

# SN54F258, SN74F258 QUADRUPLE 2-LINE TO 1-LINE DATA SELECTORS/MULTIPLEXERS WITH 3-STATE OUTPUTS

SDFS067A – D2932, MARCH 1987 – REVISED OCTOBER 1993

- 3-State Outputs Interface Directly With System Bus
- Provides Bus Interface From Multiple Sources in High-Performance Systems
- Package Options Include Plastic Small-Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs

## description

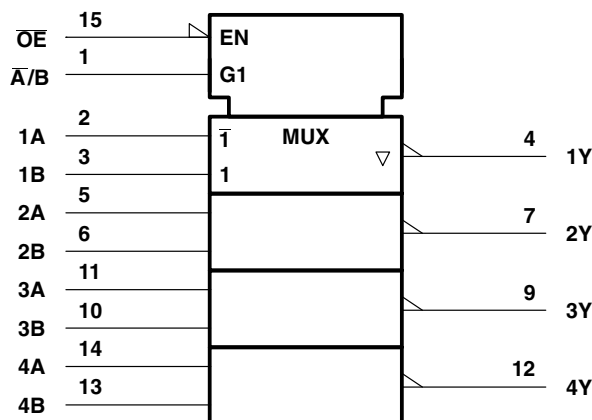
The 'F258 is designed to multiplex signals from 4-bit data sources to 4-output data lines in bus-organized systems. The 3-state outputs will not load the data lines when the output-enable ( $\overline{OE}$ ) input is at a high logic level.

The SN54F258 is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74F258 is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

FUNCTION TABLE

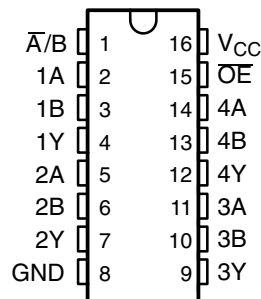
INPUTS				OUTPUT
$\overline{OE}$	$\overline{A/B}$	A	B	Y
H	X	X	X	Z
L	L	L	X	H
L	L	H	X	L
L	H	X	L	H
L	H	X	H	L

## logic symbol†

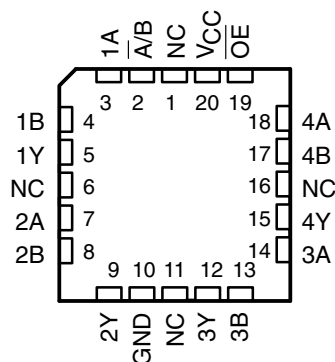


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12. Pin numbers shown are for the D, J, and N packages.

SN54F258 . . . J PACKAGE  
SN74F258 . . . D OR N PACKAGE  
(TOP VIEW)



SN54F258 . . . FK PACKAGE  
(TOP VIEW)



NC – No internal connection



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## recommended operating conditions

		SN54F258			SN74F258			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			-3			-3	mA
$I_{OL}$	Low-level output current			20			24	mA
$T_A$	Operating free-air temperature	-55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS		SN54F258			SN74F258			UNIT
			MIN	TYP†	MAX	MIN	TYP†	MAX	
$V_{IK}$	$V_{CC} = 4.5\text{ V}$ ,	$I_I = -18\text{ mA}$			-1.2			-1.2	V
$V_{OH}$	$V_{CC} = 4.5\text{ V}$	$I_{OH} = -1\text{ mA}$	2.5	3.4		2.5	3.4		V
		$I_{OH} = -3\text{ mA}$	2.4	3.3		2.4	3.3		
	$V_{CC} = 4.75\text{ V}$ ,	$I_{OH} = -1\text{ mA to } -3\text{ mA}$				2.7			
$V_{OL}$	$V_{CC} = 4.5\text{ V}$	$I_{OL} = 20\text{ mA}$		0.3	0.5				V
		$I_{OL} = 24\text{ mA}$					0.35	0.5	
$I_{OZH}$	$V_{CC} = 5.5\text{ V}$ ,	$V_O = 2.7\text{ V}$			50			50	μA
$I_{OZL}$	$V_{CC} = 5.5\text{ V}$ ,	$V_O = 0.5\text{ V}$			-50			-50	μA
$I_I$	$V_{CC} = 5.5\text{ V}$ ,	$V_I = 7\text{ V}$			0.1			0.1	mA
$I_{IH}$	$V_{CC} = 5.5\text{ V}$ ,	$V_I = 2.7\text{ V}$			20			20	μA
$I_{IL}$	$V_{CC} = 5.5\text{ V}$ ,	$V_I = 0.5\text{ V}$			-0.6			-0.6	mA
$I_{OS}^\ddagger$	$V_{CC} = 5.5\text{ V}$ ,	$V_O = 0$	-60		-150	-60		-150	mA
$I_{CCH}$	$V_{CC} = 5.5\text{ V}$ , See Note 2	Condition A		6.2	9.5		6.2	9.5	mA
$I_{CCL}$		Condition B		15.1	23		15.1	23	
$I_{CCZ}$		Condition C		11.3	17		11.3	17	

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

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

NOTE 2:  $I_{CC}$  is measured with the outputs open under the following conditions:

- A. All B inputs at 4.5 V, other inputs grounded
- B.  $\bar{A}/B$  and all B inputs at 4.5 V, other inputs grounded
- C.  $\bar{O}\bar{E}$  and all B inputs at 4.5 V, other inputs grounded

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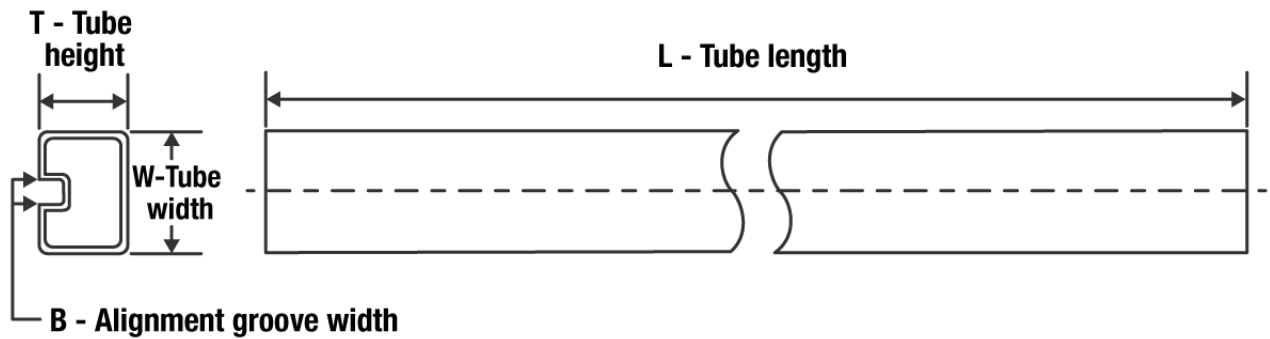
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## switching characteristics (see Note 3)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5\text{ V},$ $C_L = 50\text{ pF},$ $R_1 = 500\ \Omega,$ $R_2 = 500\ \Omega,$ $T_A = 25^\circ\text{C}$			$V_{CC} = 4.5\text{ V to }5.5\text{ V},$ $C_L = 50\text{ pF},$ $R_1 = 500\ \Omega,$ $R_2 = 500\ \Omega,$ $T_A = \text{MIN to MAX}^\dagger$				UNIT
			'F258			SN54F258		SN74F258		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
$t_{PLH}$	Data (A or B)	Any Y	1	3.6	5.3	1	7.5	1	6	ns
$t_{PHL}$			1	3.1	4.7	1	6	1	5.5	
$t_{PLH}$	$\bar{A}/B$	Any Y	3.2	6.1	8.5	3.2	12	3.2	9.5	ns
$t_{PHL}$			3.2	6.9	9.5	3.2	11.5	3.2	11	
$t_{PZH}$	$\bar{G}$	Any Y	2.2	5.5	7.5	2.2	11	2.2	8.5	ns
$t_{PZL}$			2.2	5.1	7.5	2.2	9.5	2.2	8.5	
$t_{PHZ}$	$\bar{G}$	Any Y	1.2	3.9	6	1	7	1.2	7	ns
$t_{PLZ}$			1.2	4.1	6	1.2	9	1.2	7	

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

NOTE 3: Load circuits and waveforms are shown in Section 1.

**TUBE**


\*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (μm)	B (mm)
SN74F258D	D	SOIC	16	40	507	8	3940	4.32
SN74F258DG4	D	SOIC	16	40	507	8	3940	4.32
SN74F258N	N	PDIP	16	25	506	13.97	11230	4.32
SN74F258N	N	PDIP	16	25	506	13.97	11230	4.32

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