

The SP8902 is one of a range of very high speed low power prescalers for professional applications. The dividing elements are static D type flip flops and therefore allow operation down to DC if the drive signal is a pulse waveform with fast risetime. The output stage has a differential current output and provides a direct drive into a 50 ohm load.

### Ordering Information

SP8902/KG/MP1S (tubes)  
 SP8902/KG/MP1T (tape and reel)

### Features

- Very High Operating Speed
- Operation down to DC with Square Wave Input
- Silicon Technology for Low Phase Noise  
(Typically better than  $-140\text{dBc/Hz}$  at 1KHz)
- 5V Single Supply Operation
- Low Power Dissipation: 335mW (Typ.)
- Surface Mount Plastic Package

### Absolute Maximum Ratings

Supply voltage, $V_{CC}$	6.5V
Storage temperature	$-65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$
Maximum junction temperature	$+150^{\circ}\text{C}$
Prescaler input voltage	2.5Vp-p
Operating temperature	KG $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ $T_{CASE}$

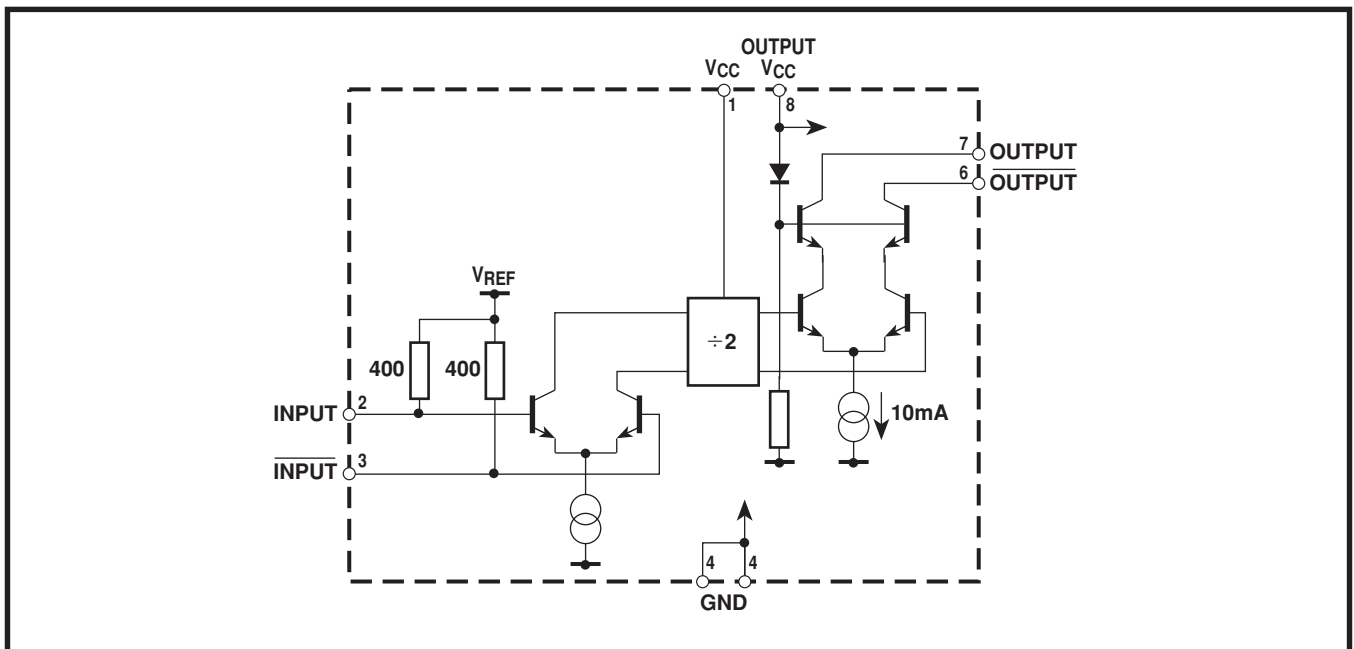


Figure 1 block diagram

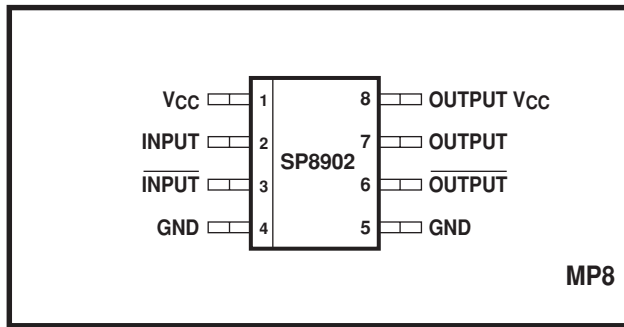


Figure 2 Pin connections - top view

**Electrical Characteristics**

These characteristics are guaranteed by either production test or design over the following range of operating conditions unless otherwise stated:  $T_{AMB} = -40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ ,  $V_{CC} = 4.75\text{V}$  to  $5.25\text{V}$

Characteristic	Pin	Value			Units	Conditions
		Min.	Typ.	Max.		
Supply current	1, 8	-	67	92	mA	
Input frequency	2, 3	1.0	-	5.0	GHz	RMS sinewave
Input sensitivity	2, 3	-	-	180	mVrms	$f_{IN} = 1\text{GHz}$ and $4.2\text{GHz}$
Input sensitivity	2, 3	-	-	570	mVrms	$f_{IN} = 5\text{GHz}$
Input overload	2, 3	440	-	-	mVrms	$f_{IN} = 1\text{GHz}$ and $3\text{GHz}$
Input overload	2, 3	700	-	-	mVrms	$f_{IN} = 5.0\text{GHz}$ and $3.8\text{GHz}$
Output voltage	6, 7	-	0.5	-	Vp-p	Into $50\Omega$ pullup resistor
Output power	6, 7	-15.0	+12	+2.0	dBm	$f_{IN} = 1\text{GHz}$ and $5\text{GHz}$ (see note 1)

NOTE

1. Measured into  $50\Omega$  measuring instrument in parallel with  $50\Omega$  pullup resistor. See Figure 5.

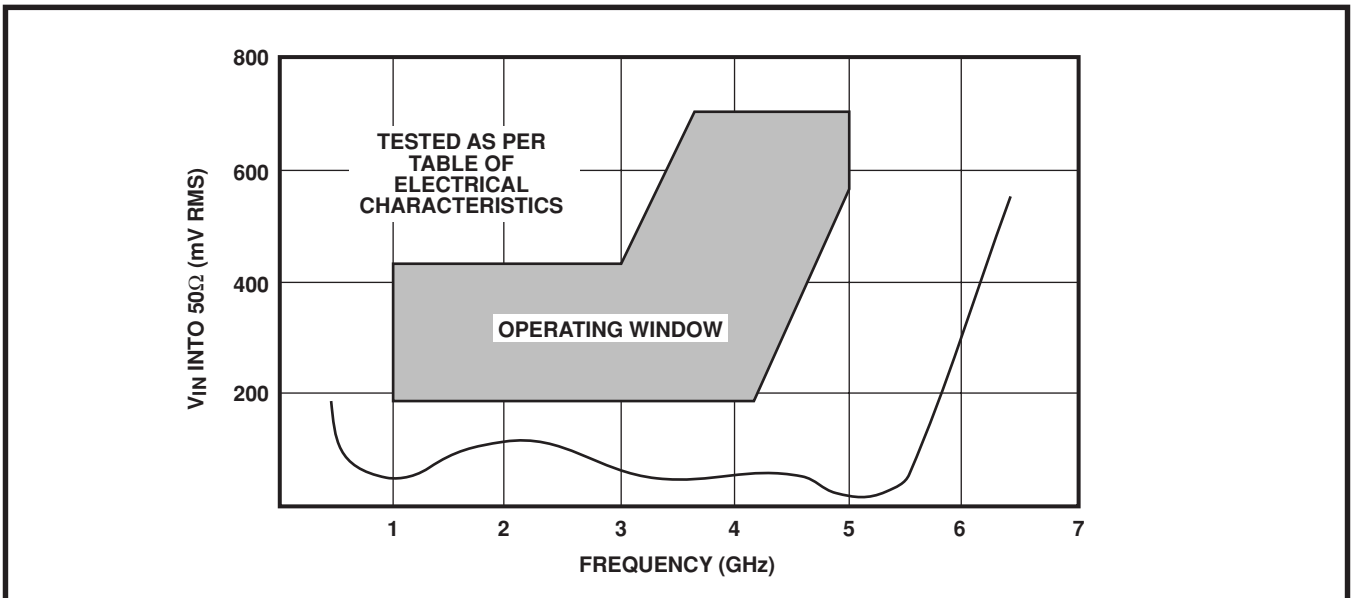


Figure3 Typical input sensitivity (sinewave drive)

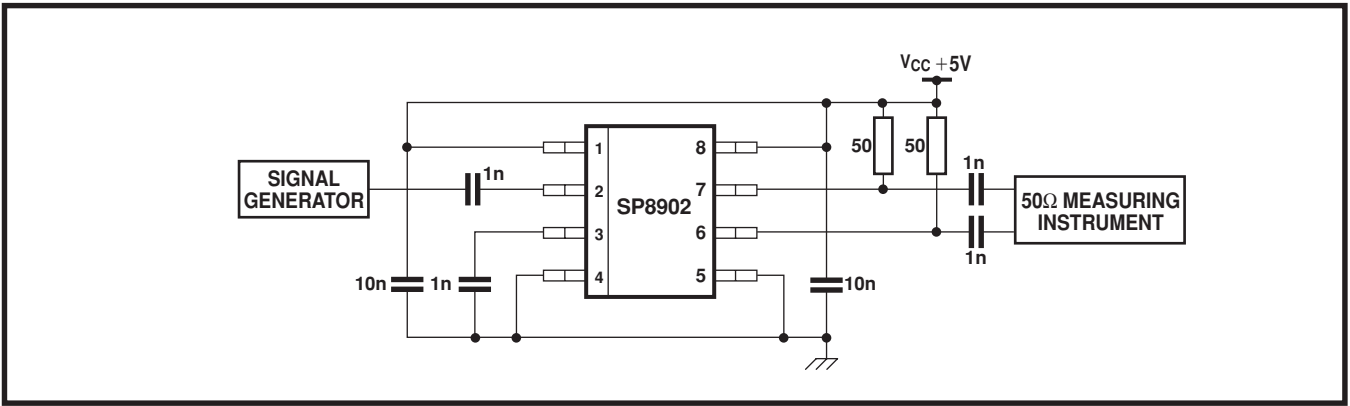


Figure 4 Typical application and test circuit

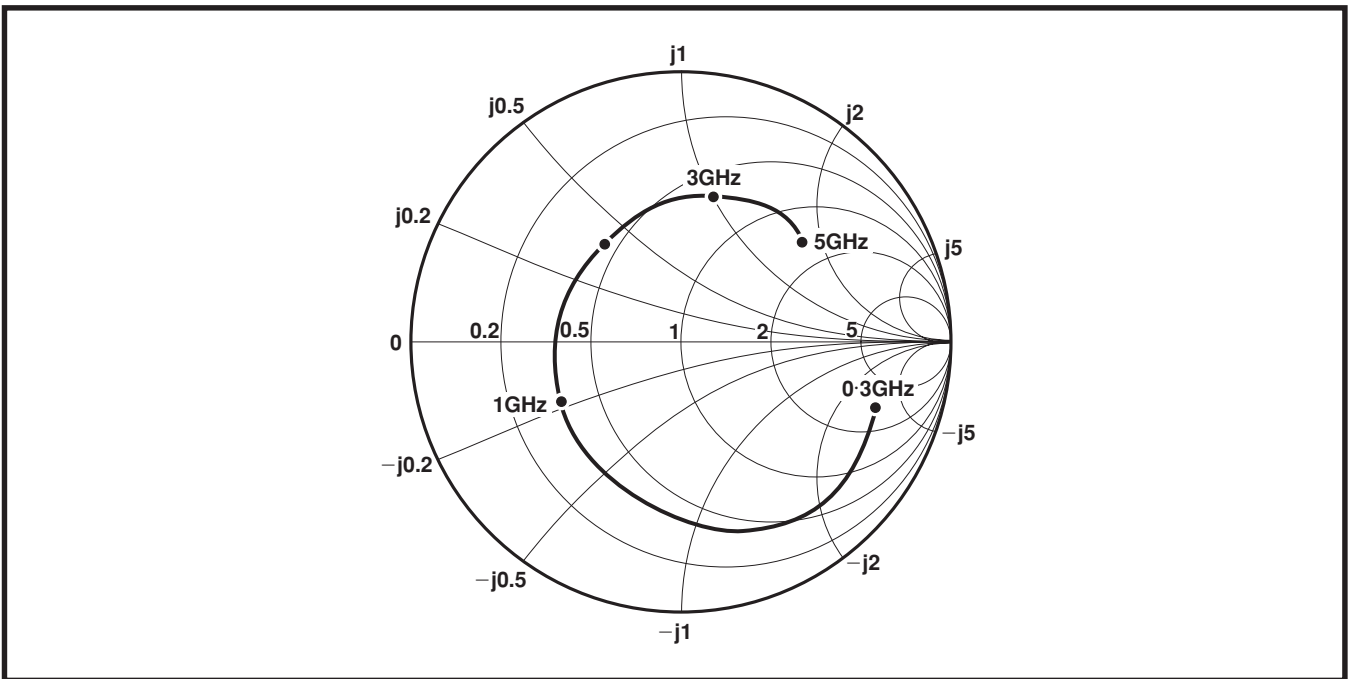


Figure 5 Typical input impedance

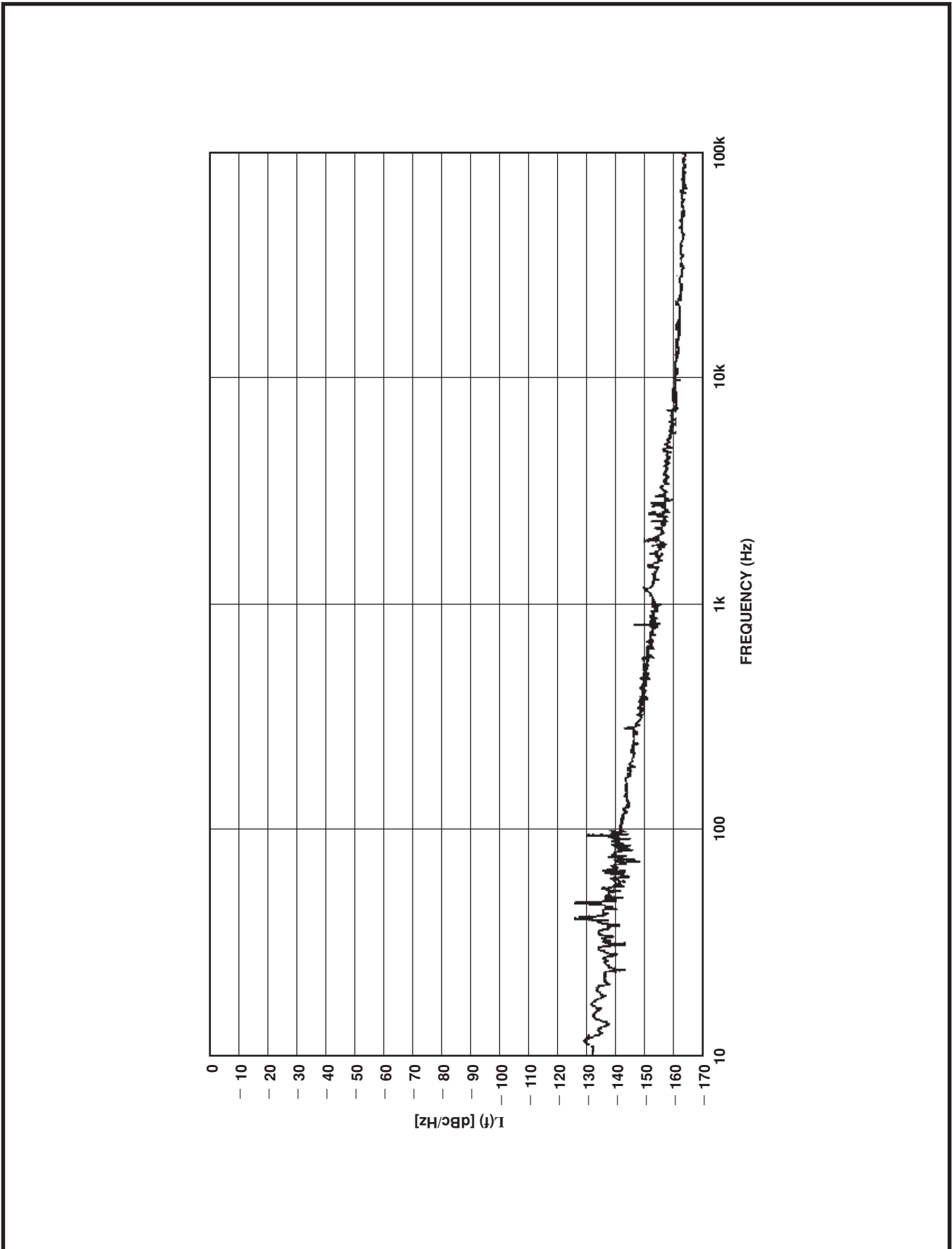


Figure 6 Typical phase noise, input frequency = 3GHz





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