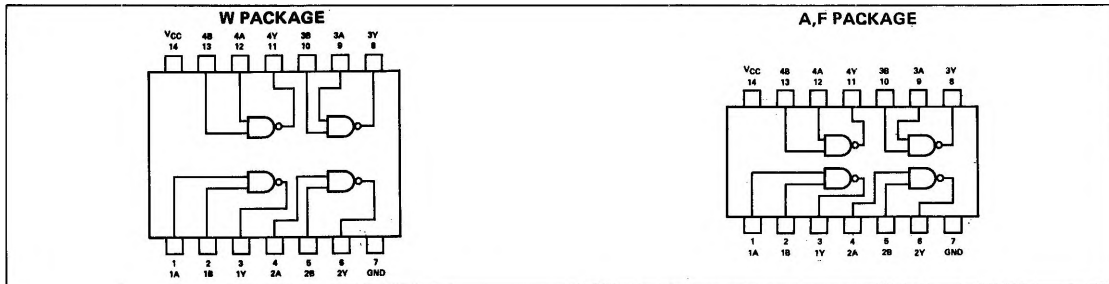
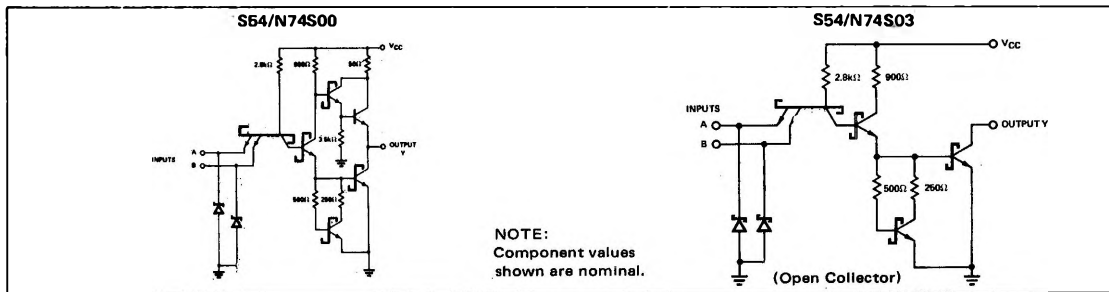


PIN CONFIGURATIONS



SCHEMATIC (each gate)



RECOMMENDED OPERATING CONDITIONS

	S54S00			N74S00			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply Voltage V_{CC}	4.5	5	5.5	4.75	5	5.25	V
Normalized Fan-Out from each Output, N:							
High logic level			20			20	
Low logic level			10			10	
Operating Free-Air Temperature, T_A	-55		125	0		70	°C

ELECTRICAL CHARACTERISTICS (over recommended operating free-air temperature range unless otherwise noted)

PARAMETER	TEST CONDITIONS *	MIN TYP ** MAX			UNIT
		MIN	TYP **	MAX	
V_{IH} High-level input voltage		2			V
V_{IL} Low-level input voltage				0.8	V
V_I Input clamp voltage	$V_{CC} = \text{MIN}, I_I = -18\text{mA}$			-1.2	V
V_{OH} High-level output voltage	$V_{CC} = \text{MIN}, I_{OH} = -1\text{mA}$	2.5	3.4		V
		2.7	3.4		V
V_{OL} Low-level output voltage	$V_{CC} = \text{MIN}, I_{OL} = 20\text{mA}$			0.5	V
I_I Input current at maximum input voltage	$V_{CC} = \text{MAX}, V_I = 5.5\text{V}$			1	mA
I_{IH} High-level input current (each input)	$V_{CC} = \text{MAX}, V_I = 2.7\text{V}$			50	μA
I_{IL} Low-level input current (each input)	$V_{CC} = \text{MAX}, V_I = 0.5\text{V}$			-2	mA
I_{OS} Short-circuit output current†	$V_{CC} = \text{MAX}$	-40		-100	mA
I_{CCH} Supply current, high-level output (average per gate)	$V_{CC} = \text{MAX},$ All inputs at 0V		2.5	4	mA
I_{CCL} Supply current, low-level output (average per gate)	$V_{CC} = \text{MAX},$ All inputs at 5V		5	9	mA

DIGITAL 54/74 TTL SERIES ■ S54S00, N74S00, S54S03, N74S03

SWITCHING CHARACTERISTICS, $V_{CC} = 5V$, $T_A = 25^\circ C$, $N = 10$

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT	
t_{PLH}	Propagation delay time, low-to-high-level output	$C_L = 15pF$, $R_L = 280\Omega$	NOTE 1	2	3	4.5	ns	
		$C_L = 50pF$, $R_L = 280\Omega$			4.5			
t_{PHL}	Propagation delay time, high-to-low-level output	$C_L = 15pF$, $R_L = 280\Omega$			2	3	5	ns
		$C_L = 50pF$, $R_L = 280\Omega$				5		

S54/N74S03

ELECTRICAL CHARACTERISTICS (over recommended operating free-air temperature range unless otherwise noted)

PARAMETER	TEST CONDITIONS*	MIN	TYP**	MAX	UNIT	
V_{IH}	High-level input voltage	2			V	
V_{IL}	Low-level input voltage			0.8	V	
V_I	Input clamp voltage			-1.2	V	
I_{OH}	High-level output current	$V_{CC} = \text{MIN}$, $V_{CC} = \text{MIN}$, $V_{OH} = 5.5V$	$I_I = -18mA$ $V_{IL} = 0.8V$,	250	μA	
V_{OL}	Low-level output voltage	$V_{CC} = \text{MIN}$, $I_{OL} = 20mA$	$V_{IH} = 2V$,	0.5	V	
I_I	Input current at maximum input voltage	$V_{CC} = \text{MAX}$,	$V_I = 5.5V$	1	mA	
I_{IH}	High-level input current (each input)	$V_{CC} = \text{MAX}$,	$V_I = 2.7V$	50	μA	
I_{IL}	Low-level input current (each input)	$V_{CC} = \text{MAX}$,	$V_I = 0.5V$	-2	mA	
I_{CCH}	Supply current, high-level output (average per gate)	$V_{CC} = \text{MAX}$,	All inputs at 0V	1.5	3.3	mA
I_{CCL}	Supply current, low-level output (average per gate)	$V_{CC} = \text{MAX}$,	All inputs at 5V	5	9	mA

SWITCHING CHARACTERISTICS, $V_{CC} = 5V$, $T_A = 25^\circ C$, $N = 10$

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT		
t_{PLH}	Propagation delay time, low-to-high-level output	$C_L = 15pF$, $R_L = 280\Omega$	NOTE 1	2	5	ns	
		$C_L = 50pF$, $R_L = 280\Omega$			7.5		7.5
t_{PHL}	Propagation delay time, high-to-low-level output	$C_L = 15pF$, $R_L = 280\Omega$			2	4.5	ns
		$C_L = 50pF$, $R_L = 280\Omega$				7	

* For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable device type.

** All typical values are at $V_{CC} = 5V$, $T_A = 25^\circ C$.

† Not more than one output should be shorted at a time, and duration of the short-circuit test should not exceed one second.

NOTE 1: Load circuit and waveforms are shown on page 2-293