

**UHF DECADE COUNTERS**
**SP8665B** 1.0GHz  $\div$  10    **SP8666B** 1.1GHz  $\div$  10

**SP8667B** 1.2GHz  $\div$  10

The SP8665/6/7 high speed decade counters operating at an input frequency of up to 1GHz over the temperature range 0°C to +70°C.

The device has a typical power dissipation of 550mW at the nominal supply voltage of 6.8V.

The clock input is biased internally and is coupled to the signal source by a capacitor. The input signal path is completed by an input reference decoupling capacitor which is connected to earth. If no signal is present at the clock input the device will self-oscillate. If this is undesirable it may be prevented by connecting a 15k $\Omega$  resistor from the input to  $V_{EE}$  (pin 10 to pin 7). This will reduce the input sensitivity of the device by approximately 100mV.

The clock inhibit input is compatible with standard ECL III circuits using a common  $V_{CC}$  to the SP8665/6/7. A 6k $\Omega$  pulldown resistor is included on the chip. The input should be left open circuit when not in use. The SP8665/6/7 outputs are compatible with standard ECL II circuits. They may be used to drive ECL 10K by the inclusion of two resistors as shown in Fig. 4.

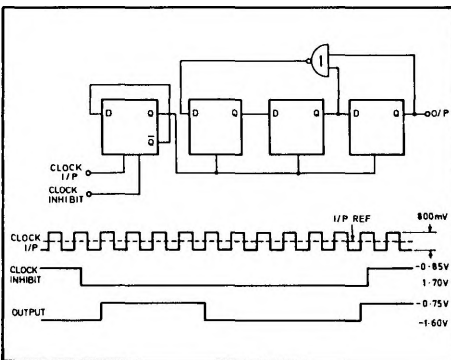


Fig. 2 Logic diagram

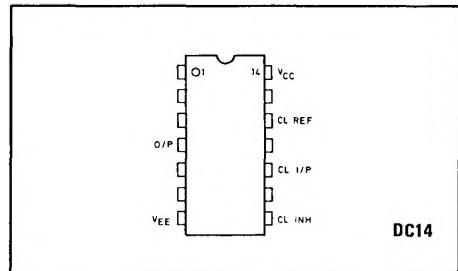


Fig. 1 Pin connections

**FEATURES**

- Guaranteed operation over large temperature range 0°C to 70°C
- Wide input dynamic range
- Self biasing clock input
- Clock inhibit input for direct gating capability

**ABSOLUTE MAXIMUM RATINGS**

Power supply voltage $V_{CC} - V_{EE}$	0V to +10V
Input voltage inhibit input	$V_{EE}$ to $V_{CC}$
Input voltage CP input	2.5V p-p
Output current	20mA
Operating junction temperature	+150°C
Storage temperature	-55°C to 150°C

ELECTRICAL CHARACTERISTICS

Test Conditions (unless otherwise stated):

- Supply voltage 6.8V ± 0.3V
- Clock input AC coupled, self-biasing
- Clock inhibit input ECL III compatible
- Output ECL II compatible
- T<sub>amb</sub> 0°C to +70°C
- Supply voltage V<sub>CC</sub> = 0V V<sub>EE</sub> = -6.8V
- Clock input voltage 400mV to 1.2V (peak to peak)

Characteristics	Value			Units	Conditions
	Min.	Typ.	Max.		
Max. i/p frequency	SP8665	1.0			GHz
	SP8666	1.1			GHz
	SP8667	1.2			GHz
Min. i/p frequency				200	MHz
Min. i/p frequency				100	MHz
Min. slew rate for square wave input				200	V/μsec
Clock i/p impedance		400			Ω
Inhibit input reference level		-1.3			V
Inhibit input pulldown resistor (internal)		6			kΩ
Output pulldown resistor (internal)		3			kΩ
Power supply drain current		80	105		mA

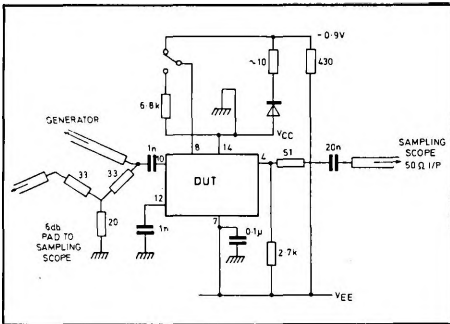


Fig. 3 Test circuit

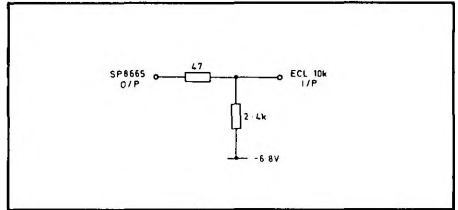


Fig. 4 SP8665 to ECL 10K