

SP8902

5.0/5.5GHz ÷ 2 FIXED MODULUS DIVIDER

(Supersedes September 1993 Edition)

The SP8902 is one of a range of very high speed low power prescalers for professional and military 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 -140dBc/Hz at 1KHz)
- 5V Single Supply Operation
- Low Power Dissipation-335mW (Typ.)
- Specified over the full Military Temperature Range

ABSOLUTE MAXIMUM RATINGS

Supply Voltage, V_{CC}	6.5V
Storage Temperature	-65°C to +150°C
Maximum Junction Temperature	+175°C
Prescaler Input Voltage	2.5Vp-p
Operating Temperature	KG -55°C to +125°C T_{case}
	IG -40°C to +85°C T_{case}

ORDERING INFORMATION

SP8902/KG/DG1S
SP8902/IG/DG1S
SP8902/RG/1CAC (naked die)

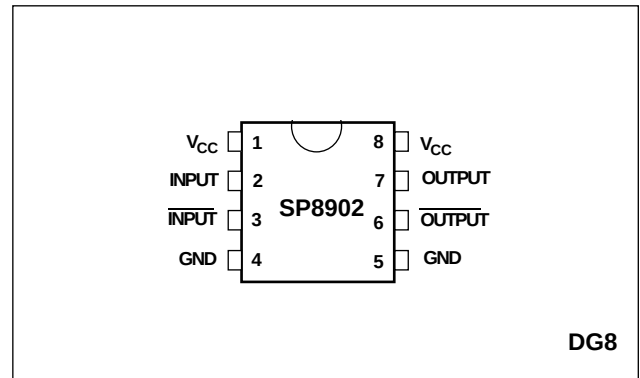


Fig.1 Pin connections - top view

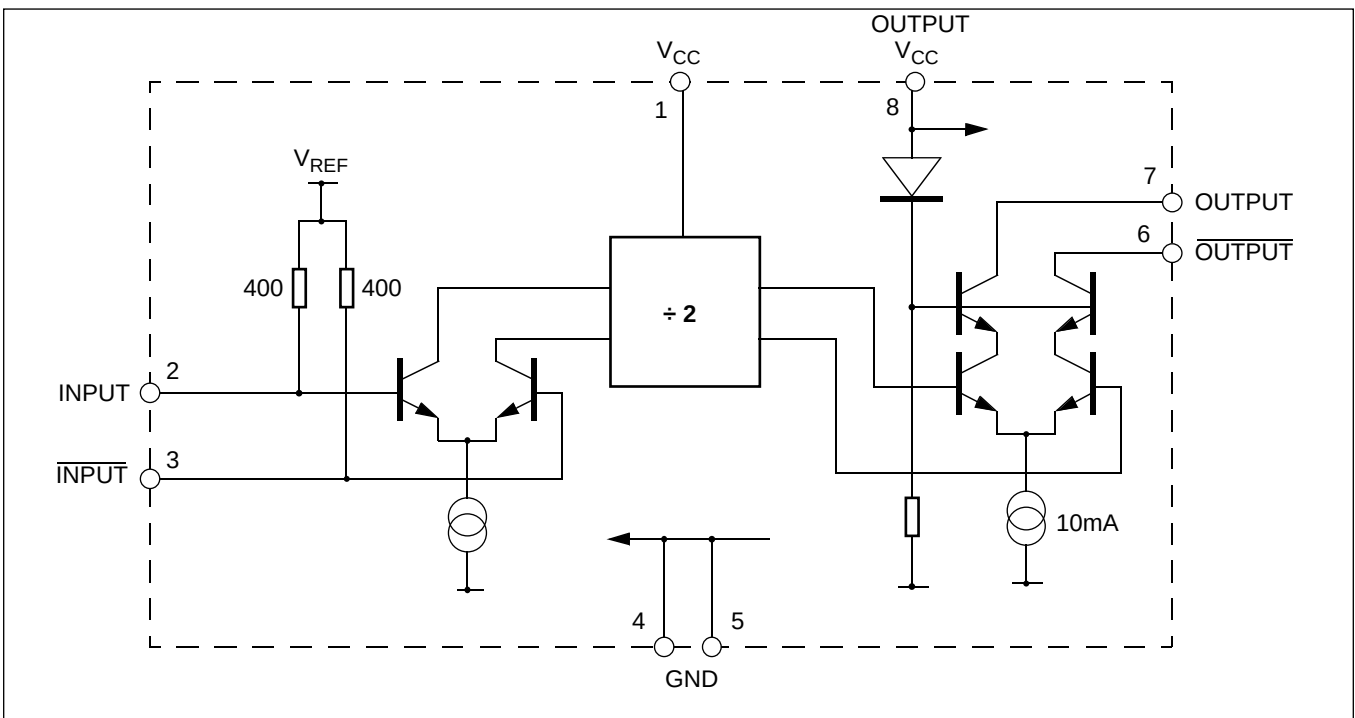


Fig.2 SP8902 block diagram

SP8902

SP8902KG ELECTRICAL CHARACTERISTICS

Guaranteed over the full specified temperature and supply voltage range

Test conditions (unless otherwise stated):

Temperature $T_{case} = -55^{\circ}\text{C}$ and $+125^{\circ}\text{C}$ using thermostream temperature control equipment.

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

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 frequency	2, 3	1.0	-	5.5	GHz	RMS sinewave, $T_{case} = -55^{\circ}\text{C}$ & $+85^{\circ}\text{C}$
Input sensitivity	2, 3	-	-	180	mVrms	$f_{in} = 1$ & 4.2GHz
Input sensitivity	2, 3	-	-	570	mVrms	$f_{in} = 5\text{GHz}$
Input sensitivity	2, 3	-	-	570	mVrms	$f_{in} = 5.5\text{GHz}$, $T_{case} = -55^{\circ}\text{C}$ & $+85^{\circ}\text{C}$
Input overload	2, 3	440	-	-	mVrms	$f_{in} = 1$ & 3GHz
Input overload	2, 3	700	-	-	mVrms	$f_{in} = 3.8$ & 5.0GHz
Input overload	2, 3	700	-	-	mVrms	$f_{in} = 5.5\text{GHz}$, $T_{case} = -55^{\circ}\text{C}$ & $+85^{\circ}\text{C}$
Output voltage	6, 7	-	0.5	-	Vp/p	Into 50W pull up resistor
Output power	6, 7	-15.0	-9.0	+2.0	dBm	$f_{in} = 1, 3, 4.2, 5\text{GHz}$ (see note 1)

NOTE 1.

Measured into 50W measuring instrument in parallel with 50W pull up resistor. See Fig.5.

SP8902IG ELECTRICAL CHARACTERISTICS

Guaranteed across the temperature range of $T_{case} = -40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$, but tested at $T_{amb} = +25^{\circ}\text{C}$

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

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	$f_{in} = 1$ & 4.2GHz
Input sensitivity	2, 3	-	-	570	mVrms	$f_{in} = 5\text{GHz}$
Input overload	2, 3	440	-	-	mVrms	$f_{in} = 1$ & 3.0GHz

The thermal resistances of the DG package are approximately $q_{JA} = 150^{\circ}\text{C/W}$ and $q_{JC} = 30^{\circ}\text{C/W}$. These are given to offset the decision on the heat sink requirement for individual applications.

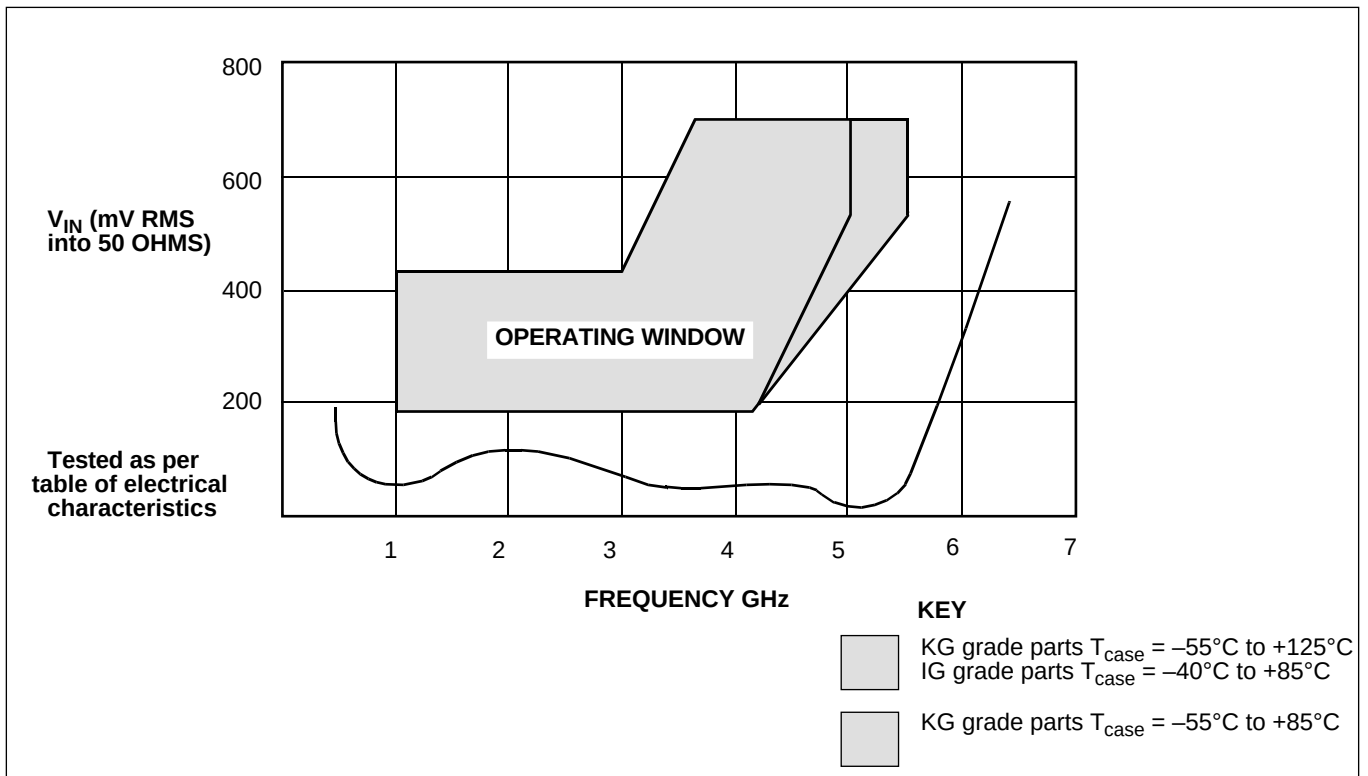


Fig.3 Typical input sensitivity (sine wave drive)

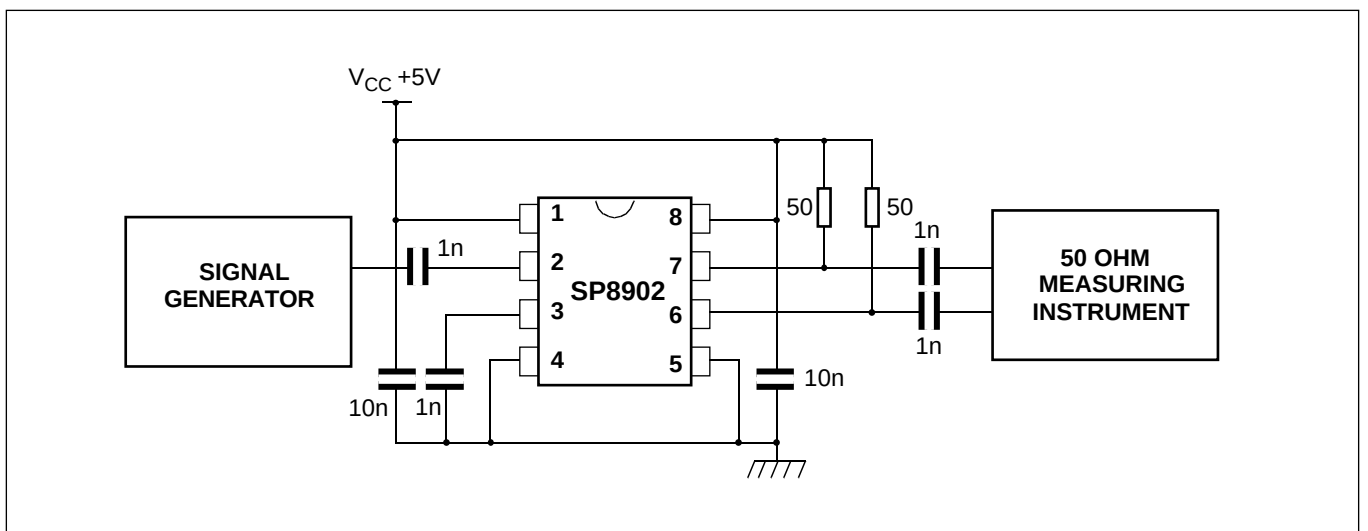


Fig.4 Typical application and test circuit

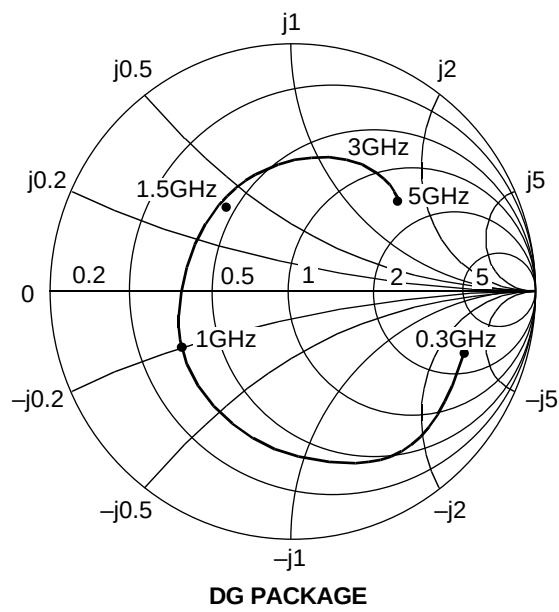
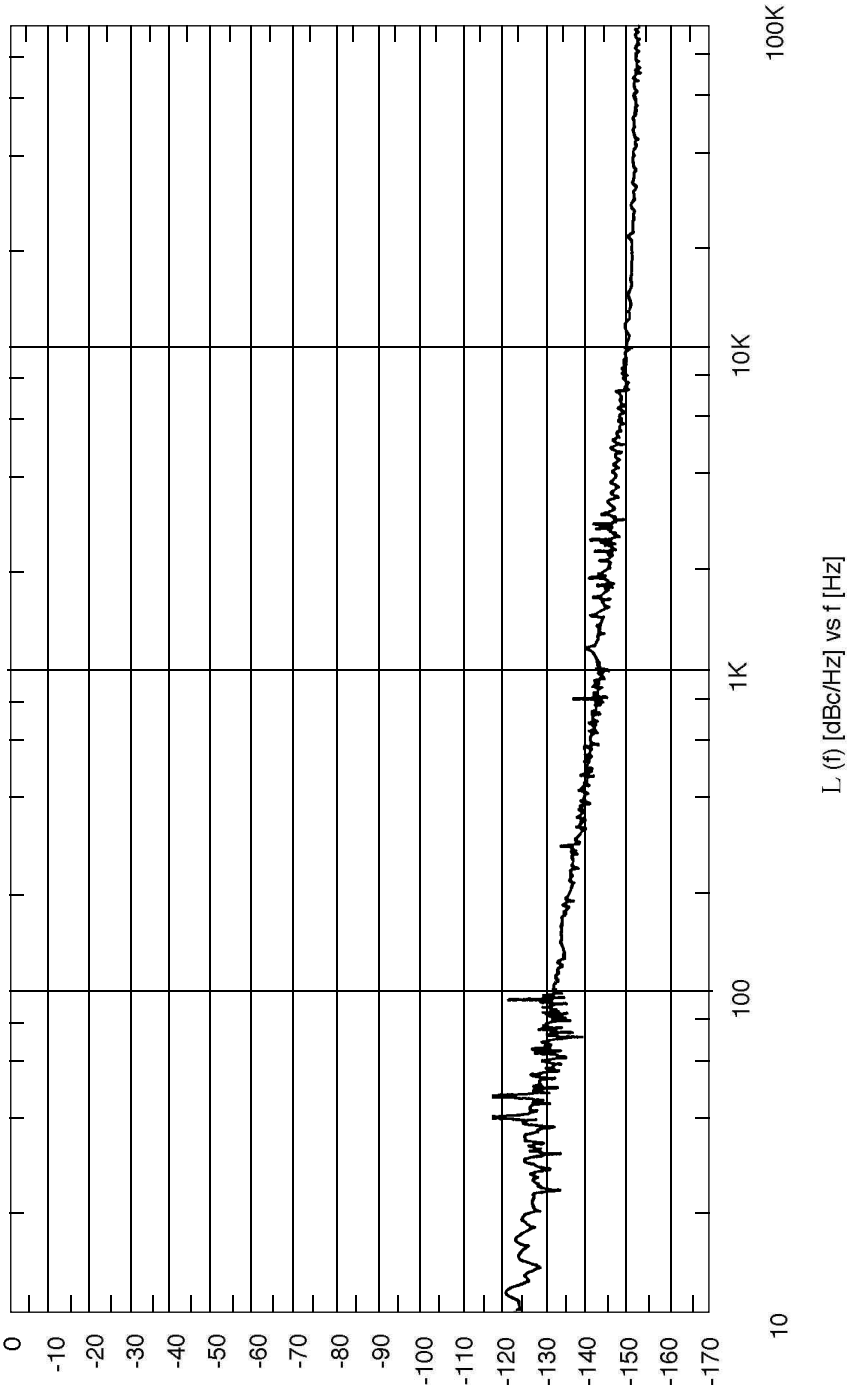


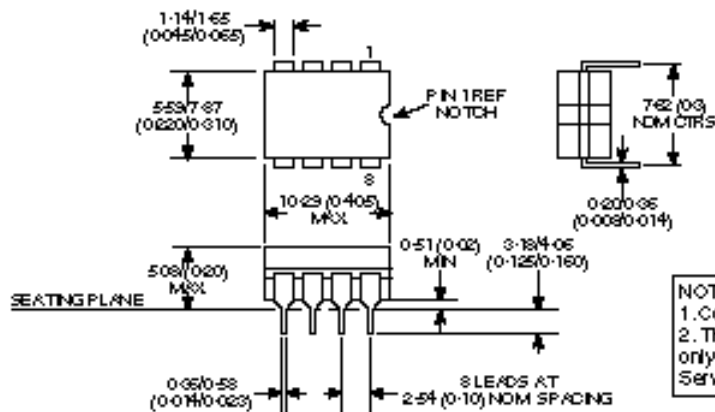
Fig.5 Typical input impedance



SP8902

PACKAGE DETAILS

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



8 LEAD CERAMIC DIL DG8 COMPLIES WITH MIL STD 1835



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