

SP8916

5.0/5.5GHz ÷ 16 FIXED MODULUS DIVIDER

(Supersedes September 1993 Edition)

The SP8916 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 internal 100 ohm pull up resistors giving a 0.5V p-p output. If required an external 100 ohm resistor can be connected in parallel to give a 50 ohm output.

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-340mW (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

SP8916/KG/DG1S
SP8916/IG/DG1S
SP8916/RG/1CAC (naked die)

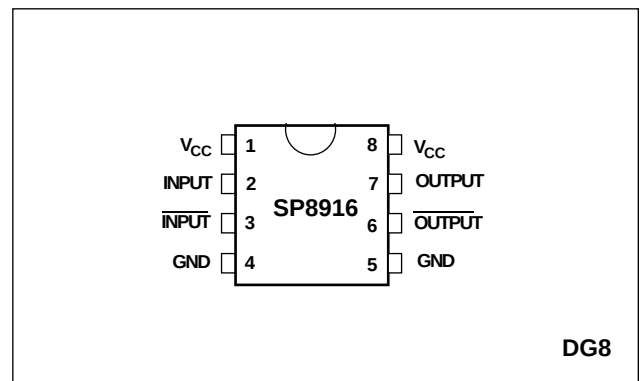


Fig.1 Pin connections - top view

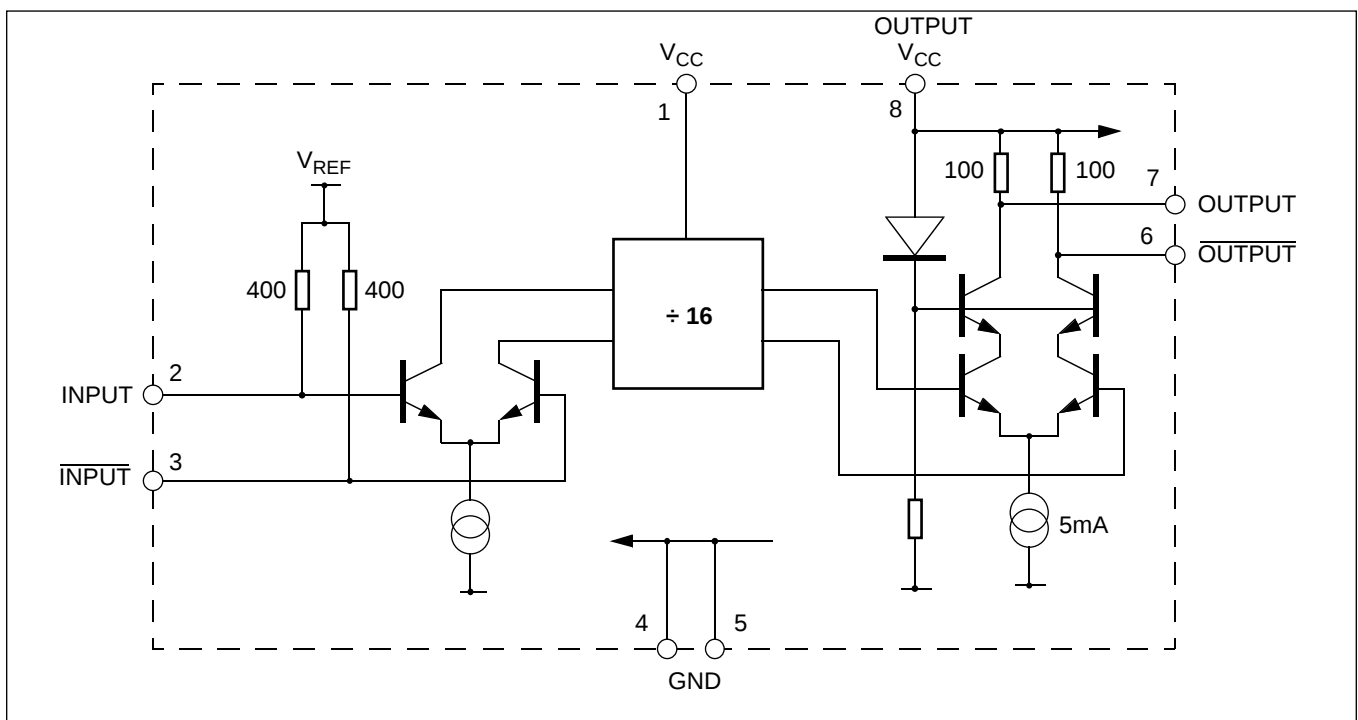


Fig.2 SP8916 block diagram

SP8916

SP8916KG ELECTRICAL CHARACTERISTICS

Guaranteed over the full specified temperature and supply voltage range

Test conditions (unless otherwise stated):

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

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

Characteristic	Pin	Value			Units	Conditions
		Min.	Typ.	Max.		
Supply current	1, 8	-	68	92	mA	
Input frequency	2, 3	1.0	-	5.0	GHz	RMS sinewave
Input frequency	2, 3	1.0	-	5.5	GHz	RMS sinewave, $T_{\text{case}} = -55^{\circ}\text{C}$ & $+85^{\circ}\text{C}$
Input sensitivity	2, 3	-	-	180	mVrms	fin = 1 & 4.2GHz
Input sensitivity	2, 3	-	-	570	mVrms	fin = 5GHz
Input sensitivity	2, 3	-	-	570	mVrms	fin = 5.5GHz, $T_{\text{case}} = -55^{\circ}\text{C}$ & $+85^{\circ}\text{C}$
Input overload	2, 3	440	-	-	mVrms	fin = 1 & 3GHz
Input overload	2, 3	700	-	-	mVrms	fin = 3.8 & 5GHz
Input overload	2, 3	700	-	-	mVrms	fin = 5.5GHz, $T_{\text{case}} = -55^{\circ}\text{C}$ & $+85^{\circ}\text{C}$
Output voltage	6, 7	-	0.25	-	Vp/p	Into 100W pull up resistor
Output power	6, 7	-18.0	-9.0	-4.0	dBm	fin = 1, 3, 4.2, 5GHz (see note 1)

NOTE 1.

Measured into 50W measuring instrument in parallel with 100W pull up resistor. See Fig.5.

SP8916IG ELECTRICAL CHARACTERISTICS

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

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

Characteristic	Pin	Value			Units	Conditions
		Min.	Typ.	Max.		
Supply current	1, 8	-	68	95	mA	
Input frequency	2, 3	1.0	-	5.0	GHz	RMS sinewave
Input sensitivity	2, 3	-	-	180	mVrms	fin = 1 & 4.2GHz
Input sensitivity	2, 3	-	-	570	mVrms	fin = 5GHz
Input overload	2, 3	440	-	-	mVrms	fin = 1 & 3.0GHz

The thermal resistances of the DG package are given for guidance only, $q_{\text{JA}} = 150^{\circ}\text{C/W}$ and $q_{\text{JC}} = 30^{\circ}\text{C/W}$, to assist the decision on the heat sink requirements for the port

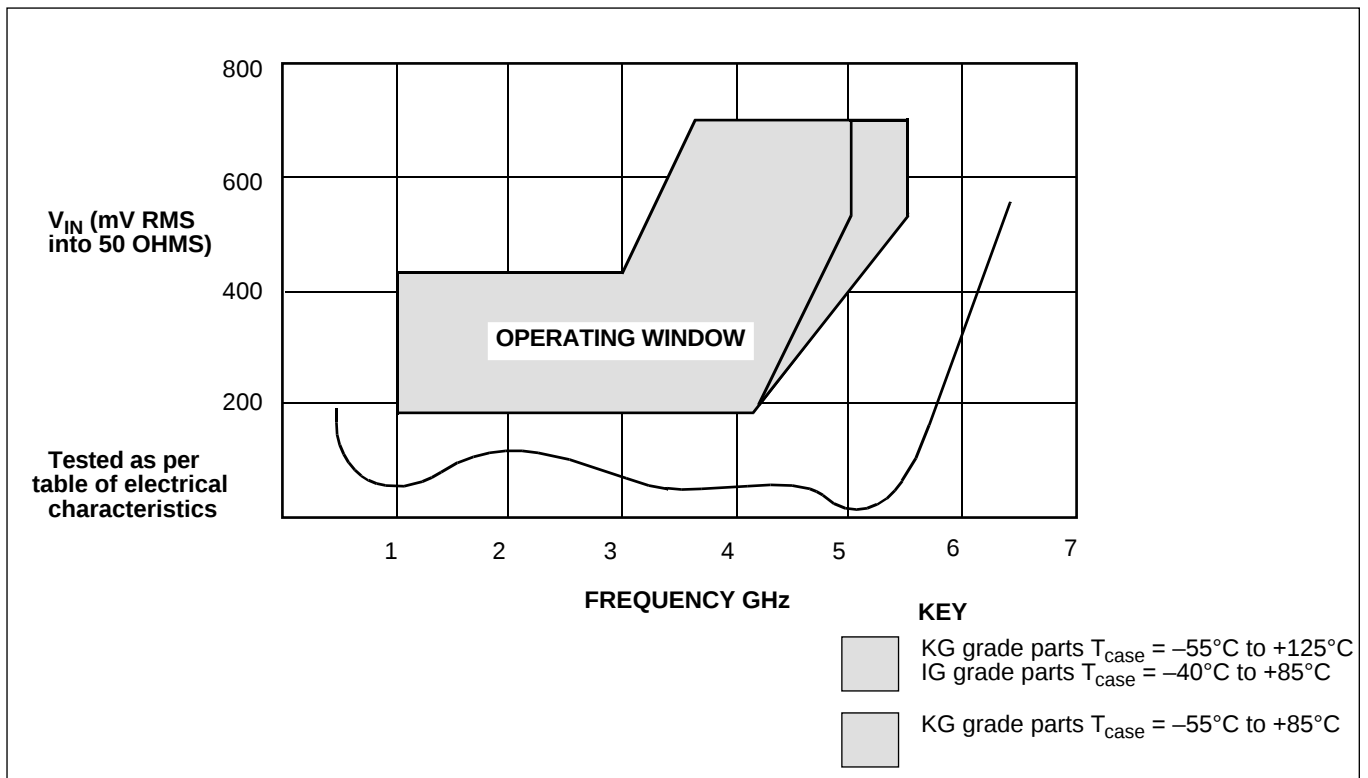


Fig.3 Typical input sensitivity (sine wave drive)

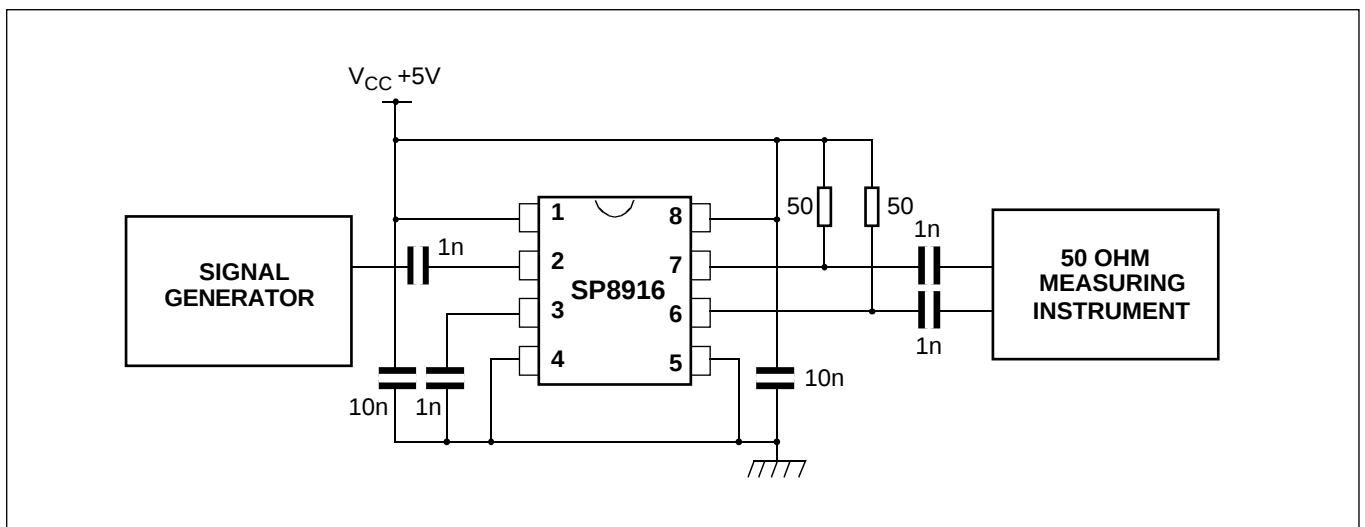


Fig.4 Typical application and test circuit

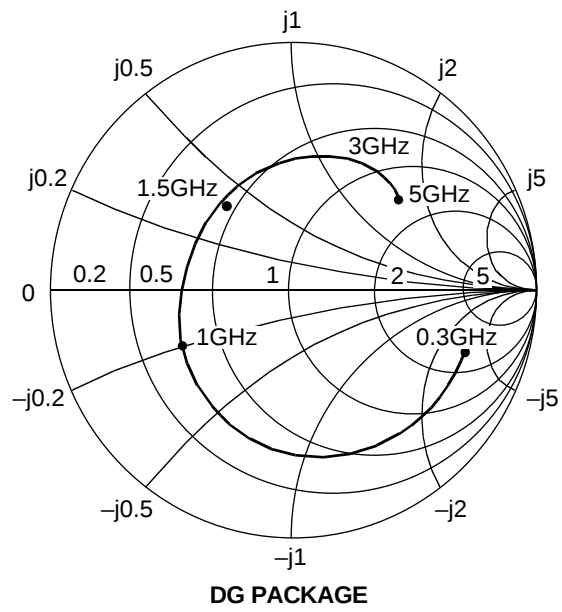
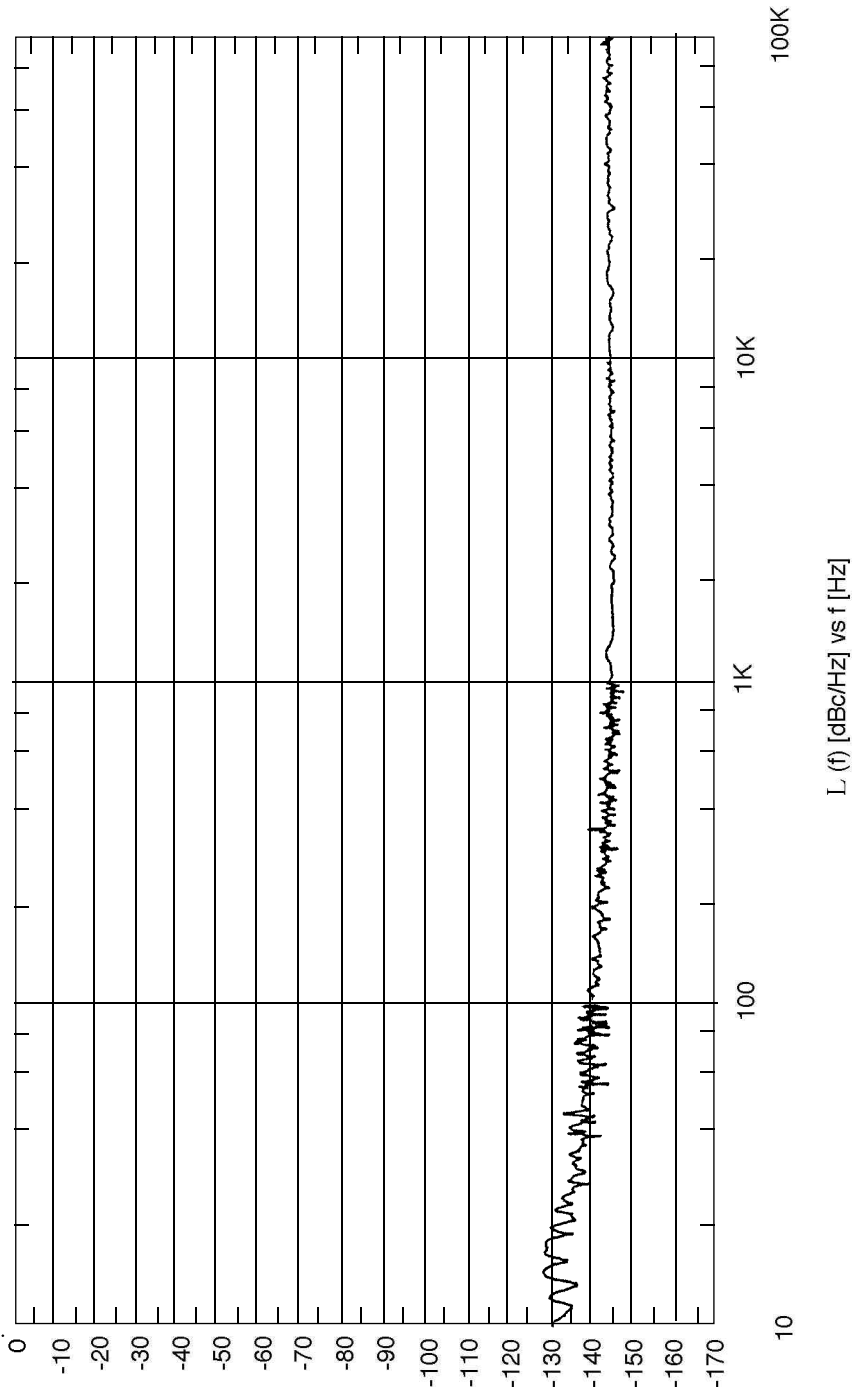


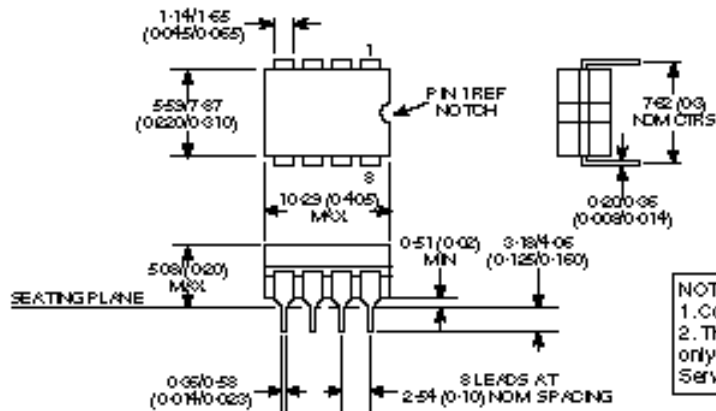
Fig.5 Typical input impedance



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PACKAGE DETAILS

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



NOTES
1. Controlling dimensions are inches.
2. This package outline diagram is for guidance only. Please contact your GFS Customer Service Centre for further information.

8 LEAD CERAMIC DIL DG8 COMPLIES WITH MIL STD 1835



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