GEC PLESSEY
SEMICONDUCTORS

SEPTEMBER 1995

PRELIMINARY INFORMATION

DS3175-3.1

SP8910

5.0/5.5GHz ÷ 10 FIXED MODULUS DIVIDER

(Supersedes September 1993 Edition)

The SP8910 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

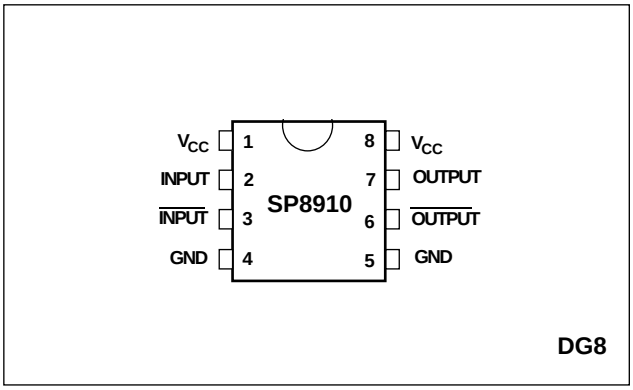


Fig.1 Pin connections - top view

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

SP8910/KG/DG1S
SP8910/IG/DG1S
SP8910/RG/1CAC (naked die)

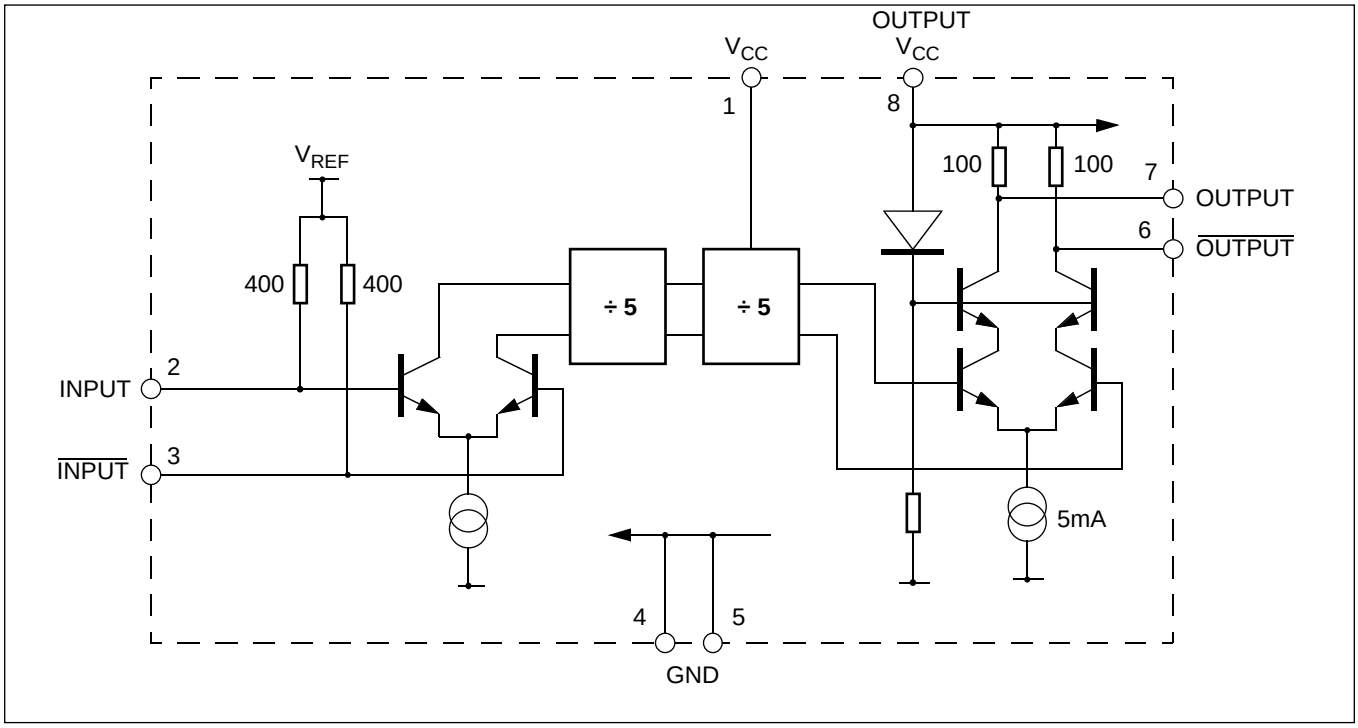


Fig.2 SP8910 block diagram

SP8910KG ELECTRICAL CHARACTERISTICS

Guaranteed over the full specified temperature and supply voltage range

Test conditions (unless otherwise stated):

Temperature T_{case} = –55°C and +125°C using the thermostream temperature control equipment.

Supply Voltage: V_{CC} = 4.75V 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_{case} = –55°C & +85°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_{case} = –55°C & +85°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_{case} = –55°C & +85°C
Output voltage	6, 7	-	0.25	-	Vp/p	Into 100Ω 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 50Ω measuring instrument in parallel with 100Ω pull up resistor. See Fig.5.

SP8910IG ELECTRICAL CHARACTERISTICS

Guaranteed across the temperature range of T_{case} = –40°C to +85°C, but tested at T_{amb} = +25°C

With Supply Voltage: V_{CC} = 4.75V 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 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, θ_{JA} = 150°C/W and θ_{JC} = 30°C/W, to assist the decision on the heat sink requirements for the port

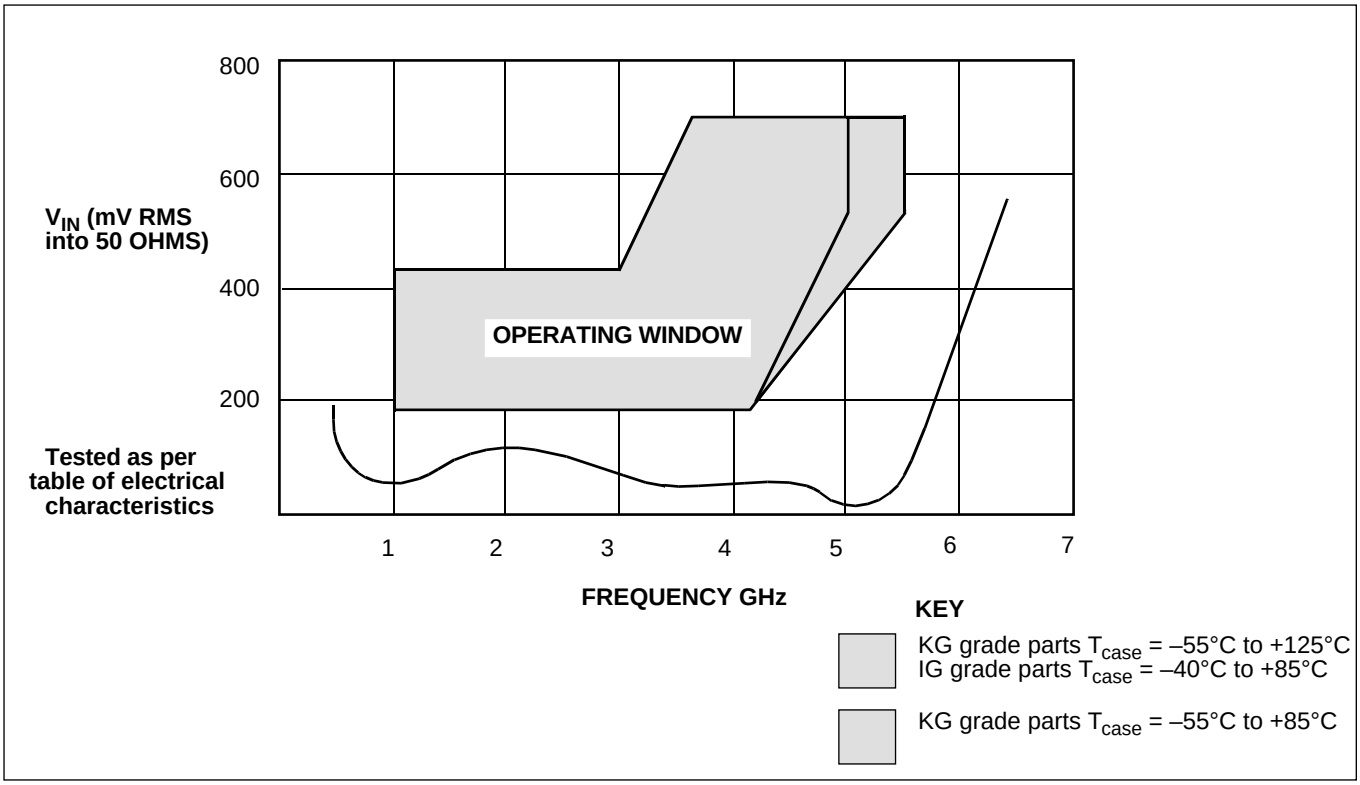


Fig.3 Typical input sensitivity (sine wave drive)

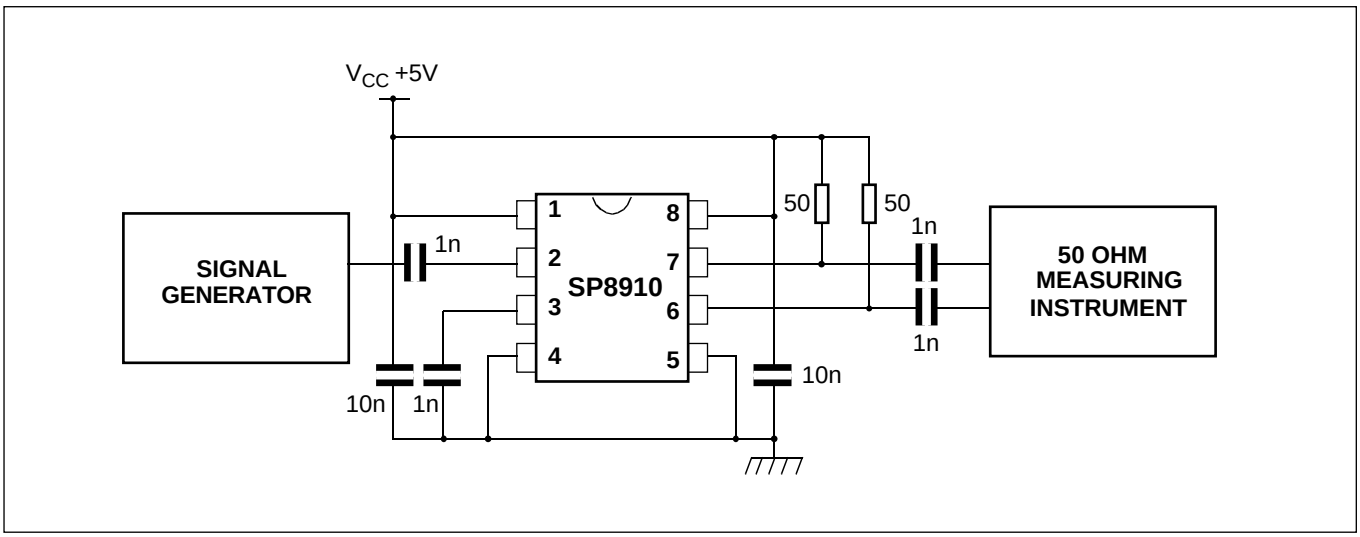


Fig.4 Typical application and test circuit

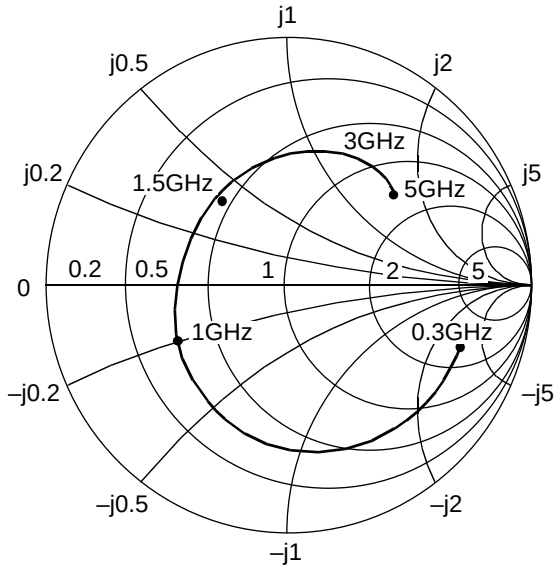
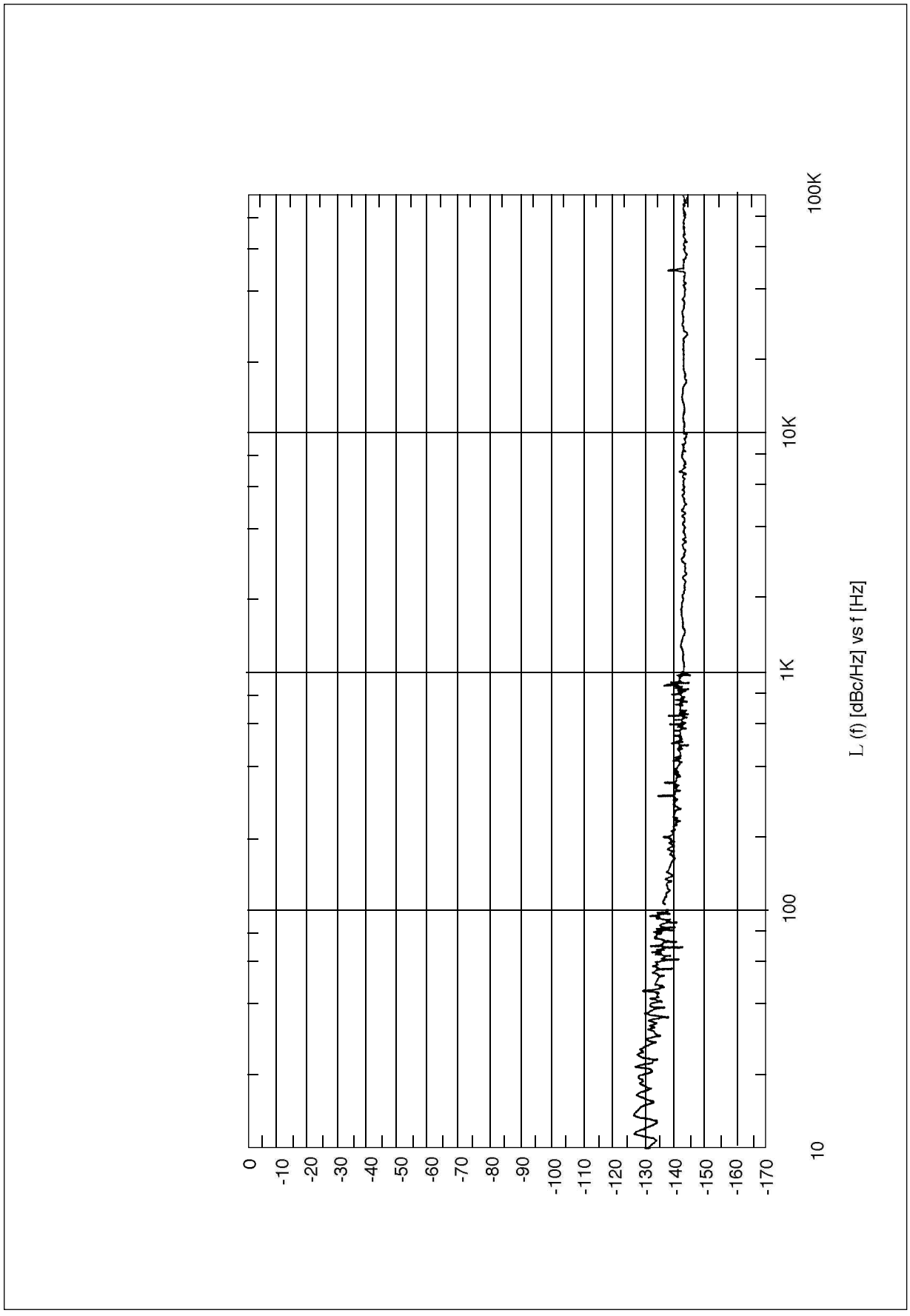


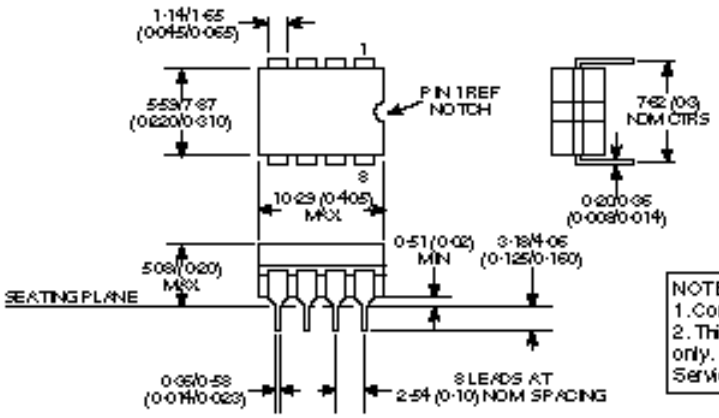
Fig.5 Typical input impedance


0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
-160
-170
10
100
1K
10K
100K
L (f) [dBc/Hz] vs f [Hz]

SP8910

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 GPS Customer Service Centre for further information.

8 LEAD CERAMIC DIL DG8 COMPLIES WITH MIL STD 1835

GEC PLESSEY
SEMICONDUCTORS

HEADQUARTERS OPERATIONS
GEC PLESSEY SEMICONDUCTORS
Cheney Manor, Swindon,
Wiltshire, United Kingdom. SN2 2QW
Tel: (01793) 518000
Fax: (01793) 518411

GEC PLESSEY SEMICONDUCTORS
P.O. Box 660017,
1500 Green Hills Road,
Scotts Valley, California 95067-0017,
United States of America.
Tel (408) 438 2900
Fax: (408) 438 5576

CUSTOMER SERVICE CENTRES
- **FRANCE & BENELUX** Les Ulis Cedex Tel: (1) 69 18 90 00 Fax: (1) 64 46 06 07
- **GERMANY** Munich Tel: (089) 3609 06-0 Fax: (089) 3609 06-55
- **ITALY** Milan Tel: (02) 66040867 Fax: (02)66040993
- **JAPAN** Tokyo Tel: (03) 5276-5501 Fax: (03) 5276-5510
- **NORTH AMERICA** Scotts Valley, USA Tel: (408) 438 2900 Fax: (408) 438 7023
- **SOUTH EAST ASIA** Singapore Tel: (65) 3827708 Fax: (65) 3828872
- **SWEDEN** Stockholm Tel: 46 8 702 97 70 Fax: 46 8 640 47 36
- **TAIWAN, ROC** Taipei Tel: 886 2 5461260 Fax: 886 2 7190260
- **UK, EIRE, DENMARK, FINLAND & NORWAY**
  Swindon Tel: (01793) 518527/518566 Fax: (01793) 518582

These are supported by Agents and Distributors in major countries worldwide.