

SN54F125, SN74F125 QUADRUPLE BUS BUFFER GATES WITH 3-STATE OUTPUTS

D3211, JANUARY 1989

- 3-State Outputs Drive Bus Lines or Buffer Memory Address Registers
- Package Options Include Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

description

This bus buffer features independent line drivers with three-state outputs. Each output is disabled when the associated \bar{G} is high.

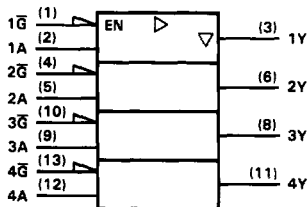
The SN54F125 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74F125 is characterized for operation from 0°C to 70°C .

FUNCTION TABLE
(EACH BUFFER)

INPUTS		OUTPUT
\bar{G}	A	Y
L	H	H
L	L	L
H	X	Z

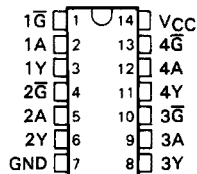
H = high level
L = low level
X = irrelevant

logic symbol†

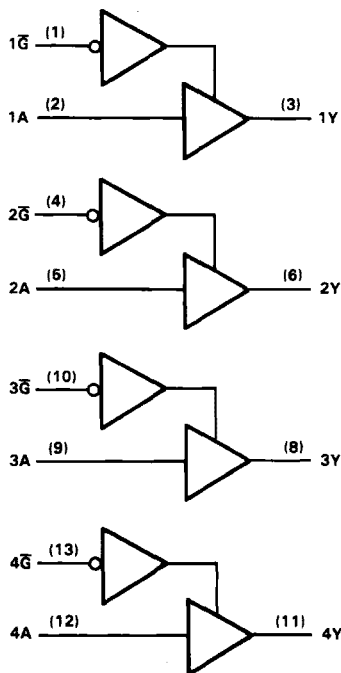


†This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

SN54F125 . . . J PACKAGE
SN74F125 . . . D OR N PACKAGE
(TOP VIEW)



logic diagram (positive logic)



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Data Sheets

PRODUCT PREVIEW

PRODUCT PREVIEW documents contain information on products in the formative or design phase of development. Characteristic data and other specifications are design goals. Texas Instruments reserves the right to change or discontinue these products without notice.

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INSTRUMENTS

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SN54F125, SN74F125 QUADRUPLE BUS BUFFER GATES WITH 3-STATE OUTPUTS

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

Supply voltage, V _{CC}	-0.5 V to 7 V
Input voltage	-1.2 V to 7 V
Input current	-30 mA to 5 mA
Voltage applied to any output in the disabled or power-off state	-0.5 V to 5.5 V
Voltage applied to any output in the high state	-0.5 V to V _{CC}
Current into any output in the low state: SN54F125	96 mA
SN74F125	128 mA
Operating free-air temperature range: SN54F125	-55°C to 125°C
SN74F125	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.

recommended operating conditions

		SN54F125			SN74F125			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			-15			-15	mA
I _{OL}	Low-level output current			64			64	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	SN54F125			SN74F125			UNIT
		MIN	TYP†	MAX	MIN	TYP†	MAX	
V _{IK}	V _{CC} = 4.5 V, I _I = -18 mA			-1.2			-1.2	V
V _{OH}	V _{CC} = 4.5 V	I _{OH} = -3 mA	2.4	3.3	2.4	3.3		V
		I _{OH} = -12 mA	2	3.2				
	I _{OH} = -15 mA				2	3.1		
V _{OL}	V _{CC} = 4.75 V	I _{OH} = -3 mA			2.7			V
	V _{CC} = 4.5 V	I _{OL} = 48 mA	0.35	0.5				
		I _{OL} = 64 mA			0.40	0.55		
I _I	V _{CC} = 0, V _I = 7 V			0.1			0.1	mA
I _{IH}	V _{CC} = 5.5 V, V _I = 2.7 V			20			20	μA
I _{IL}	V _{CC} = 5.5 V, V _I = 0.5 V			-20			-20	μA
I _{OZH}	V _{CC} = 5.5 V, V _O = 2.7 V			50			50	μA
I _{OZL}	V _{CC} = 5.5 V, V _O = 0.5 V			-50			-50	μA
I _{OS} ‡	V _{CC} = 5.5 V, V _O = 0			-100			-225	mA
I _{CCH}	V _{CC} = 5.5 V, Outputs open		17	24		17	24	mA
I _{CCL}			28	40		28	40	
I _{CCZ}			25	35		25	35	

†All typical values are at V_{CC} = 5 V, T_A = 25°C.

‡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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PRODUCT PREVIEW

SN54F125 SN74F125 QUADRUPLE BUS BUFFER GATES WITH 3-STATE OUTPUTS

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 5 V, C _L = 50 pF, R _L = 500 Ω, T _A = 26 °C			V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = MIN to MAX [†]			UNIT	
			'F125			SN54F125		SN74F125		
			MIN	TYP	MAX	MIN	MAX	MIN		MAX
t _{PLH}	A	Y	1.2	3.6	6			1.2	6.5	ns
t _{PHL}			2.2	5.1	7.5			2.2	8	
t _{PZH}	0	Y	2.7	5.1	7.5			2.7	8.5	ns
t _{PZL}			3.2	5.6	8			3.2	9	
t _{PHZ}	0	Y	1	3.1	5			1	6	ns
t _{PLZ}			1	3.1	5.5			1	6	

[†]For conditions shown as MIN or MAX, use the appropriate value specified under Recommended Operating Conditions.

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

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