

SN54F245, SN74F245 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SDFS010A – MARCH 1987 – REVISED OCTOBER 1993

- 3-State Outputs Drive Bus Lines Directly
- Package Options Include Plastic Small-Outline (SOIC) and Shrink Small-Outline (SSOP) Packages, Ceramic Chip Carriers, and Plastic and Ceramic DIPs

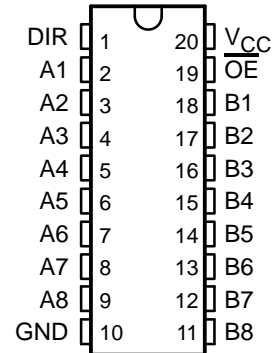
description

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.

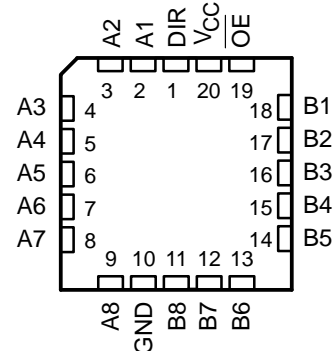
The SN74F245 is available in TI's shrink small-outline package (DB), which provides the same I/O pin count and functionality of standard small-outline packages in less than half the printed-circuit-board area.

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

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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	A1 thru A8		–3	mA
		B1 thru B8		–12	B1 thru B8		–15	
I_{OL}	Low-level output current	A1 thru A8		20	A1 thru A8		24	mA
		B1 thru B8		48	B1 thru B8		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		mA
	DIR, \overline{OE}		$V_I = 7\text{ V}$			0.1		
I_{IH}^\ddagger	A and B	$V_{CC} = 5.5\text{ V}$, $V_I = 2.7\text{ V}$				70		μA
	DIR, \overline{OE}					20		
I_{IL}^\ddagger	A and B	$V_{CC} = 5.5\text{ V}$, $V_I = 0.5\text{ V}$				–0.65		mA
	DIR, \overline{OE}					–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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