

54S40 Buffer

Military Logic Products

Dual Four-Input NAND Buffer

Product Specification

FUNCTION TABLE

INPUTS				OUTPUT
A	B	C	D	Y
L	X	X	X	H
X	L	X	X	H
X	X	L	X	H
X	X	X	L	H
H	H	H	H	L

H = High voltage level
L = Low voltage level
X = Don't care

ORDERING INFORMATION

DESCRIPTION	ORDER CODE
Ceramic DIP	54S40/BCA
Ceramic Flat Pack	54S40/BDA
Ceramic LLCC	54S40/B2A

INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

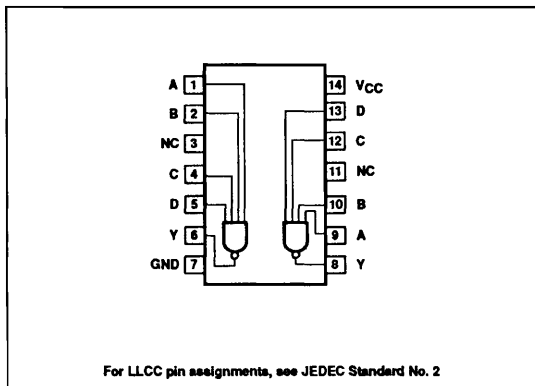
PINS	DESCRIPTION	54S
A - D	Inputs	2SUL
Y	Output	30SUL

NOTE: Where a 54S Unit Load (SUL) is $50\mu\text{A } I_{IH}$.

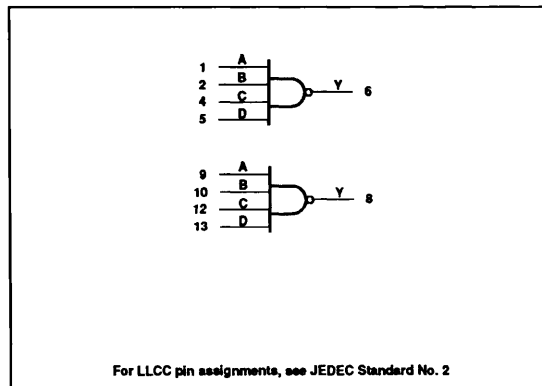
ABSOLUTE MAXIMUM RATINGS (Over operating free-air temperature range unless otherwise noted.)

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Supply voltage	7.0	V
V_I	Input voltage range	-0.5 to +5.5	V
I_I	Input current range	-30 to +5	mA
V_O	Voltage applied to output in High output state range	-0.5 to $+V_{CC}$	V
T_{STG}	Storage temperature range	-65 to +150	$^{\circ}\text{C}$

PIN CONFIGURATION



LOGIC SYMBOL



Buffers

54S40

RECOMMENDED OPERATING CONDITIONS

SYMBOL	PARAMETER	LIMITS			UNIT
		Min	Nom	Max	
V_{CC}	Supply voltage	4.5	5.0	5.5	V
V_{IH}	High-level input voltage	2.0			V
V_{IL}	Low-level input voltage			+0.8	V
			+125°C	+0.7	V
I_{IK}	Input clamp current			-18	mA
I_{OH}	High-level output current			-3000	μ A
I_{OL}	Low-level output current			60	mA
T_A	Operating free-air temperature range	-55		+125	°C

DC ELECTRICAL CHARACTERISTICS (Over recommended operating free-air temperature range unless otherwise noted.)

SYMBOL	PARAMETER	TEST CONDITIONS ¹	LIMITS			UNIT
			Min	Typ ²	Max	
V_{OH}	High-level output voltage	$V_{CC} = \text{Min}, V_{IL} = \text{Max}, I_{OH} = \text{Max}$	2.5	3.4		V
V_{OL}	Low-level output voltage	$V_{CC} = \text{Min}, V_{IH} = \text{Min},$			0.5	V
		$I_{OL} = \text{Max}$		+125°C	0.45	V
V_{IK}	Input clamp voltage	$V_{CC} = \text{Min}, I_I = I_{IK}$			-1.2	V
I_{IH2}	Input current at maximum input voltage	$V_{CC} = \text{Max}, V_I = 5.5\text{V}$			1.0	mA
I_{IH1}	High-level input current	$V_{CC} = \text{Max}, V_I = 2.7\text{V}$			100	μ A
I_{IL}	Low-level input current	$V_{CC} = \text{Max}, V_I = 0.5\text{V}$			-4.0	mA
I_{OS}	Short-circuit output current ³	$V_{CC} = \text{Max}$	-50		-225	mA
I_{CC}	Supply current (total)	$V_{CC} = \text{Max}$	I_{CCH} Outputs High	10	18	mA
			I_{CCL} Outputs Low	25	44	mA

AC ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}, V_{CC} = 5.0\text{V}$

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS		UNIT
			$C_L = 50\text{pF}$		
			Min	Max	
t_{PLH} t_{PHL}	Propagation delay	Waveform 1		6.5 6.5	ns ns

AC ELECTRICAL CHARACTERISTICS $T_A = -55^\circ\text{C}$ and $+125^\circ\text{C}, V_{CC} = 5.0\text{V}$ ⁴

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS		UNIT
			$C_L = 50\text{pF}$		
			Min	Max	
t_{PLH} t_{PHL}	Propagation delay	Waveform 1		8.5 8.5	ns ns

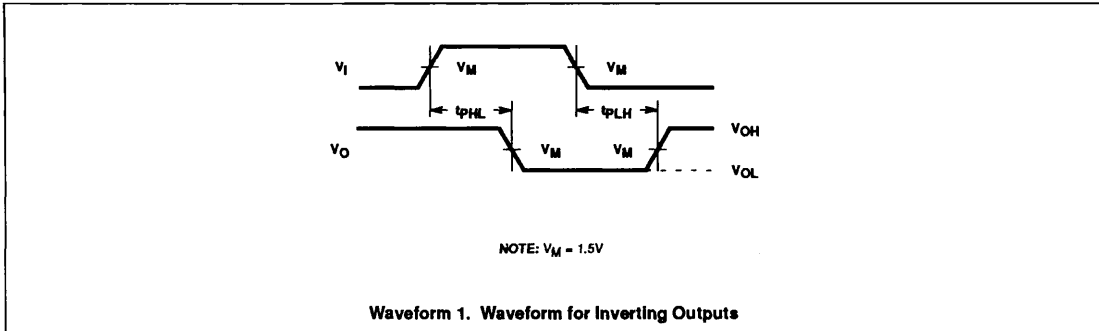
NOTES:

- For conditions shown as Min or Max, use the appropriate value specified under recommended operating conditions for the applicable type and function table operating mode.
- 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 duration of the short circuit should not exceed one second. The 54S40 test time for I_{OS} should not exceed 100ms.
- These parameters are guaranteed, but not tested.

Buffers

54S40

AC WAVEFORM



TEST CIRCUIT AND WAVEFORM

