

SP8685

500MHz ÷ 10/11

The SP8685 is an ECL variable modulus divider, with ECL10K compatible outputs. It divides by 10 when either of the ECL control inputs, PE1 or PE2, is in the high state and by 11 when both are low (or open circuit).

FEATURES

- Divides by 10 or 11
- AC-Coupled Input (Internal Bias)
- ECL Compatible Output

QUICK REFERENCE DATA

- Supply Voltage: -5.2V
- Power Consumption: 300mW
- Temperature Range:
 - 55°C to +125°C (A Grade)
 - 30°C to +70°C (B Grade)

ABSOLUTE MAXIMUM RATINGS

Supply voltage	-8V
Output current	20mA
Storage temperature range	-65°C to +150°C
Max. junction temperature	+175°C
Max. clock input voltage	2.5V p-p

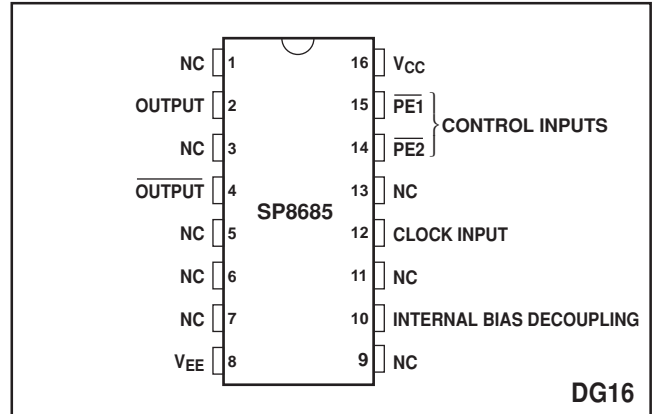


Fig. 1 Pin connections - top view

ORDERING INFORMATION

- SP8685 A DG
- SP8685 B DG
- SP8685 AC DG
- SP8685 NA 1C

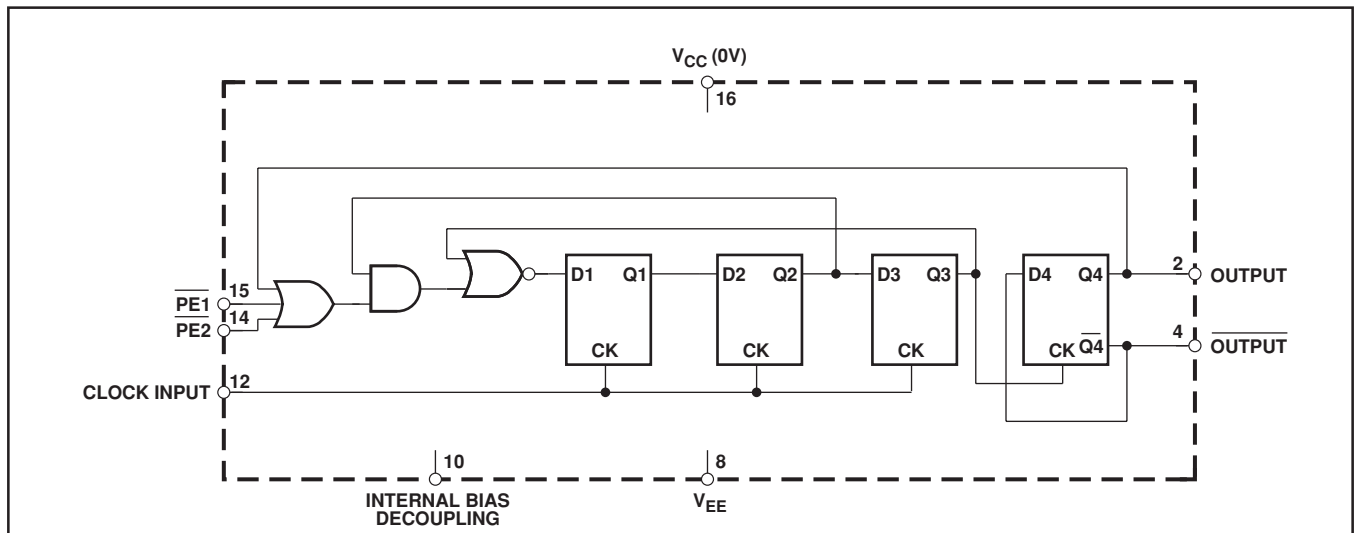


Fig. 2 Functional diagram

ELECTRICAL CHARACTERISTICS

Unless otherwise stated, the Electrical Characteristics are guaranteed over specified supply, frequency and temperature range

Supply voltage, $V_{CC} = 0V$, $V_{EE} = -5.2V \pm 0.25V$

Temperature, $T_{AMB} = -55^{\circ}C$ to $+125^{\circ}C$ (A Grade), $-30^{\circ}C$ to $+70^{\circ}C$ (B Grade)

Characteristic	Symbol	Value		Units	Conditions	Notes
		Min.	Max.			
Maximum frequency (sinewave input)	f_{MAX}	500		MHz	Input = 400-800mV p-p	
Minimum frequency (sinewave input)	f_{MIN}		50	MHz	Input = 400-800mV p-p	
Power supply current	I_{EE}		70	mA	$V_{EE} = -5.2V$	
Output high voltage	V_{OH}	-0.87	-0.7	V	$V_{EE} = -5.2V$ (25°C)	
Output low voltage	V_{OL}	-1.8	-1.5	V	$V_{EE} = -5.2V$ (25°C)	
PE input high voltage	V_{INH}	-0.93		V	$V_{EE} = -5.2V$ (25°C)	
PE input low voltage	V_{INL}		-1.62	V	$V_{EE} = -5.2V$ (25°C)	
Clock to output delay	t_p		6	ns		5
Set-up time	t_s	2		ns		5
Release time	t_r	2		ns		5

NOTES

1. The temperature coefficients of $V_{OH} = +1.63mV/^{\circ}C$, $V_{OL} = +0.94mV/^{\circ}C$ and of $V_{IN} = +1.22mV/^{\circ}C$.
2. The test configuration for dynamic testing is shown in Fig.6.
3. The set-up time t_s is defined as the minimum time that can elapse between L→H transition of control input and the next L→H clock pulse transition to ensure that the ÷10 mode is obtained.
4. The release time t_r is defined as the minimum time that can elapse between H→L transition of control input and the next L→H clock pulse transition to ensure that the ÷11 mode is obtained.
5. Guaranteed but not tested.

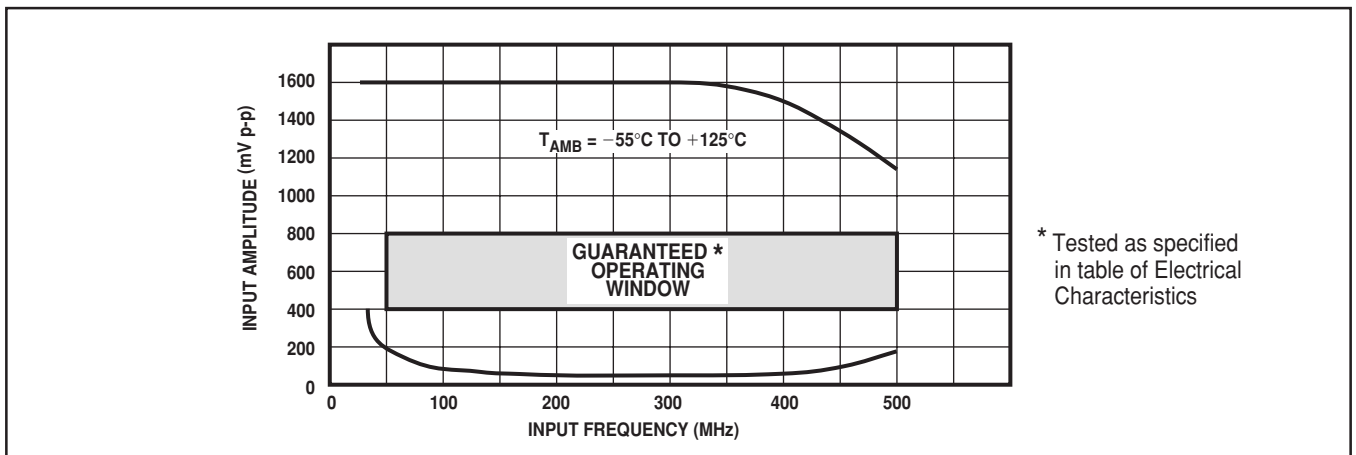


Fig. 3 Typical input characteristic of SP8685A

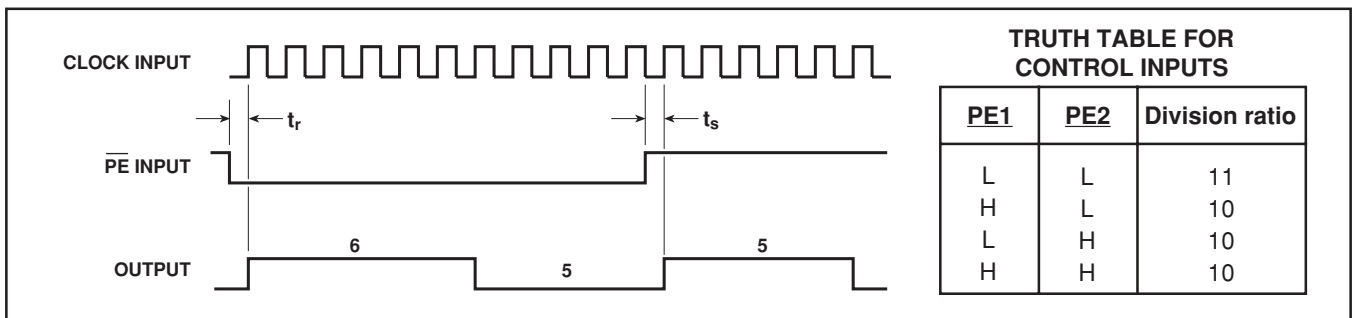


Fig. 4 Timing diagram

OPERATING NOTES

1. The clock input is biased internally and is coupled to the signal source with a suitable capacitor. The input signal path is completed by an input reference decoupling capacitor which is connected from pin 10 to ground.
2. If no signal is present the device will self-oscillate. If this is undesirable, it may be prevented by connecting a 15kΩ resistor from the clock input (pin 12) to V_{EE}. This will reduce the input sensitivity by approximately 100mV.

3. The circuit will operate down to DC but slew rate must be better than 100V/μs.
4. The outputs are compatible with ECLII but can be interfaced to ECL10K as shown in Fig. 7.
5. The PE inputs are ECLIII/10K compatible and include 4.3kΩ pulldown resistors. Unused inputs can therefore be left open.
6. Input impedance is a function of frequency, See Fig. 5.
7. All components should be suitable for the frequency in use.

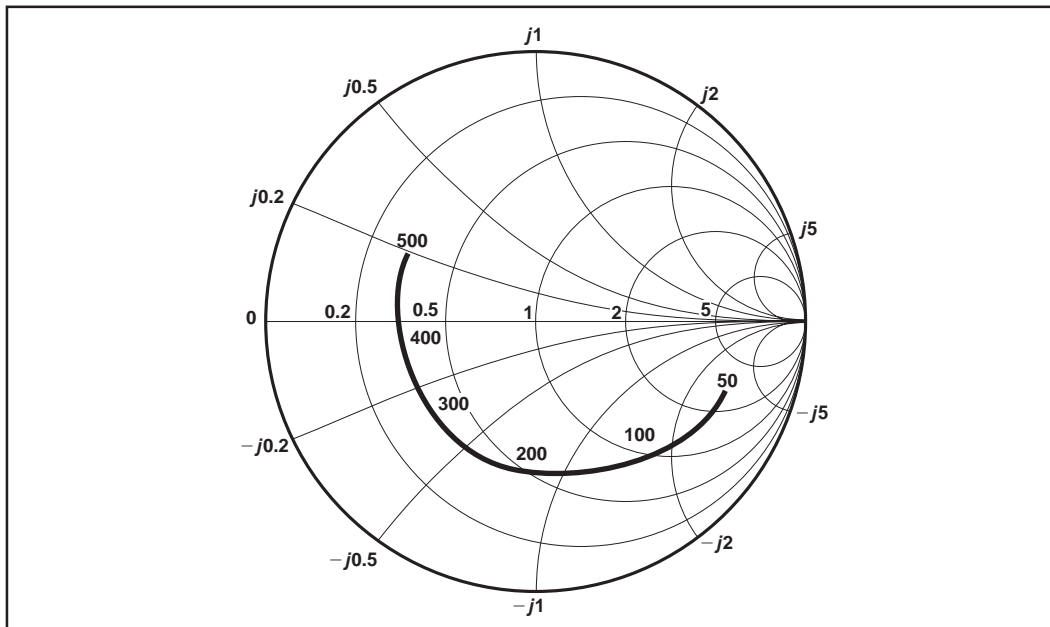


Fig. 5 Typical input impedance. Test conditions: Supply Voltage = -5.2V, Ambient Temperature = 25°C. Frequencies in MHz, impedances normalised to 50Ω.

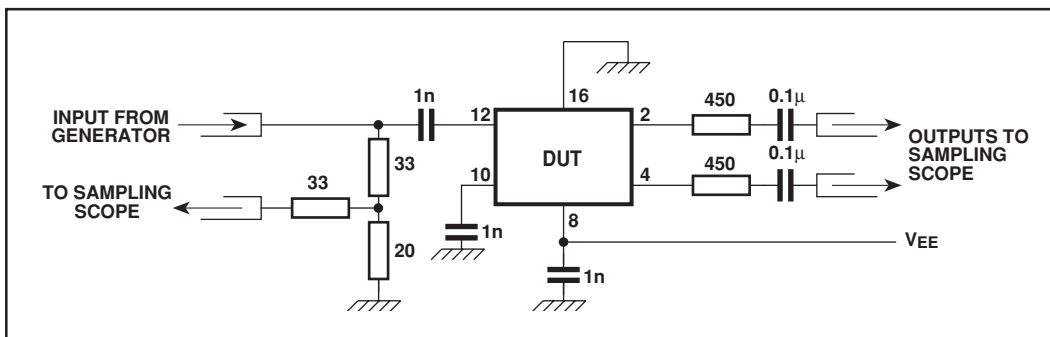


Fig. 6 Test circuit

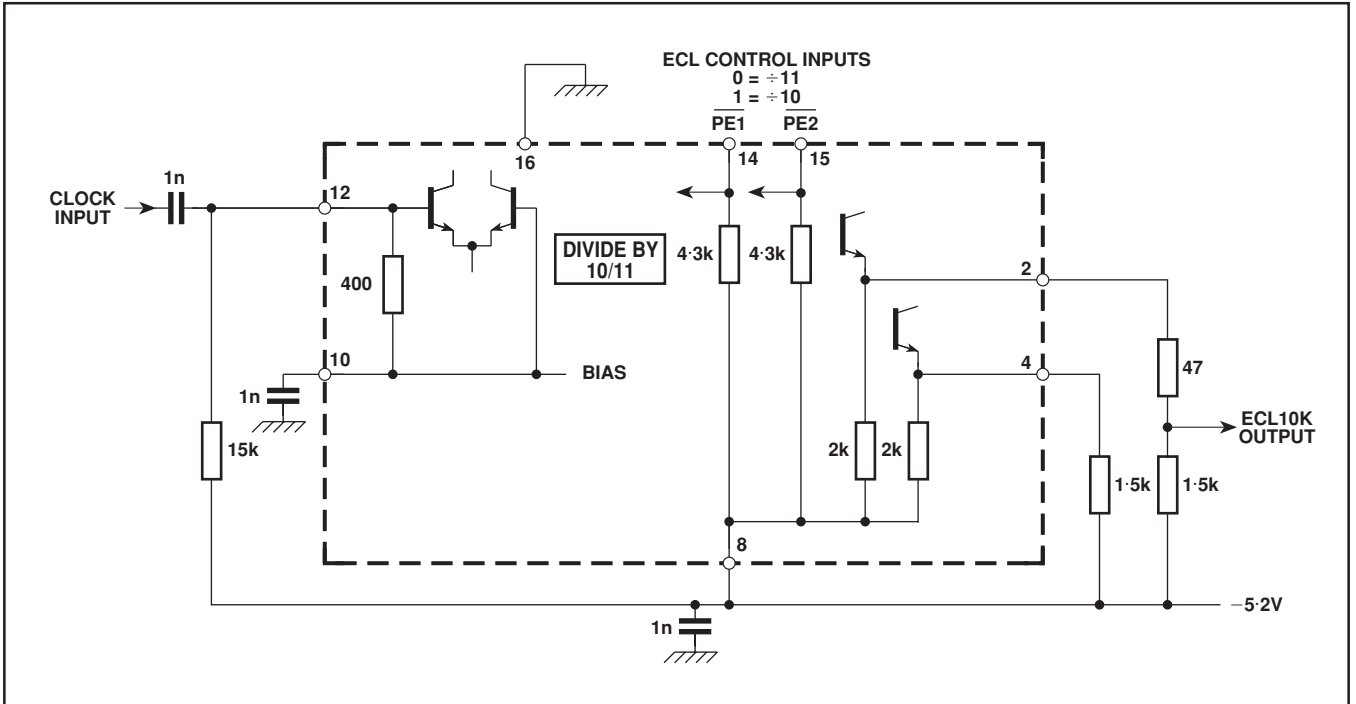
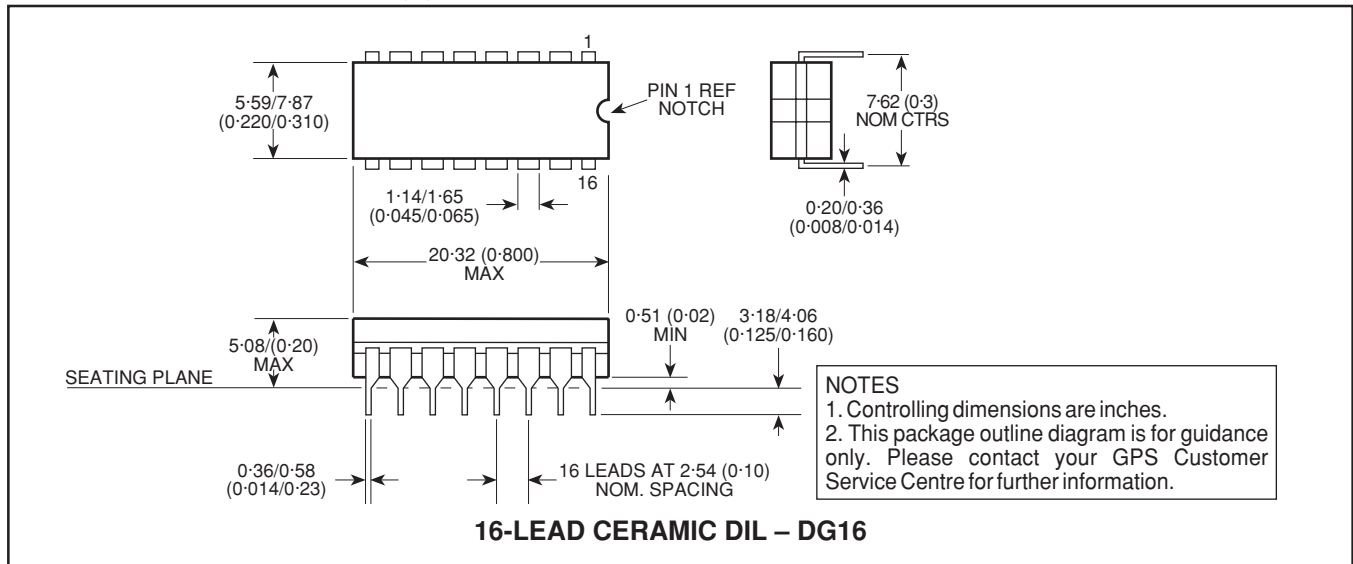


Fig. 7 Typical application showing interfacing

NOTES

PACKAGE DETAILS

Dimensions are shown thus: mm (in).

**HEADQUARTERS OPERATIONS****GEC PLESSEY SEMICONDUCTORS**

Cheney Manor, Swindon,
Wiltshire SN2 2QW, United Kingdom.
Tel: (0793) 518000
Fax: (0793) 518411

GEC PLESSEY SEMICONDUCTORS

P.O. Box 660017
1500 Green Hills Road,
Scotts Valley, CA95067-0017
United States of America.
Tel (408) 438 2900
Fax: (408) 438 5576

CUSTOMER SERVICE CENTRES

- **FRANCE & BENELUX** Les Ulis Cedex Tel: (1) 64 46 23 45 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: (3) 5276-5501 Fax: (3) 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
- **UK, EIRE, DENMARK, FINLAND & NORWAY**
Swindon Tel: (0793) 518510 Fax : (0793) 518582

These are supported by Agents and Distributors in major countries world-wide.

© GEC Plessey Semiconductors 1994 Publication No. DS3646 Issue No. 1.2 March 1994

This publication is issued to provide information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose nor form part of any order or contract nor to be regarded as a representation relating to the products or services concerned. No warranty or guarantee express or implied is made regarding the capability, performance or suitability of any product or service. The Company reserves the right to alter without prior knowledge the specification, design or price of any product or service. Information concerning possible methods of use is provided as a guide only and does not constitute any guarantee that such methods of use will be satisfactory in a specific piece of equipment. It is the user's responsibility to fully determine the performance and suitability of any equipment using such information and to ensure that any publication or data used is up to date and has not been superseded. These products are not suitable for use in any medical products whose failure to perform may result in significant injury or death to the user. All products and materials are sold and services provided subject to the Company's conditions of sale, which are available on request.



**For more information about all Zarlink products
visit our Web Site at
www.zarlink.com**

Information relating to products and services furnished herein by Zarlink Semiconductor Inc. trading as Zarlink Semiconductor or its subsidiaries (collectively "Zarlink") is believed to be reliable. However, Zarlink assumes no liability for errors that may appear in this publication, or for liability otherwise arising from the application or use of any such information, product or service or for any infringement of patents or other intellectual property rights owned by third parties which may result from such application or use. Neither the supply of such information or purchase of product or service conveys any license, either express or implied, under patents or other intellectual property rights owned by Zarlink or licensed from third parties by Zarlink, whatsoever. Purchasers of products are also hereby notified that the use of product in certain ways or in combination with Zarlink, or non-Zarlink furnished goods or services may infringe patents or other intellectual property rights owned by Zarlink.

This publication is issued to provide information only and (unless agreed by Zarlink in writing) may not be used, applied or reproduced for any purpose nor form part of any order or contract nor to be regarded as a representation relating to the products or services concerned. The products, their specifications, services and other information appearing in this publication are subject to change by Zarlink without notice. No warranty or guarantee express or implied is made regarding the capability, performance or suitability of any product or service. Information concerning possible methods of use is provided as a guide only and does not constitute any guarantee that such methods of use will be satisfactory in a specific piece of equipment. It is the user's responsibility to fully determine the performance and suitability of any equipment using such information and to ensure that any publication or data used is up to date and has not been superseded. Manufacturing does not necessarily include testing of all functions or parameters. These products are not suitable for use in any medical products whose failure to perform may result in significant injury or death to the user. All products and materials are sold and services provided subject to Zarlink's conditions of sale which are available on request.

Purchase of Zarlink's I²C components conveys a licence under the Philips I²C Patent rights to use these components in and I²C System, provided that the system conforms to the I²C Standard Specification as defined by Philips.

Zarlink and the Zarlink Semiconductor logo are trademarks of Zarlink Semiconductor Inc.

Copyright 2001, Zarlink Semiconductor Inc. All Rights Reserved.

TECHNICAL DOCUMENTATION - NOT FOR RESALE
