

TYPES SN54L90, SN54L93, SN74L90, SN74L93 DECADE AND BINARY COUNTERS

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

Supply voltage, V_{CC} (see Note 4)	8 V
Input voltage (see Note 5)	5.5 V
Operating free-air temperature range: SN54L90, SN54L93 Circuits	-55°C to 125°C
SN74L90, SN74L93 Circuits	0°C to 70°C
Storage temperature range	-65°C to 150°C

NOTES: 4. Voltage values are with respect to network ground terminal.
5. Input voltages must be zero or positive with respect to network ground terminal.

recommended operating conditions

	SN54L90, SN54L93			SN74L90, SN74L93			UNIT
	MIN	NOM	MAX	MIN	NOM	MAX	
Supply voltage, V_{CC}	4.5	5	5.5	4.75	5	5.25	V
Input count frequency, f_{count}	0		3	0		3	MHz
High-level output current, I_{OH}			-100			-200	μ A
Low-level output current, I_{OL}			2			3.6	mA
Width of input count pulse, $t_{w(count)}$	200			200			ns
Width of reset pulse, $t_{w(reset)}$	200			200			ns
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†	'L90			'L93			UNIT
			MIN	TYP‡	MAX	MIN	TYP‡	MAX	
V_{IH}	High-level input voltage		2			2			V
V_{IL}	Low-level input voltage				0.7			0.7	V
V_{OH}	High-level output voltage	SN54L'	2.4	3.3		2.4	3.3		V
		SN74L'	2.4	3.2		2.4	3.2		V
V_{OL}	Low-level output voltage	SN54L'	0.15	0.3		0.15	0.3		V
		SN74L'	0.2	0.4		0.2	0.4		V
I_I	Input current at maximum input voltage	Any reset input			100			100	μ A
		A input			300			200	μ A
		B input			600			200	μ A
I_{IH}	High-level input current	Any reset input			10			10	μ A
		A input			30			20	μ A
		B input			60			20	μ A
I_{IL}	Low-level input current	Any reset input			-0.18			0.18	mA
		A input			-0.54			0.36	mA
		B input			-1.08			0.36	mA
I_{OS}	Short-circuit output current§	$V_{CC} = \text{MAX}$	-3		-15	-3		-15	mA
I_{CC}	Supply current	$V_{CC} = \text{MAX}$, See Note 3	4		7.2	3.2		6.6	mA

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable type.
‡ All typical values are at $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$.

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

¶ Outputs are tested at $I_{OL} = \text{MAX}$ plus the limit value for I_{IL} for the B input. This permits driving the B input while maintaining full fan-out capability.

NOTE 3: I_{CC} is measured with all outputs open, both R_D inputs grounded following momentary connection to 4.5 V, and all other inputs grounded.

switching characteristics, $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$

PARAMETER		TEST CONDITIONS	'L90			'L93			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
f_{max}	Maximum count frequency		3	6		3	6		MHz
t_{PLH}	Propagation delay time, low-to-high-level Q_D output from input A	$C_L = 50$ pF, $R_L = 4$ k Ω , See Figure 1	230	340		280	450		ns
t_{PHL}	Propagation delay time, high-to-low-level Q_D output from input A		230	340		280	450		ns