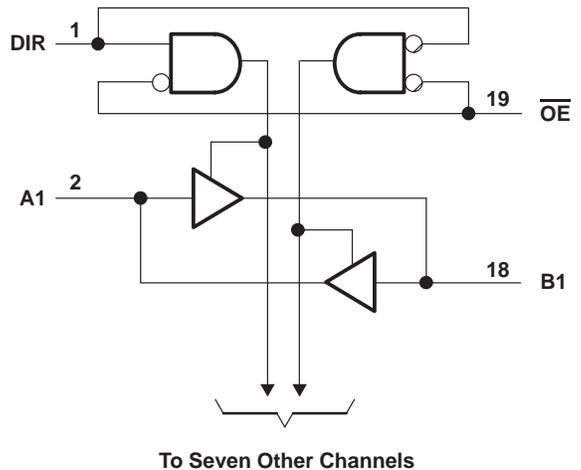
SN54F245, SN74F245 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

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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.

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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 | -3 | | mA | |
| | | B1 thru B8 | | -12 | -15 | | | |
| I_{OL} | Low-level output current | A1 thru A8 | | 20 | 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 | |
| | 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 | |
| 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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SN54F245, OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

Device Status: Active

- > [Description](#)
- > [Features](#)
- > [Datasheets](#)
- > [Pricing/Samples/Availability](#)
- > [Application Notes](#)
- > [Related Documents](#)

| Parameter Name | SN54F245 |
|-------------------|------------|
| Voltage Nodes (V) | 5 |
| Vcc range (V) | 4.5 to 5.5 |
| Input Level | TTL |
| Output Level | TTL |
| No. of Outputs | 8 |
| Logic | True |

Description

These octal bus transceivers are designed for asynchronous communication between data buses. The devices transmit data from the A bus to the B bus or from the B bus to the A bus depending upon the logic level at the direction-control (DIR) input. The output enable (\overline{OE}) input can be used to disable the device so the buses are effectively isolated.

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Features

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To view the following documents, [Acrobat Reader 3.x](#) is required.

To download a document to your hard drive, right-click on the link and choose 'Save'.

Datasheets

Full datasheet in Acrobat PDF: [sdfs010a.pdf](#) (75 KB)

Full datasheet in Zipped PostScript: [sdfs010a.psz](#) (75 KB)

Pricing/Samples/Availability

| <u>Orderable Device</u> | <u>Package</u> | <u>Pins</u> | <u>Temp (°C)</u> | <u>Status</u> | <u>Price/unit USD (100-999)</u> | <u>Pack Qty</u> | <u>DSCC Number</u> | <u>Availability / Samples</u> |
|-------------------------|--------------------|-------------|------------------|---------------|---------------------------------|-----------------|--------------------|--------------------------------------|
| 85511012A | FK | 20 | -55 TO 125 | ACTIVE | 5.85 | 1 | | Check stock or order |
| JM38510/34803B2A | FK | 20 | -55 TO 125 | ACTIVE | 6.53 | 1 | | Check stock or order |
| JM38510/34803BRA | J | 20 | -55 TO 125 | ACTIVE | 3.26 | 1 | | Check stock or order |
| JM38510/34803BSA | W | 20 | -55 TO 125 | ACTIVE | 9.34 | 1 | | Check stock or order |
| SN54F245J | J | 20 | -55 TO 125 | ACTIVE | 2.49 | 1 | | Check stock or order |
| SNJ54F245FK | FK | 20 | -55 TO 125 | ACTIVE | 5.85 | 1 | 85511012A | Check stock or order |
| SNJ54F245J | J | 20 | -55 TO 125 | ACTIVE | 2.92 | 1 | 8551101RA | Check stock or order |
| SNJ54F245W | W | 20 | -55 TO 125 | ACTIVE | 8.35 | 1 | 8551101SA | Check stock or order |

Application Reports

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- [BUS-INTERFACE DEVICES WITH OUTPUT-DAMPING RESISTORS OR REDUCED-DRIVE OUTPUTS \(SCBA012A - Updated: 08/01/1997\)](#)
- [DESIGNING WITH LOGIC \(SDYA009C - Updated: 06/01/1997\)](#)
- [INPUT AND OUTPUT CHARACTERISTICS OF DIGITAL INTEGRATED CIRCUITS \(SDYA010 - Updated: 02/05/1999\)](#)
- [LOGIC SOLUTIONS FOR IEEE STD 1284 \(SCEA013 - Updated: 06/27/1999\)](#)
- [LVT-TO-LVTH CONVERSION \(SCEA010 - Updated: 02/05/1999\)](#)

Related Documents

- [DOCUMENTATION RULES \(SAP\) AND ORDERING INFORMATION \(SZZU001B, 4 KB - Updated: 05/06/1999\)](#)
- [LOGIC SELECTION GUIDE SECOND HALF 2000 \(SDYU001N, 5035 KB - Updated: 04/17/2000\)](#)
- [MORE POWER IN LESS SPACE - TECHNICAL ARTICLE \(SCAU001A, 850 KB - Updated: 03/01/1996\)](#)

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