

The SP8904 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.

#### 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-350mW (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 $+85^{\circ}\text{C}$ $T_{case}$

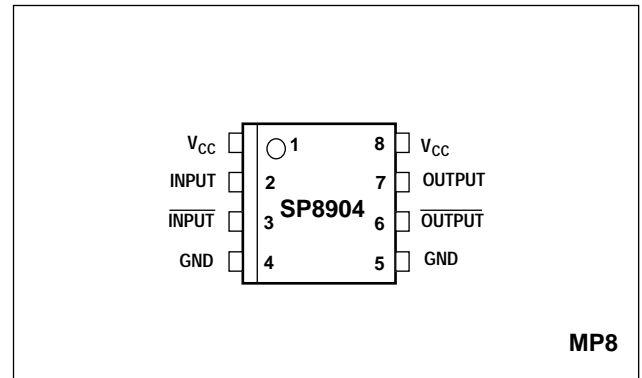


Fig.1 Pin connections - top view

#### ORDERING INFORMATION

SP8904/KG/MP1S(Antistatic Tubes)  
 SP8904/KG/MP1T(Tape and Reel)

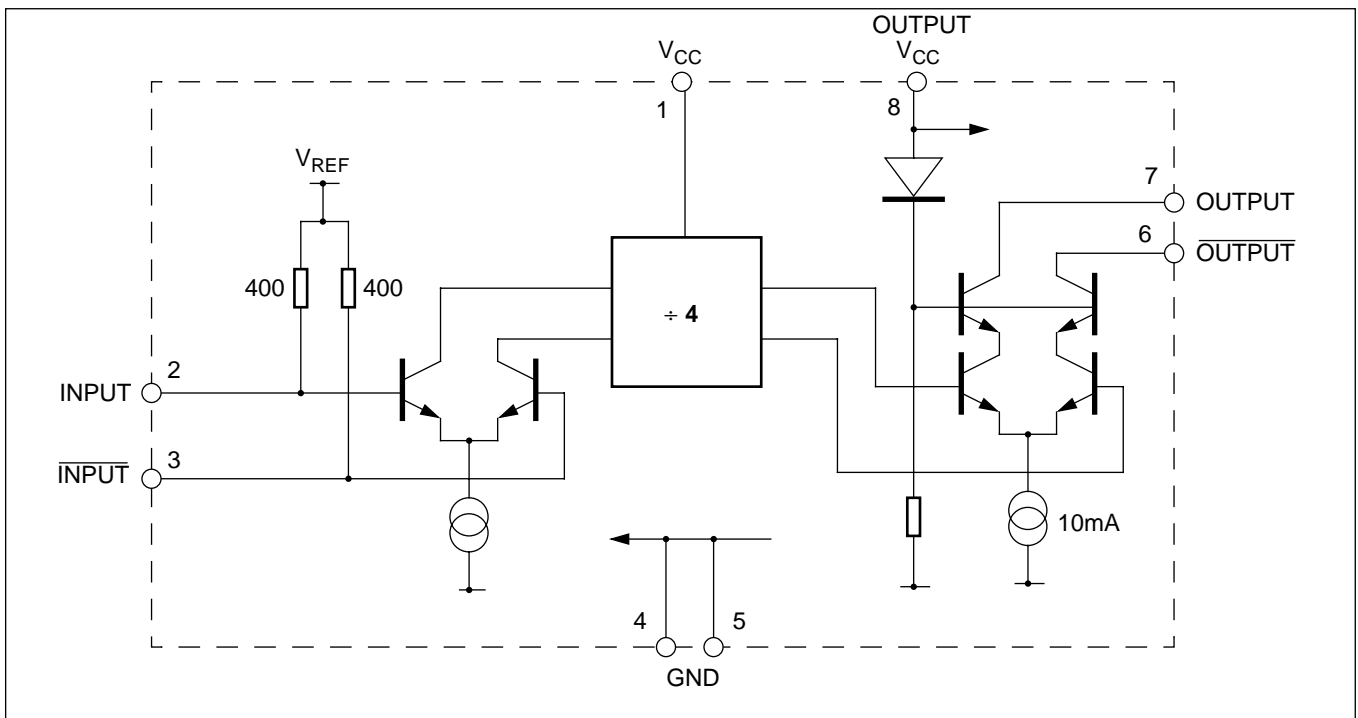


Fig.2 SP8904 block diagram

**SP8904**

**SP8904CG ELECTRICAL CHARACTERISTICS**

Guaranteed over the full specified temperature and supply voltage range

**Test conditions (unless otherwise stated):**

Temperature  $T_{amb} = -40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .

Supply Voltage:  $V_{CC} = 4.75\text{V}$  and  $5.25\text{V}$

Characteristic	Pin	Value			Units	Conditions
		Min.	Typ.	Max.		
Supply current	1, 8	-	70	95	mA	
Input frequency	2, 3	1.0	-	5.0	GHz	RMS sinewave
Input sensitivity	2, 3	-	-	180	mVrms	$f_{in} = 1\text{GHz} \ \& \ 4.2\text{GHz}$
Input sensitivity	2, 3	-	-	570	mVrms	$f_{in} = 5\text{GHz}$
Input overload	2, 3	440	-	-	mVrms	$f_{in} = 1\text{GHz} \ \& \ 3\text{GHz}$
Input overload	2, 3	700	-	-	mVrms	$f_{in} = 5\text{GHz} \ \& \ 3.8\text{GHz}$
Output voltage	6, 7	-	0.5	-	Vp/p	Into $50\Omega$ pull up resistor
Output power	6, 7	-10.0	0	+2.0	dBm	$f_{in} = 1 \ \& \ 5\text{GHz}$ (see note 1)

**NOTE 1.**

Measured into  $50\Omega$  measuring instrument in parallel with  $50\Omega$  pull up resistor. See Fig.5.

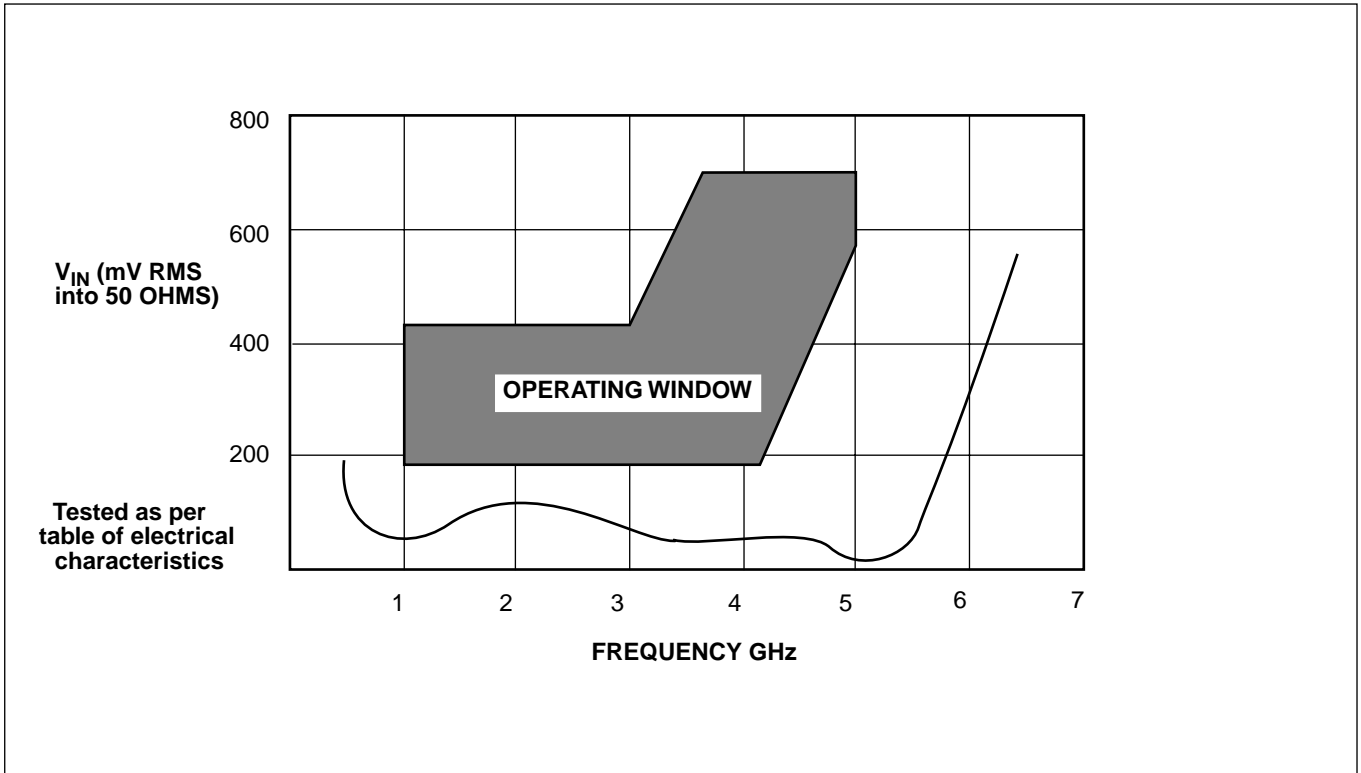


Fig.3 Typical input sensitivity (sine wave drive)

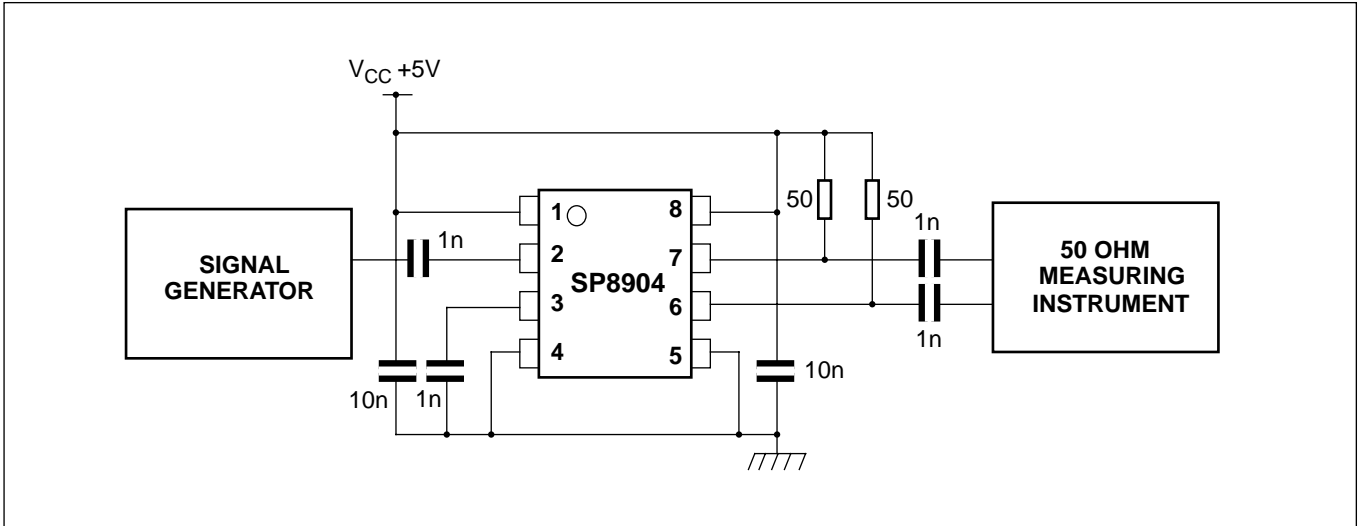


Fig.4 Typical application and test circuit

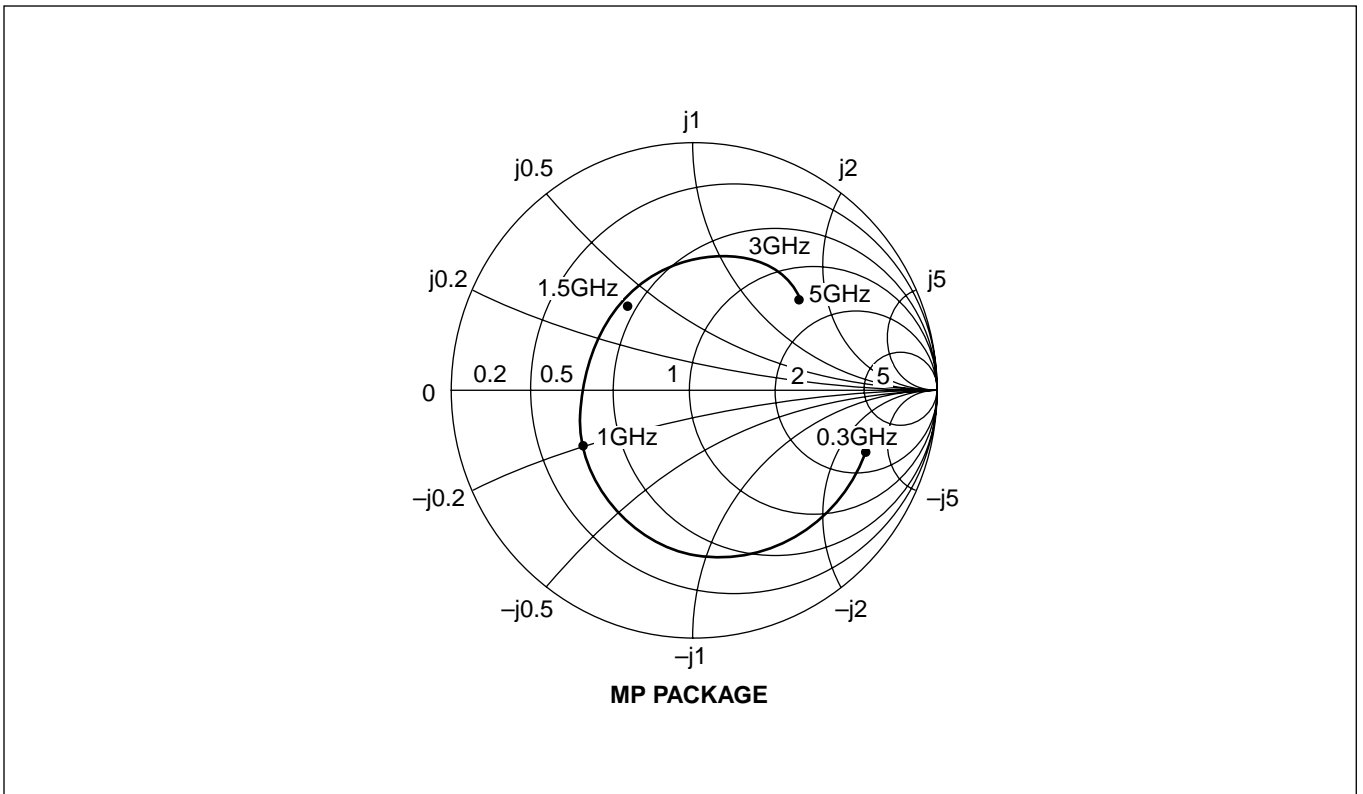


Fig.5 Typical input impedance

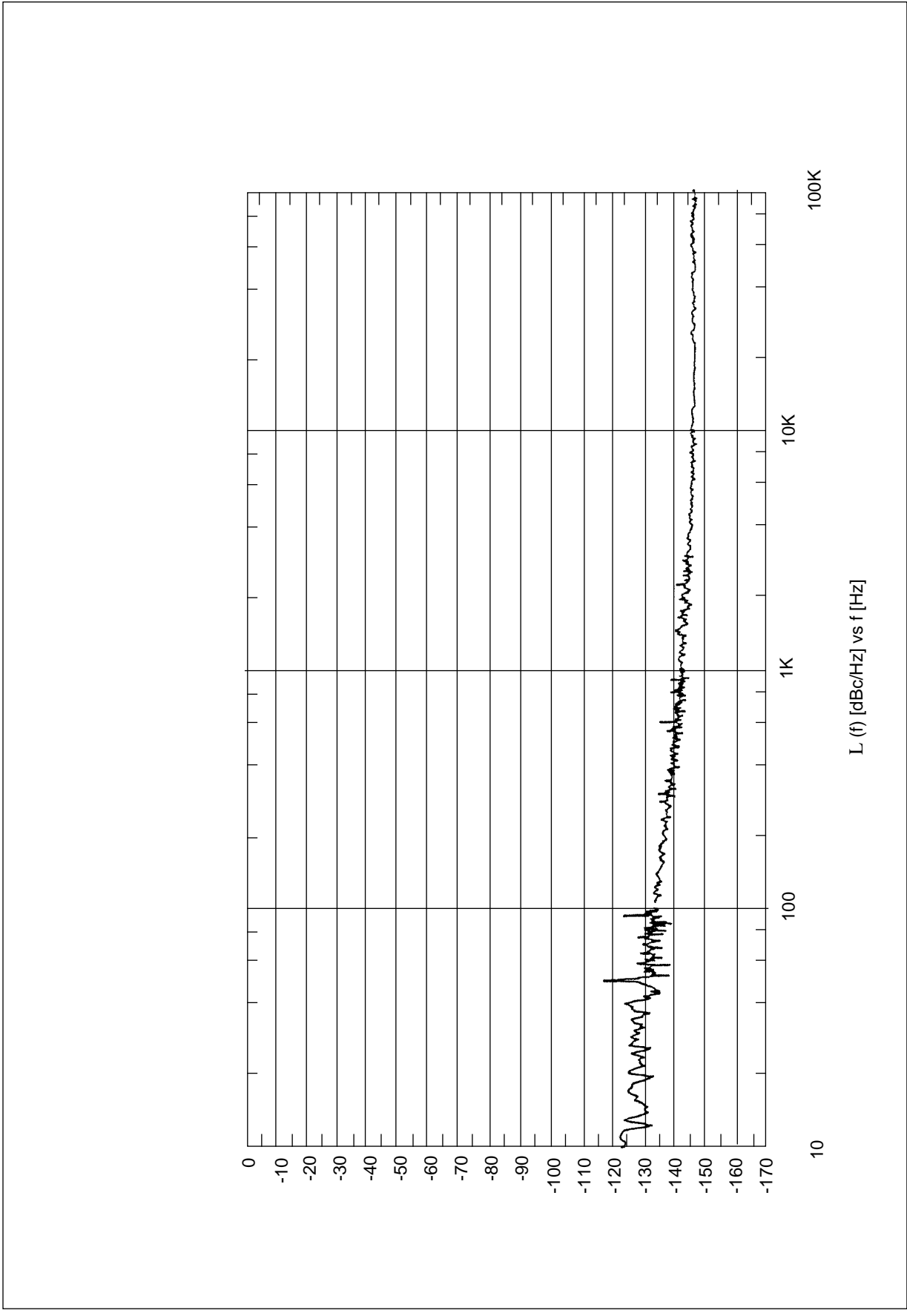


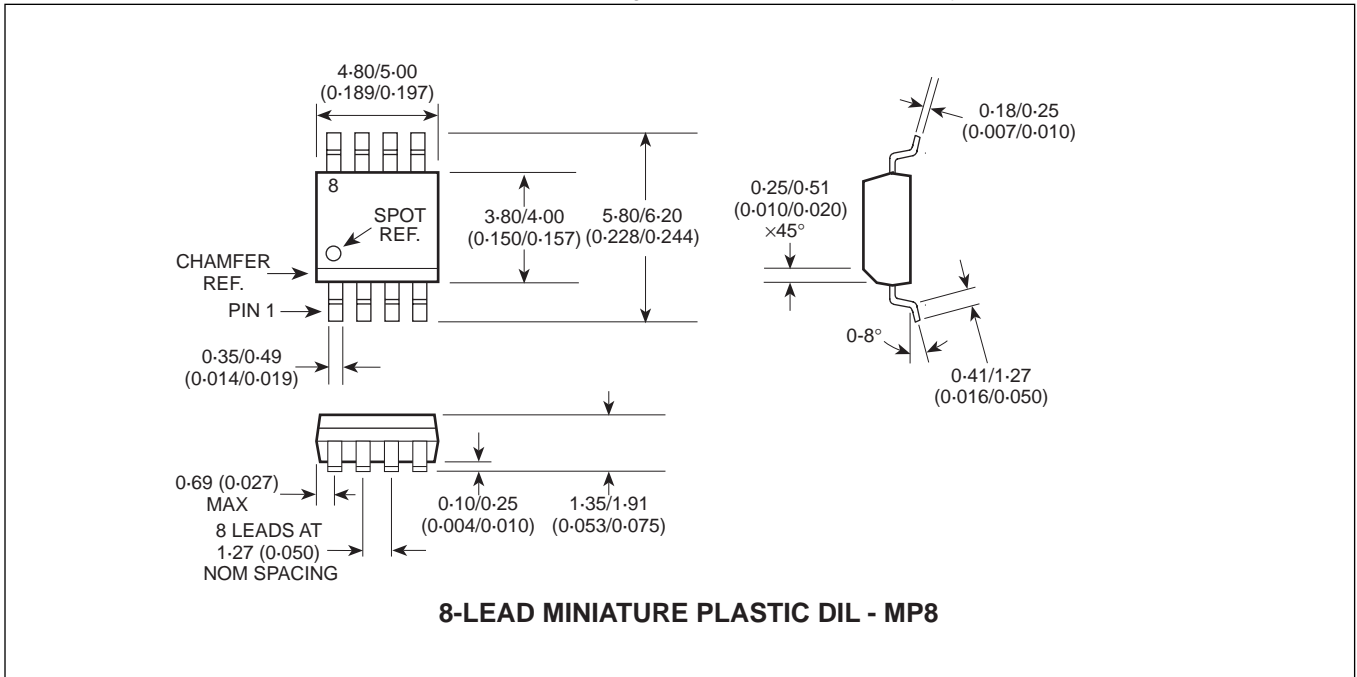
Fig.6 Typical phase noise of SP8904, input frequency = 3GHz

NOTES

# SP8904

## PACKAGE DETAILS

Dimensions are shown thus: mm (in). For further package information please contact your local Customer Service Centre.



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