



**SIGNETICS DIGITAL 54/74 TTL SERIES – S54150 • N74150**

**RECOMMENDED OPERATING CONDITIONS**

	MIN	NOM	MAX	UNIT
Supply Voltage $V_{CC}$ : S54150 Circuits	4.5	5	5.5	V
N74150 Circuits	4.75	5	5.25	V
Normalized Fan-Out from each Output, N: Logical 0			10	
Logical 1			20	

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

PARAMETER	TEST CONDITIONS *	MIN	TYP **	MAX	UNIT
$V_{in(1)}$ Input voltage required to ensure logical 1 at any input terminal	$V_{CC} = \text{MIN}$	2			V
$V_{in(0)}$ Input voltage required to ensure logical 0 at any input terminal	$V_{CC} = \text{MIN}$			0.8	V
$V_{out(1)}$ Logical 1 output voltage	$V_{CC} = \text{MIN}, V_{in(1)} = 2V, V_{in(0)} = 0.8V,$ $I_{load} = -800\mu A$	2.4			V
$V_{out(0)}$ Logical 0 output voltage	$V_{CC} = \text{MIN}, V_{in(1)} = 2V, V_{in(0)} = 0.8V,$ $I_{sink} = 16mA$			0.4	V
$I_{in(1)}$ Logical 1 level input (each input)	$V_{CC} = \text{MAX}, V_{in} = 2.4V$ $V_{CC} = \text{MAX}, V_{in} = 5.5V$			40 1	$\mu A$ mA
$I_{in(0)}$ Logical 0 level input current (each input)	$V_{CC} = \text{MAX}, V_{in} = 0.4V$			-1.6	mA
$I_{OS}$ Short circuit output current†	$V_{CC} = \text{MAX},$ $V_{OUT} = 0$	-20 -18		-55 -55	mA
$I_{CC}$ Supply current	$V_{CC} = \text{MAX}, V_{in} = 4.5V$		40	68	mA

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

PARAMETER	FROM (INPUT)	TO (OUTPUT)	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$t_{pd0}$	A,B,orC(4 levels)	Y	$C_L = 15pF, R_L = 400\Omega$		20	30	ns
$t_{pd1}$	A,B,orC(4levels)	Y			35	52	ns
$t_{pd0}$	A,B,C,orD(3 levels)	W			22	33	ns
$t_{pd1}$	A,B,C,orD(3 levels)	W			23	35	ns
$t_{pd0}$	STROBE	Y			19	30	ns
$t_{pd1}$	STROBE	Y			35	52	ns
$t_{pd0}$	STROBE	W			21	30	ns
$t_{pd1}$	STROBE	W			15.5	24	ns
$t_{pd0}$	D <sub>0</sub> thru D <sub>7</sub>	Y			16	24	ns
$t_{pd1}$	D <sub>0</sub> thru D <sub>7</sub>	Y			19	29	ns
$t_{pd0}$	E <sub>0</sub> thru E <sub>15</sub>	W			8.5	14	ns
$t_{pd1}$	E <sub>0</sub> thru E <sub>15</sub>	W			13	20	ns

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