

SIGNETICS DIGITAL 54/74 TTL SERIES S5476 • N7476
RECOMMENDED OPERATING CONDITIONS

	MIN	NOM	MAX	UNIT
Supply Voltage V_{CC} : S5476 Circuits	4.5	5	5.5	V
N7476 Circuits	4.75	5	5.25	V
Operating Free-Air Temperature Range, T_A : S5476 Circuits	-55	25	125	$^{\circ}\text{C}$
N7476 Circuits	0	25	70	$^{\circ}\text{C}$
Normalized Fanout from each Output, N			10	
Width of Clock Pulse, $t_{p(\text{clock})}$	20			ns
Width of Preset Pulse, $t_{p(\text{preset})}$	25			ns
Width of Clear Pulse, $t_{p(\text{clear})}$	25			ns
Input Setup Time, t_{setup}	$\geq t_{p(\text{clock})}$			
Input Hold Time, t_{hold}	0			

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 $V_{CC} = \text{MIN}$, $I_{\text{load}} = -400\mu\text{A}$	2.4	3.5		V
$V_{out(0)}$	Logical 0 output voltage $V_{CC} = \text{MIN}$, $I_{\text{sink}} = 16\text{mA}$		0.22	0.4	V
$I_{in(0)}$	Logical 0 level input current at J or K $V_{CC} = \text{MAX}$, $V_{in} = 0.4\text{V}$			-1.6	mA
$I_{in(0)}$	Logical 0 level input current at clear, preset, or clock $V_{CC} = \text{MAX}$, $V_{in} = 0.4\text{V}$			-3.2	mA
$I_{in(1)}$	Logical 1 level input current at J or K $V_{CC} = \text{MAX}$, $V_{in} = 2.4\text{V}$ $V_{CC} = \text{MAX}$, $V_{in} = 5.5\text{V}$			40 1	μA mA
$I_{in(1)}$	Logical 1 level input current at clear, preset, or clock $V_{CC} = \text{MAX}$, $V_{in} = 2.4\text{V}$ $V_{CC} = \text{MAX}$, $V_{in} = 5.5\text{V}$			80 1	μA mA
I_{OS}	Short circuit output current† $V_{CC} = \text{MAX}$, $V_{in} = 0$	S5476 -20 N7476 -18		-57 -57	mA
I_{CC}	Supply current (each flip-flop) $V_{CC} = \text{MAX}$, $V_{in} = 5\text{V}$		20	40	mA

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

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
f_{clock}	Maximum clock frequency $C_L = 15\text{pF}$, $R_L = 400\Omega$	15	20		MHz
t_{pd1}	Propagation delay time to logical 0 level from clear or preset to output $C_L = 15\text{pF}$, $R_L = 400\Omega$		16	25	ns
t_{pd0}	Propagation delay time to logical 1 level from clear or preset to output $C_L = 15\text{pF}$, $R_L = 400\Omega$		25	40	ns
t_{pd1}	Propagation delay time to logical 1 level from clock to output $C_L = 15\text{pF}$, $R_L = 400\Omega$	10	16	25	ns
t_{pd0}	Propagation delay time to logical 0 level from clock to output $C_L = 15\text{pF}$, $R_L = 400\Omega$	10	25	40	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 $V_{CC} = 5\text{V}$, $T_A = 25^{\circ}\text{C}$.

† Not more than one output should be shorted at a time.