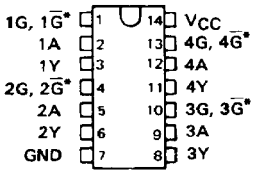
TYPES SN54425, SN54426, SN74425, SN74426
QUADRUPLE BUS BUFFERS WITH 3-STATE OUTPUTS

REVISED DECEMBER 1983

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

SN54425, SN54426 . . . J OR W PACKAGE
SN74425, SN74426 . . . J OR N PACKAGE
(TOP VIEW)

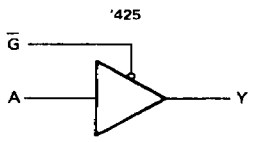


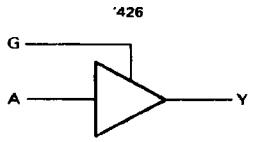
*$\overline{G}$ on '425, G on '426

description

These bus buffers feature three-state outputs that, when enabled, have the low impedence 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 '425 outputs are disabled when $\overline{G}$ is high. The '426 outputs are disabled when G is low.

logic diagram (each gate)





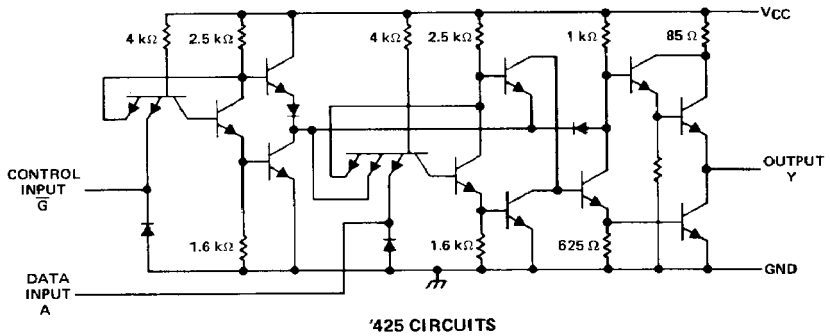
positive logic: Y = A

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

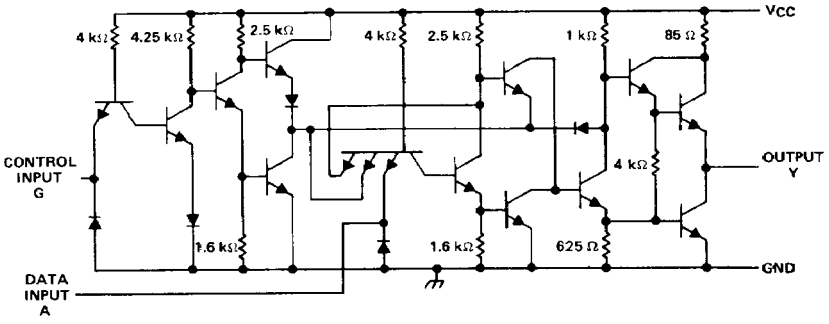
Supply voltage, V_{CC} (see Note 1) . . . . . 7 V
Input voltage . . . . . 5.5 V
Operating free-air temperature range: SN54' . . . . . −55°C to 125°C
SN74' . . . . . 0°C to 70°C
Storage temperature range . . . . . −65°C to 150°C

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

schematics (each gate)



'425 CIRCUITS



'426 CIRCUITS

Resistor values shown are nominal.

TEXAS INSTRUMENTS
POST OFFICE BOX 225012 • DALLAS, TEXAS 75265

recommended operating conditions

	SN54425, SN54426			SN74425, SN74426			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	°C

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

PARAMETER	TEST CONDITIONS†		SN54425, SN54426			SN74425, SN74426			UNIT
			MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IK}	V_{CC} = MIN, I_I = −12 mA				−1.5			−1.5	V
V_{OH}	V_{CC} = MIN, V_{IH} = 2 V, V_{IL} = 0.8 V	I_{OH} = −2 V	2.4	3.3					V
		I_{OH} = −5.2 V				2.4	3.1		
V_{OL}	V_{CC} = MIN, V_{IH} = 2 V, I_{OL} = 16 mA	V_{IL} = 0.8 V,			0.4			0.4	V
I_{OZ}	V_{CC} = MAX, V_{IH} = 2 V, V_{IL} = 0.8 V	V_O = 2.4 V			40			40	μA
		V_O = 0.4 V			−40			−40	
I_I	V_{CC} = MAX, V_I = 5.5 V				1			1	mA
I_{IH}	V_{CC} = MAX, V_I = 2.4 V				40			40	μA
I_{IL}	V_{CC} = MAX, V_I = 0.4 V				−1.6			−1.6	mA
I_{OS}§	V_{CC} = MAX		−30		−70	−28		−70	mA
I_{CC}	V_{CC} = MAX, (see Note 2)	'425		32	54		32	54	mA
		'426		36	62		36	62	

† For condition 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.
NOTE 2: Data inputs = 0 V; output control = 4.5 V for '425 and 0 V for '426.

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

PARAMETER	TEST CONDITIONS		SN54/74425			SN54/74426			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
t_{PLH}	R_L = 400 Ω,	C_L = 50 pF		8	13		8	13	ns
t_{PHL}				12	18		12	18	ns
t_{PZH}				11	17		11	18	ns
t_{PZL}				16	25		16	25	ns
t_{PHZ}	R_L = 400 Ω,	C_L = 5 pF		5	8		10	16	ns
t_{PLZ}				7	12		12	18	ns

NOTE 3: See General Information Section for load circuits and voltage waveforms.