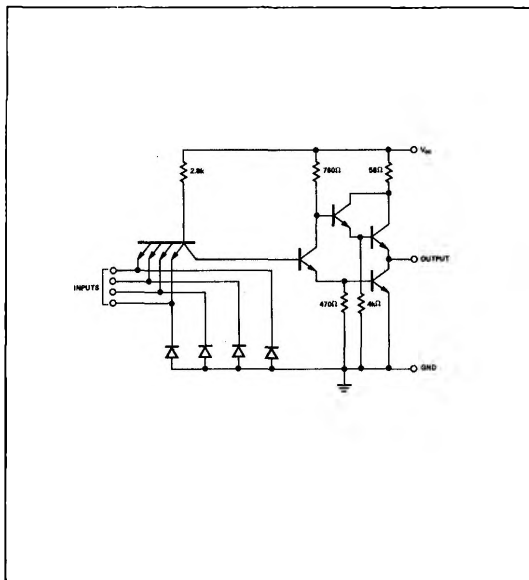


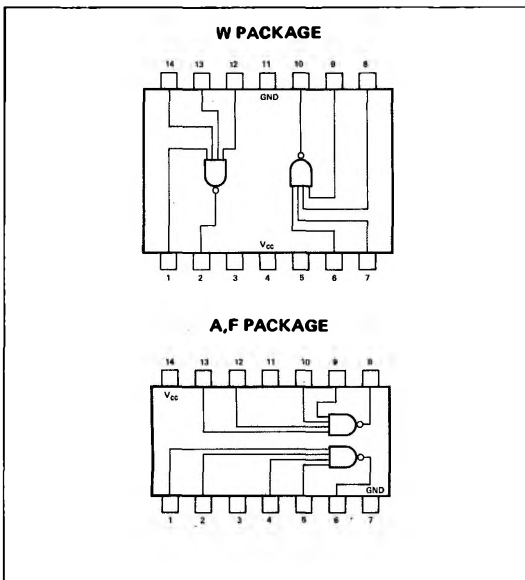
S54H20-A,F,W • N74H20-A,F

DIGITAL 54/74 TTL SERIES

**SCHEMATIC (each gate)**



**PIN CONFIGURATIONS**



**RECOMMENDED OPERATING CONDITIONS**

	MIN	NOM	MAX	UNIT
Supply Voltage $V_{CC}$ : S54H20 Circuits	4.5	5	5.5	V
N74H20 Circuits	4.75	5	5.25	V
Normalized Fan-Out from each Output, N			10	
Operating Free-Air Temperature Range, $T_A$ : S54H20 Circuits	-55	25	125	°C
N74H20 Circuits	0	25	70	°C

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

PARAMETER	TEST CONDITIONS*	MIN	TYP**	MAX	UNIT	
$V_{in(1)}$	Logical 1 input voltage required at all input terminals to ensure logical 0 level at output	$V_{CC} = \text{MIN}$	2		V	
$V_{in(0)}$	Logical 0 input voltage required of any input terminal to ensure logical 1 level at output	$V_{CC} = \text{MIN}$ ,		0.8	V	
$V_{out(1)}$	Logical 1 output voltage	$V_{CC} = \text{MIN}$ , $I_{load} = -500\mu A$	$V_{in} = 0.8V$ ,	2.4	V	
$V_{out(0)}$	Logical 0 output voltage	$V_{CC} = \text{MIN}$ , $I_{sink} = 20mA$	$V_{in} = 2V$ ,	0.4	V	
$I_{in(0)}$	Logical 0 level input current (each input)	$V_{CC} = \text{MAX}$ ,	$V_{in} = 0.4V$	-2	mA	
$I_{in(1)}$	Logical 1 level input current (each input)	$V_{CC} = \text{MAX}$ , $V_{CC} = \text{MAX}$ ,	$V_{in} = 2.4V$ , $V_{in} = 5.5V$	50 1	$\mu A$ mA	
$I_{OS}$	Short circuit output current†	$V_{CC} = \text{MAX}$ ,		-40	-100	mA
$I_{CC(0)}$	Logical 0 level supply current	$V_{CC} = \text{MAX}$ ,	$V_{in} = 4.5V$	13	20	mA
$I_{CC(1)}$	Logical 1 level supply current	$V_{CC} = \text{MAX}$ ,	$V_{in} = 0$	5	8.4	mA

## DIGITAL 54/74 TTL SERIES ■ S54H20, N74H20

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

PARAMETER		TEST CONDITIONS		MIN	TYP	MAX	UNIT
$t_{pd0}$	Propagation delay time to logical 0 level	$C_L = 25pF$ ,	$R_L = 280\Omega$		7	10	ns
$t_{pd1}$	Propagation delay time to logical 1 level	$C_L = 25pF$ ,	$R_L = 280\Omega$		6	10	ns

\* 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 short circuit test should not exceed 1 second.