NLB6222

NEL
SELIC

Dual T Flip-flop with Set and Reset

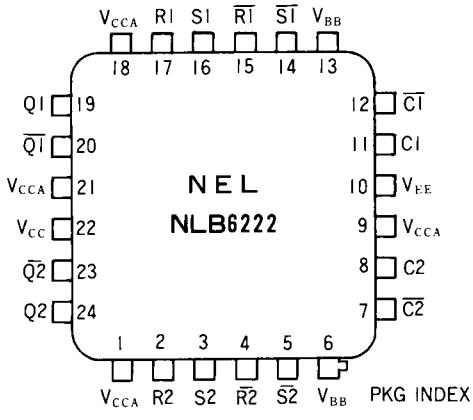
Description

The NLB6222 is an ultra high-speed monolithic dual T Flip-Flop with separate direct compliment set (S) and reset (R).

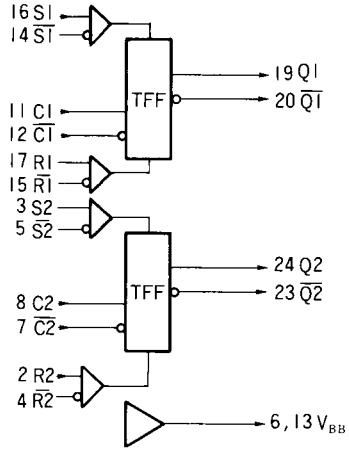
Features

- Typical ; clock rate up to 4GHz.
- Internal pull down resisters on input pins (Sn,Rn,Cn) to maintain logic LOW level with the pins left open
- Internal pull down resisters on input pins ($\overline{Sn}$,$\overline{Rn}$,$\overline{Cn}$) to maintain logic HIGH level with the pins left open
- ELC100K compatible I/O levels
- Differential output

Pin Assignment
Top View (Ceramic)



Logic Symbol



V_{CC}	22
V_{CCA}	1,9,18,21
V_{EE}	10

Pin Name

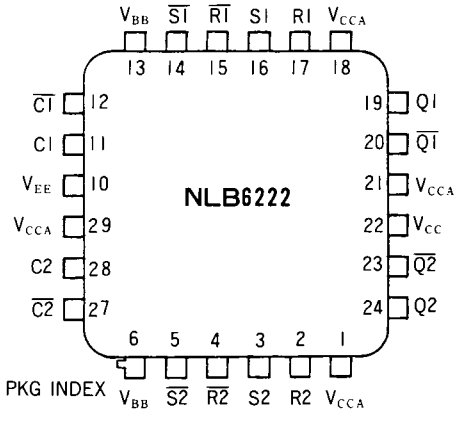
Sn, $\overline{Sn}$	Direct set inputs
Rn, $\overline{Rn}$	Direct reset inputs
Cn, $\overline{Cn}$	Clock inputs (Positive edge torigger)
V_{BB}	Reference voltage outputs
V_{CC}	Circuit GND
V_{CCA}	Circuit GND for outputs
V_{EE}	-4.5V

Truth table

Input				Output	
S	R	C	$\overline{C}$	Q	$\overline{Q}$
H	L	X	X	H	L
L	H	X	X	L	H
H	H	X	X	X	X
L	L	⌐	⌐	$\overline{Q_{n-1}}$	Q_{n-1}

H : High voltage level
L : Low voltage level
X : Arbitrary
⌐ : L to H transition
⌐ : H to L transition

Back View (Metal Cap)



DC Characteristics

V_{EE}=-4.5V ±0.3V, V_{CC}=GND, V_{TT}=-2V
T_C= 0 °C to +85°C

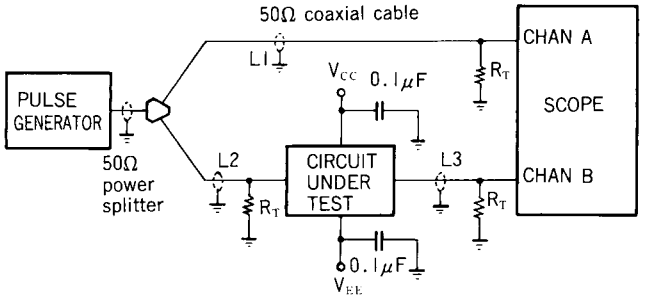
Characteristics	Symbol	Min.	Typ.	Max.	Unit
Power supply current	I_{EE}	80	115	155	mA

AC Characteristics

V_{EE}=-4.5V ±0.3V, V_{CC}=GND, V_{TT}=-2V
T_C= 0 °C to +85°C, R_T=50Ω to V_{TT}

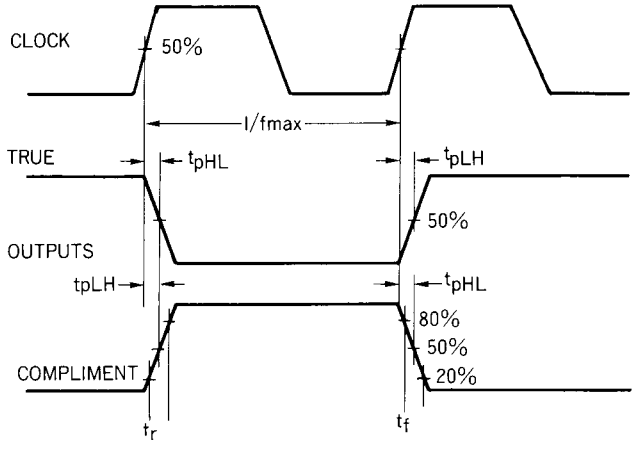
Characteristics	Symbol	Input	Output	Measuring condition	Min.	Typ.	Max.	Unit
Propagation delay time	t_{PLH}	Cn	Qn			600	790	ps
	t_{PHL}					600	790	
	t_{PLH}	Sn				660	870	
	t_{PHL}					660	870	
	t_{PLH}	Rn				680	900	
	t_{PHL}					680	900	
Release time	t_R	Sn, Cn			230	170		
		Rn, Cn			230	170		
Minimum pulse width	t_{PW}	Sn			330	250		
		Rn			330	250		
Maximum operating frequency	f_{max}	Cn			2.8	4.0		GHz
Rise time	t_r	Cn	Qn	20 to 80 %		150	200	ps
Fall time	t_f					140	190	

AC Test Circuit



Notes) V_{CC}, V_{CCA}=+2V, V_{EE}=-2.5V.
L1=L2+L3
R_T=50Ω terminator.
Unused compliment output is loaded with 50Ω to GND.
C_L=Fixture and stray capacitance≤ 2 pF.

Propagation Delay and Transition Times



Propagation Delay (Set/Reset) and
Release Times