

Dual 2-Wide 2-Input AND-OR-Invert Gate

Military Logic Products

Product Specification

FUNCTION TABLE

INPUTS				OUTPUT
A	B	C	D	Y
H	H	X	X	L
X	X	H	H	L
All other combinations				H

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

ORDERING INFORMATION

DESCRIPTION	ORDER CODE
Ceramic DIP	54S51/BCA
Ceramic Flat Pack	54S51/BDA
Ceramic LLCC	54S51/B2A

INPUT AND OUTPUT LOADING AND FAN-OUT TABLE

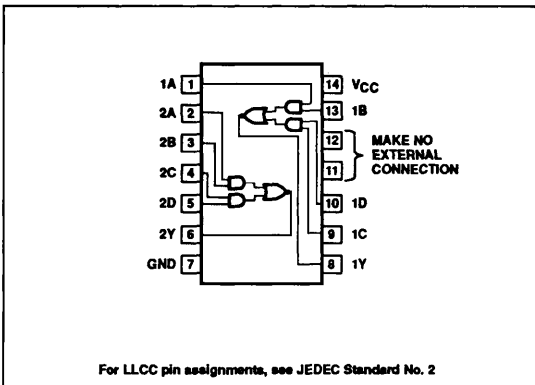
PINS	DESCRIPTION	54S
All	Inputs	1SUL
Y	Output	10SUL

NOTE: Where a 54S Unit Load (SUL) is 50 μ A I_{IH} and -2.0mA I_{IL} .

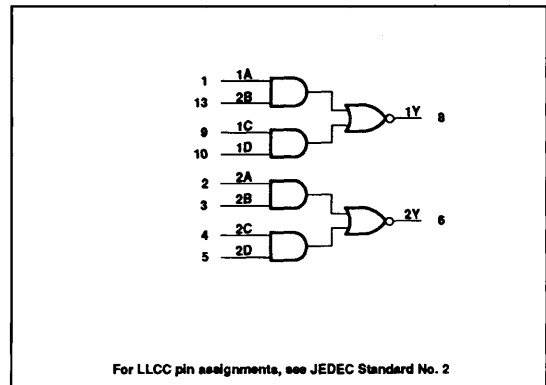
ABSOLUTE MAXIMUM RATINGS (Over operating free-air temperature range unless otherwise noted.)

SYMBOL	PARAMETER	54S	UNIT
V_{CC}	Supply voltage	7.0	V
V_I	Input voltage range	-0.5 to +6.5	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	$^{\circ}$ C

PIN CONFIGURATION



LOGIC SYMBOL



Gate

54S51

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
I _{IK}	Input clamp current			-18	mA
I _{OH}	High-level output current			-1000	μA
I _{OL}	Low-level output current			20	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} = Min, V _{IL} = Max, I _{OH} = Max	2.5	3.4		V
V _{OL}	Low-level output voltage	V _{CC} = Min, V _{IH} = Min, I _{OL} = Max			0.5	V
V _{IK}	Input clamp voltage	V _{CC} = Min, I _I = I _{IK}			-1.2	V
I _{IH2}	Input current at maximum input voltage	V _{CC} = Max, V _I = 5.5V			1.0	mA
I _{IH1}	High-level input current	V _{CC} = Max, V _I = 2.7V			50	μA
I _{IL}	Low-level input current	V _{CC} = Max, V _I = 0.5V			-2.0	mA
I _{OS}	Short-circuit output current ³	V _{CC} = Max	-40		-100	mA
I _{CC}	Supply current (total)	V _{CC} = Max	I _{CC} H Outputs High	8.2	17.8	mA
			I _{CC} L Outputs Low	13.6	22	mA

AC ELECTRICAL CHARACTERISTICS T_A = 25°C, V_{CC} = 5.0V

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS		UNIT
			C _L = 15pF		
			Min	Max	
t _{PLH} t _{PHL}	Propagation delay	Waveform 1		5.5 5.5	ns ns

AC ELECTRICAL CHARACTERISTICS T_A = 25°C, V_{CC} = 5.0V⁴

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS		UNIT
			C _L = 50pF		
			Min	Max	
t _{PLH} t _{PHL}	Propagation delay	Waveform 1		7.0 8.0	ns ns

AC ELECTRICAL CHARACTERISTICS T_A = -55°C and +125°C, V_{CC} = 5.0V⁴

SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS		UNIT
			C _L = 50pF		
			Min	Max	
t _{PLH} t _{PHL}	Propagation delay	Waveform 1		9.0 10.0	ns ns

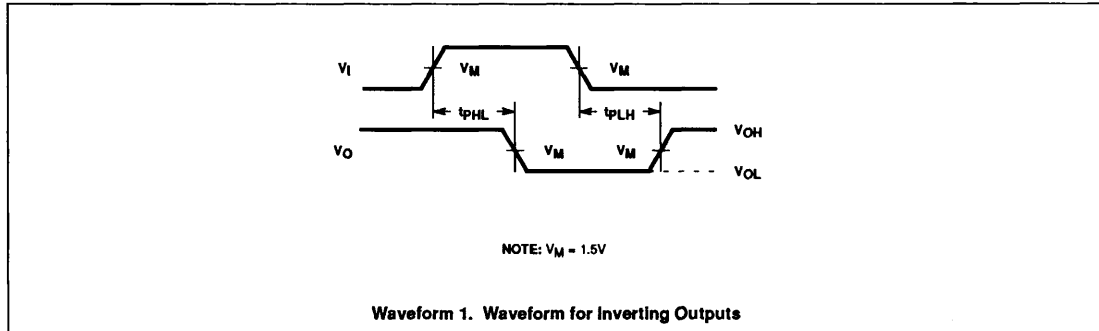
NOTES:

- 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} = 5V, 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.
- These parameters are guaranteed, but not tested.

Gate

54S51

AC WAVEFORM



TEST CIRCUIT AND WAVEFORM

