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Jameco Part Number 49373TI

**SN54125, SN54126, SN54LS125A, SN54LS126A,
SN74125, SN74126, SN74LS125A, SN74LS126A**
QUADRUPLE BUS BUFFERS WITH 3-STATE OUTPUTS

DECEMBER 1983 - REVISED MARCH 1988

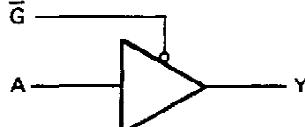
- Quad Bus Buffers
- 3-State Outputs
- Separate Control for Each Channel

description

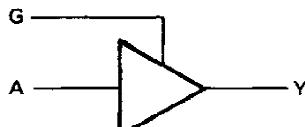
These bus buffers feature three-state outputs that, when enabled, have the low impedance characteristics of a TTL output with additional drive capability at high logic levels to permit driving heavily loaded bus lines without external pull-up resistors, when disabled, both output transistors are turned off presenting a high-impedance state to the bus so the output will act neither as a significant load nor as a driver. The '125 and 'LS125A outputs are disabled when \bar{G} is high. The '126 and 'LS126A outputs are disabled when G is low.

logic diagram (each gate)

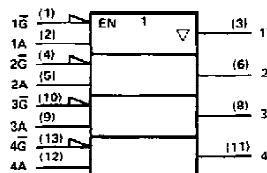
'125, 'LS125A



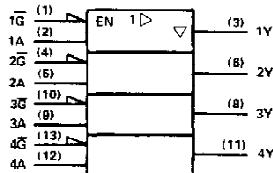
'126, LS126A

positive logic $Y = A$ logic symbols[†]

'125

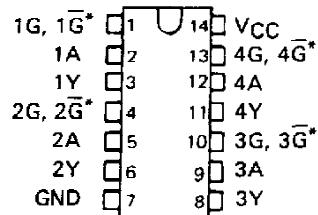


'LS125A



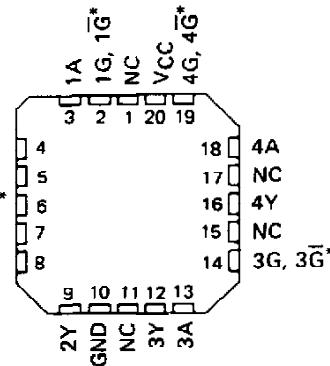
SN54125, SN54126, SN54LS125A,
SN54LS126A . . . J OR W PACKAGE
SN74125, SN74126 . . . N PACKAGE
SN74LS125A, SN74LS126A . . . D OR N PACKAGE

(TOP VIEW)



SN54LS125A, SN54LS126A . . . FK PACKAGE

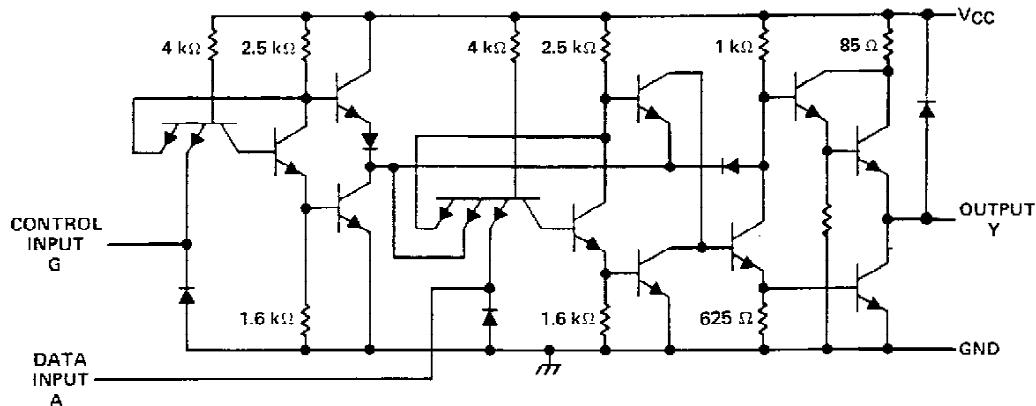
(TOP VIEW)

* \bar{G} on '125 and 'LS125A; G on 126 and 'LS126A

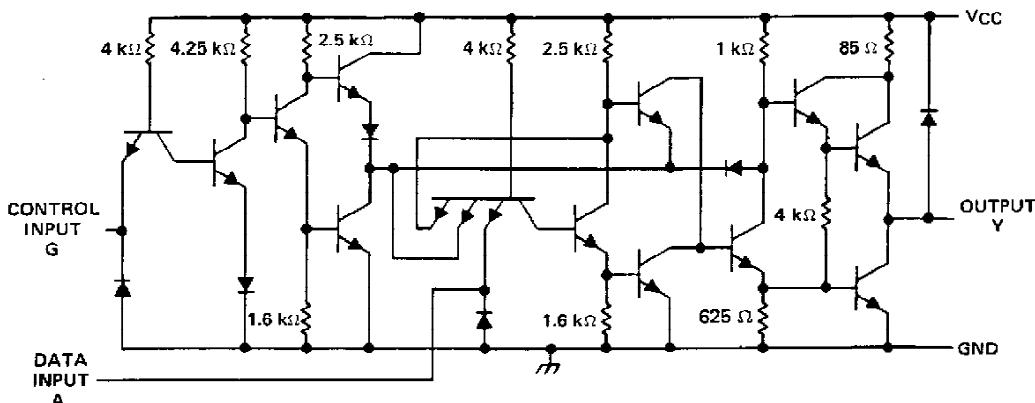
NC — No internal connection

SN54125, SN54126, SN74125, SN74126 QUADRUPLE BUS BUFFERS WITH 3-STATE OUTPUTS

schematics (each gate)



'125 CIRCUITS



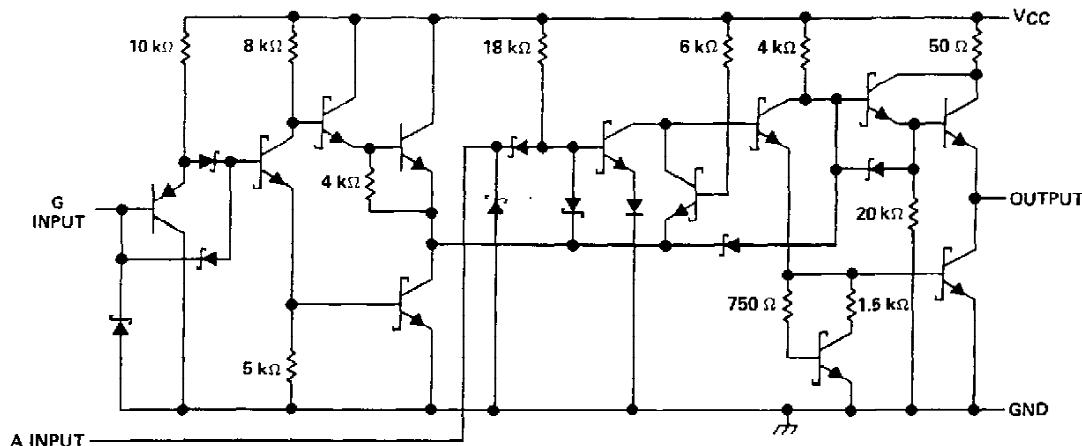
126 CIRCUITS

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

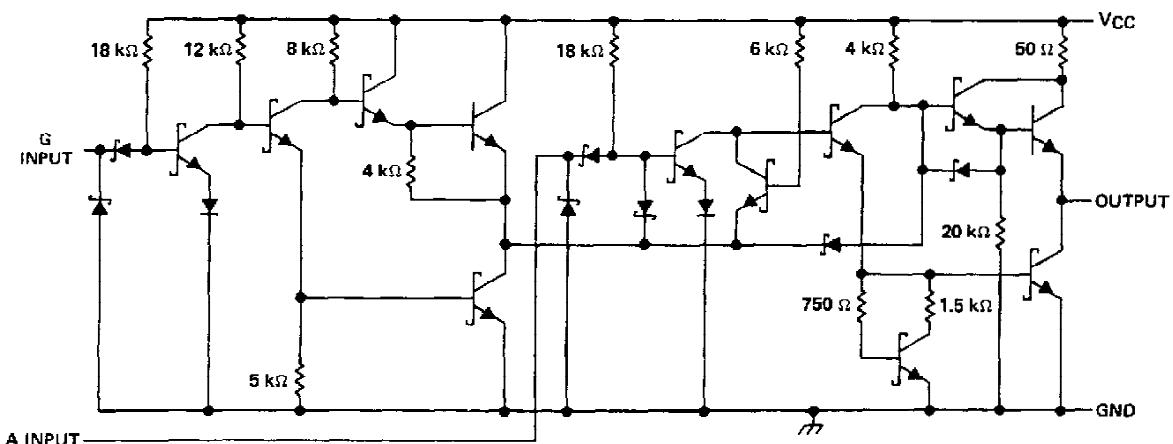
NOTE 1: Voltage values are with respect to network ground terminal.

SN54LS125A, SN54LS126A, SN74LS125A, SN74LS126A QUADRUPLE BUS BUFFERS WITH 3-STATE OUTPUTS

schematics (each gate)



'LS125A CIRCUITS



'LS126A CIRCUITS

Resistor values shown are nominal.

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

NOTE 1: Voltage values are with respect to network ground terminals.

SN54125, SN54126, SN74125, SN74126 QUADRUPLE BUS BUFFERS WITH 3-STATE OUTPUTS

recommended operating conditions

		SN54125, SN54126			SN74125, SN74126			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.8			0.8	V
I_{OH}	High-level output current			-2			-5.2	mA
I_{OL}	Low-level output current			16			16	mA
T_A	Operating free-air temperature	-55		125	0		70	$^{\circ}$ C

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

PARAMETER	TEST CONDITIONS [†]			SN54125, SN54126		SN74125, SN74126		UNIT
				MIN	TYP [‡]	MAX	MIN	
V_{IK}	$V_{CC} = \text{MIN}$,	$I_I = -12 \text{ mA}$			1.5		-1.5	V
V_{OH}	$V_{CC} = \text{MIN}$,	$V_{IH} = 2 \text{ V}$,	$I_{OH} = -2 \text{ mA}$	2.4	3.3			V
	$V_{IL} = 0.8 \text{ V}$		$I_{OH} = -5.2 \text{ mA}$			2.4	3.1	
V_{OL}	$V_{CC} = \text{MIN}$,	$V_{IH} = 2 \text{ V}$,	$V_{IL} = 0.8 \text{ V}$,			0.4		0.4
I_{OZ}	$V_{CC} = \text{MAX}$,	$V_{IH} = 2 \text{ V}$,	$V_O = 2.4 \text{ V}$		40		40	μ A
	$V_{IL} = 0.8 \text{ V}$		$V_O = 0.4 \text{ V}$		-40		-40	
I_I	$V_{CC} = \text{MAX}$,	$V_I = 6.5 \text{ V}$			1		1	mA
I_{IH}	$V_{CC} = \text{MAX}$,	$V_I = 2.4 \text{ V}$			40		40	μ A
I_{IL}	$V_{CC} = \text{MAX}$,	$V_I = 0.4 \text{ V}$			-1.6		-1.6	mA
$I_{OS\$}$	$V_{CC} = \text{MAX}$			-30	-70	-28	-70	mA
I_{CC}	$V_{CC} = \text{MAX}$, (see Note 2)	'125		32	54	32	54	mA
		'126		36	62	36	62	

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

[‡] 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.

NOTE 2: Data inputs = 0 V; output control = 4.5 V for '125 and 0 V for '126.

switching characteristics, $V_{CC} = 5 \text{ V}$, $T_A = 25^{\circ}\text{C}$ (see note 3)

PARAMETER	TEST CONDITIONS	SN54/74125			SN54/74126			UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	
t_{PLH}	$R_L = 400 \Omega$, $C_L = 50 \text{ pF}$		8	13		8	13	ns
			12	18		12	18	ns
			11	17		11	18	ns
			16	25		16	25	ns
t_{PHL}	$R_L = 400 \Omega$, $C_L = 5 \text{ pF}$		5	8		10	16	ns
t_{PZH}			7	12		12	18	ns
t_{PZL}								
t_{PHZ}								
t_{PLZ}								

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

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SN54LS125A, SN54LS126A, SN74LS125A, SN74LS126A QUADRUPLE BUS BUFFERS WITH 3-STATE OUTPUTS

recommended operating conditions

		SN54LS125A			SN74LS125A			UNIT	
		SN54LS126A			SN74LS126A				
		MIN	NOM	MAX	MIN	NOM	MAX		
V _{CC}	Supply voltage	4.5	5	5.5	4.75	5	5.25	V	
V _{IH}	High-level input voltage	2			2			V	
V _{IL}	Low-level input voltage			0.7			0.8	V	
I _{OH}	High-level output current			-1			-2.6	mA	
I _{OL}	Low-level output current			12			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 [†]			SN54LS125A		SN74LS125A		UNIT
					MIN	TYP [‡]	MAX	MIN	
V _{IK}	V _{CC} = MIN, I _l = -18 mA					-1.5		-1.5	V
V _{OH}	V _{CC} = MIN, V _{IH} = 2 V	V _{IL} = 0.7 V, I _{OH} = -1 mA			2.4				V
		V _{IL} = 0.8 V, I _{OH} = -2.6 mA					2.4		
V _{OL}	V _{CC} = MIN, V _{IH} = 2 V	V _{IL} = 0.7 V, I _{OL} = 12 mA			0.25	0.4			V
		V _{IL} = 0.8 V, I _{OL} = 12 mA					0.25	0.4	
		V _{IL} = 0.8 V, I _{OL} = 24 mA					0.35	0.5	
I _{OZ}	V _{CC} = MAX, V _{IH} = 2 V	V _{IL} = 0.7 V	V _O = 2.4 V		20				μA
		V _{IL} = 0.7 V	V _O = 0.4 V		-20				
		V _{IL} = 0.8 V	V _O = 2.4 V				20		
I _I	V _{CC} = MAX, V _I = 7 V				0.1		0.1	mA	
I _{IH}	V _{CC} = MAX, V _I = 2.7 V				20		20	μA	
I _{IL}	V _{CC} = MAX, V _I = 0.4 V	'LS125A-G inputs			-0.2		-0.2	mA	
		'LS125A-A inputs; 'LS126A All inputs			-0.4		-0.4	mA	
I _{OS\$}	V _{CC} = MAX				-40	-225	-40	-225	mA
I _{CC}	V _{CC} = MAX, (see Note 2)	'LS125A			11	20	11	20	mA
		'LS126A			12	22	12	22	

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

[‡] 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 duration of the short circuit should not exceed one second.

NOTE 2: Data inputs = 0 V; Output controls = 4.5 V for 'LS125A and 0 V for 'LS126A.

switching characteristics, V_{CC} = 5 V, T_A = 25°C (see note 3)

PARAMETER		TEST CONDITIONS			SN54/74LS125A		SN54/74LS126A		UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	
t _{PLH}					9	15	9	15	ns
t _{PHL}					7	18	8	18	ns
t _{PZH}					12	20	16	25	ns
t _{PZL}					15	25	21	35	ns
t _{PHZ}						20		25	ns
t _{PLZ}						20		25	ns

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

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