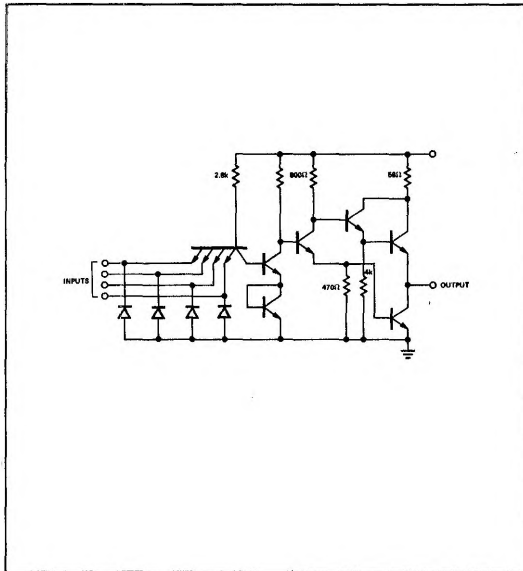


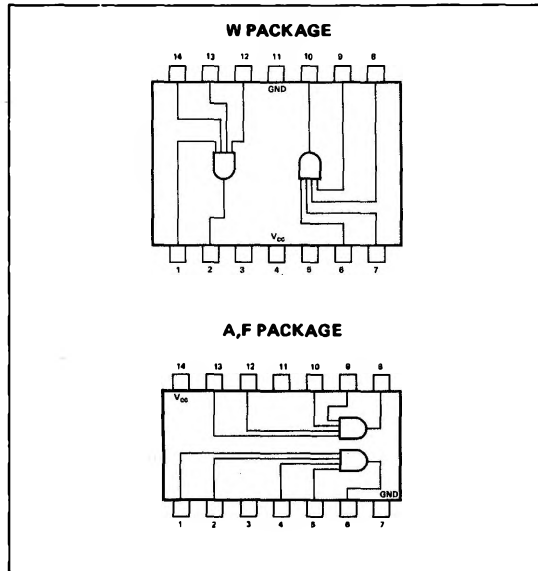
S54H21-A,F,W • N74H21-A,F

DIGITAL 54/74 TTL SERIES

SCHEMATIC (each gate)



PIN CONFIGURATIONS



RECOMMENDED OPERATING CONDITIONS

	MIN	NOM	MAX	UNIT
Supply Voltage $V_{CC}$ : S54H21 Circuits	4.5	5	5.5	V
N74H21 Circuits	4.75	5	5.25	V
Normalized Fan-Out from each Output, N			10	
Operating Free-Air Temperature Range, $T_A$ : S54H21 Circuits	-55	25	125	°C
N74H21 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 1 level at output	$V_{CC} = \text{MIN.}$	2		V
$V_{in(0)}$	Logical 0 input voltage required of any input terminal to ensure logical 0 level at output	$V_{CC} = \text{MIN.}$		0.8	V
$V_{out(1)}$	Logical 1 output voltage	$V_{CC} = \text{MIN.}$ $I_{load} = -500\mu\text{A}$	2.4		V
$V_{out(0)}$	Logical 0 output voltage	$V_{CC} = \text{MIN.}$ $I_{sink} = 20\text{mA}$		0.4	V
$I_{in(0)}$	Logical 0 level input current (each input)	$V_{CC} = \text{MAX.}$ $V_{in} = 0.4\text{V}$		-2	mA
$I_{in(1)}$	Logical 1 level input current (each input)	$V_{CC} = \text{MAX.}$ $V_{in} = 2.4\text{V}$ $V_{CC} = \text{MAX.}$ $V_{in} = 5.5\text{V}$		50 1	$\mu\text{A}$ mA
$I_{OS}$	Short circuit output current†	$V_{CC} = \text{MAX.}$ $V_{in} = 4.5\text{V}$	-40	-100	mA
$I_{CC(0)}$	Logical 0 level supply current	$V_{CC} = \text{MAX.}$ $V_{in} = 0$	20	32	mA
$I_{CC(1)}$	Logical 1 level supply current	$V_{CC} = \text{MAX.}$ $V_{in} = 4.5\text{V}$	12	20	mA

**DIGITAL 54/74 TTL SERIES ■ S54H21, N74H21****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	$C_L = 25pF$ ,	$R_L = 280\Omega$		8.8	12	ns
$t_{pd1}$	Propagation delay time to logical 1 level	$C_L = 25pF$ ,	$R_L = 280\Omega$		7.6	12	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.