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SP8610 1000MHz÷4
SP8611 1300/1500MHz÷4

The SP8610 and SP8611 are asynchronous ECL divide by four circuits with ECL compatible outputs which can also be used to drive 100Ω lines. They feature input sensitivities of 600mV p-p (800mV p-p above 1300MHz).

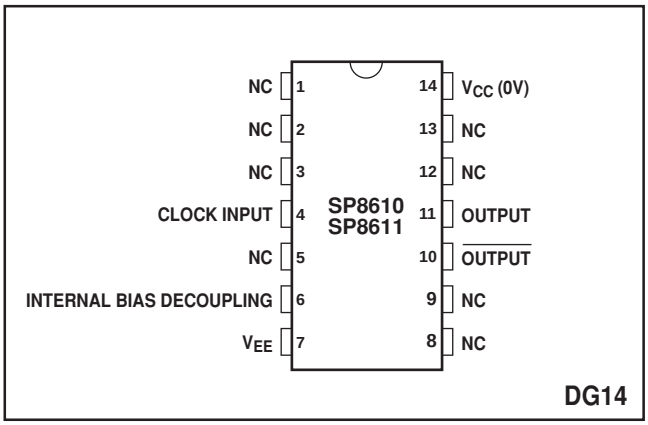


Fig. 1 Pin connections - top view

FEATURES

- ECL Compatible Outputs
- AC-Coupled Inputs (Internal Bias)

QUICK REFERENCE DATA

- Supply Voltage: −5·2V
- Power Consumption: 380mW
- Max. Input Frequency: 1500MHz (SP8611B)
- Temperature Range:

  A Grade: −55°C to +110°C
  (+125°C with suitable heat sink)
  B Grade: 0°C to +70°C

ABSOLUTE MAXIMUM RATINGS

Supply voltage, V_{EE}	−8V
Output current	15mA
Storage temperature range	−65°C to +150°C
Max. junction temperature	+175°C
Max. clock input voltage	2·5V p-p

ORDERING INFORMATION

SP8610 A DG
SP8610 B DG
SP8610 AA DG
SP8610 NA 1C
SP8611 A DG
SP8611 B DG
SP8611 AA DG
SP8611 NA 1C

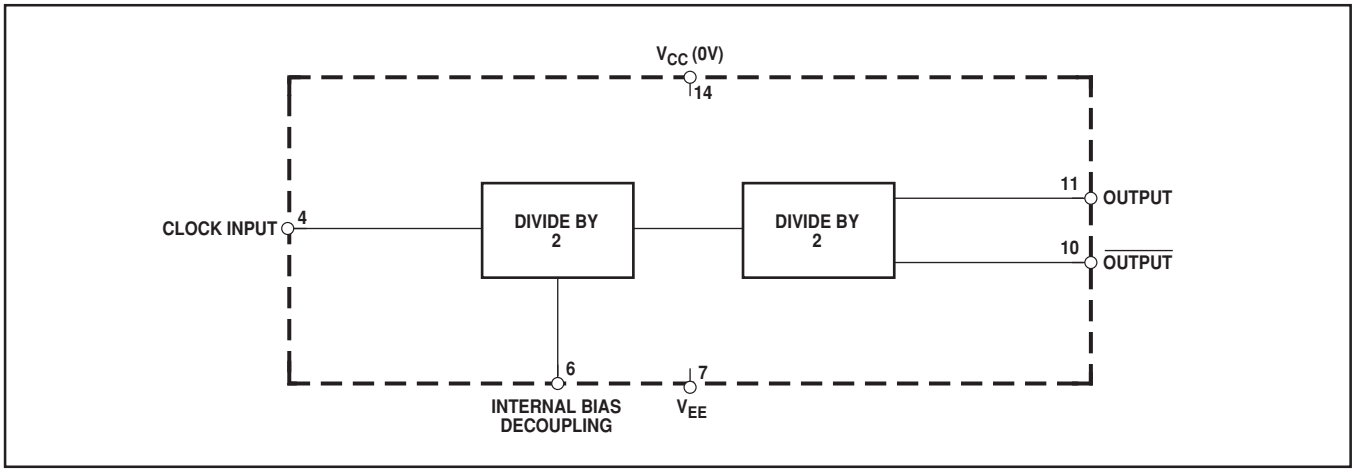


Fig. 2 Functional diagram

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 ± 0·25V

Temperature, T_{AMB} = −55°C to +125°C (A Grade) (Note 1), 0°C to +70°C (B Grade)

Characteristic	Symbol	Value		Units	Type	Conditions	Notes
		Min.	Max.				
Maximum frequency (sinewave input)	f_{MAX}	1·0		GHz	SP8605A,B	Input = 400-1200mV p-p	6
		1·3		GHz	SP8606A	Input = 800-1200mV p-p	6
		1·5		GHz	SP8606B	Input = 400-1200mV p-p	6
Minimum frequency (sinewave input)	f_{MIN}		150	MHz	All	Input = 600-1200mV p-p	4
Current consumption	I_{EE}		100	mA	All	V_{EE} = −5·45V, outputs unloaded	5
Output low voltage	V_{OL}	−1·92	−1·62	V	All	V_{EE} = −5·2V, R_L = 430Ω (25°C)	
Output high voltage	V_{OH}	−0·93	−0·75	V	All	V_{EE} = −5·2V, R_L = 430Ω (25°C)	
Minimum output swing	V_{OUT}	500		mV	All	V_{EE} = −5·2V, R_L = 430Ω	5

NOTES
1. The A Grade devices must be used with a heat sink to maintain chip temperature below +150°C when operating in a T_{AMB} of +125°C.
2. The temperature coefficients of V_{OH} = +1·2mV/°C, and V_{OL} = +0·24mV/°C but these are not tested.
3. The test configuration for dynamic testing is shown in Fig.5.
4. Tested at 25°C and +125°C only (+70°C for B grade).
5. Tested at 25°C only
6. Tested at +125°C only (+70°C for B grade).

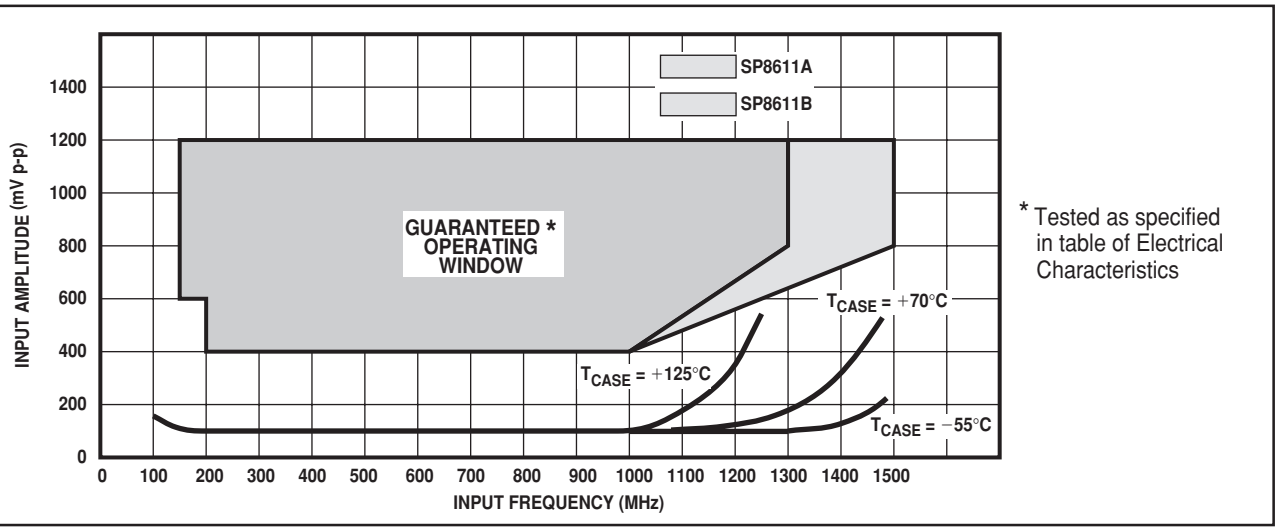


Fig. 3 Typical input characteristic of SP8611

THERMAL CHARACTERISTICS

θ_{JC} approximately 30°C/W

θ_{JA} approximately 110°C/W

OPERATING NOTES

1. The clock input (pin 4) should be capacitively coupled to the signal source. The input signal path is completed by connecting a capacitor from the internal bias decoupling, pin 6, to ground.
2. In the absence of a signal the device will self-oscillate. If this is undesirable, it may be prevented by connecting a 10kΩ resistor from the unused input to V_{EE} i.e. from pin 4 to pin 7. This will reduce the input sensitivity by approximately 100mV.
3. The circuit will operate at very low input frequencies but slew rate must be better than 200V/µs.
4. The input impedance of the SP8610/11 is a function of frequency, see Fig. 4.
5. The emitter follower outputs require external load resistors. These should not be less than 330Ω and a value of 430Ω is recommended. Interfacing to ECLIII/10K is shown in Fig. 7.
6. These devices may be used with split suopply lines and ground referenced input; a suitable configuration is shown in Fig. 6.
7. All components should be suitable for the frequency in use.

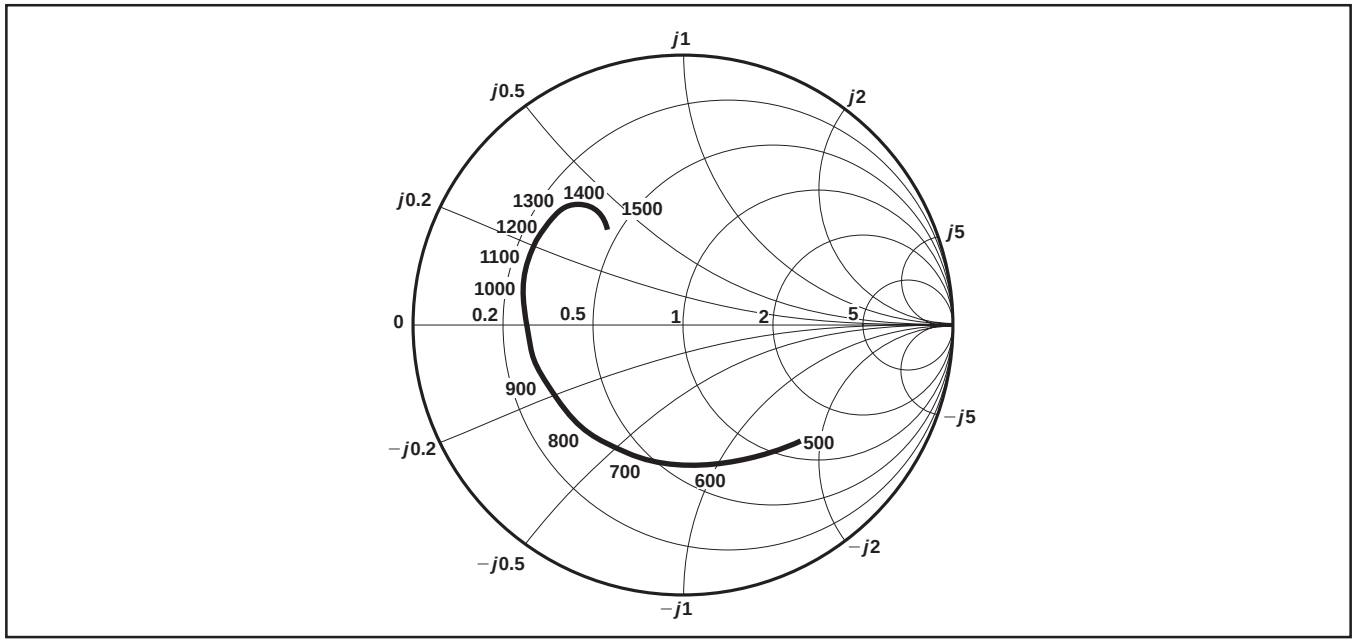


Fig. 4 Typical input impedance. Test conditions: supply voltage = −5·2V, ambient temperature = 25°C, frequencies in MHz, Impedances normalised to 50Ω

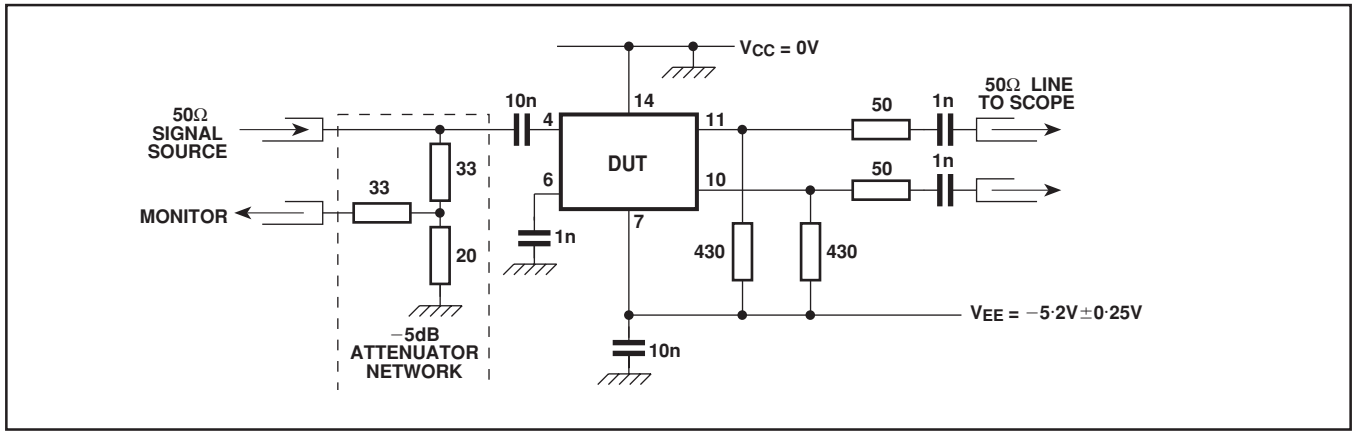


Fig. 5 Toggle frequency test circuit

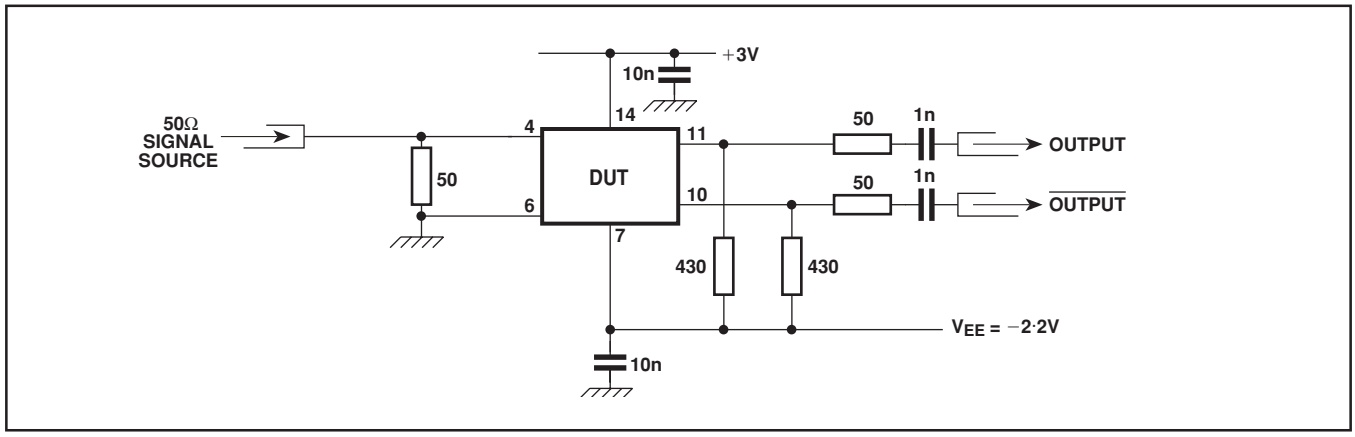


Fig. 6 Circuit for using the input signal about ground potential

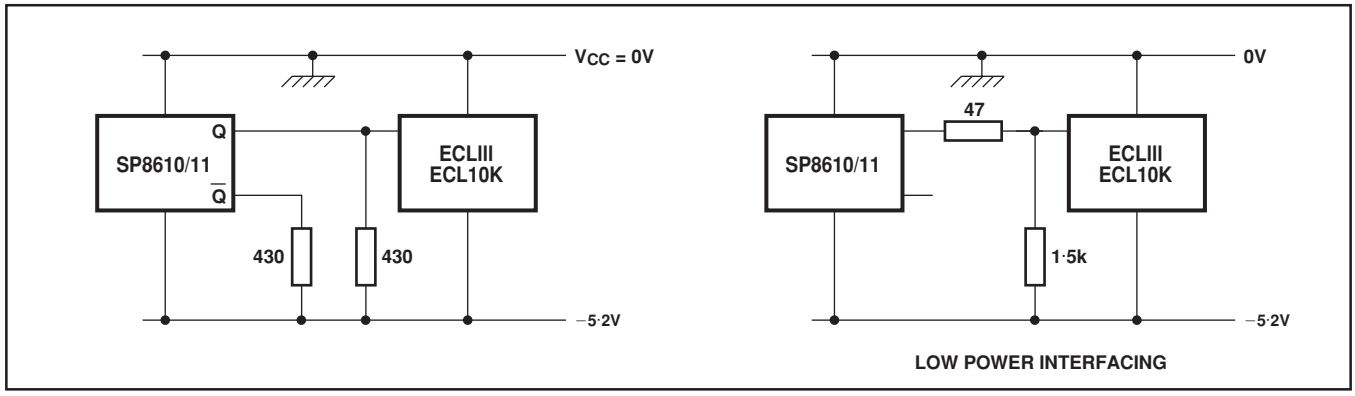


Fig. 7 Interfacing SP8610/11 to ECL10K and ECLIII

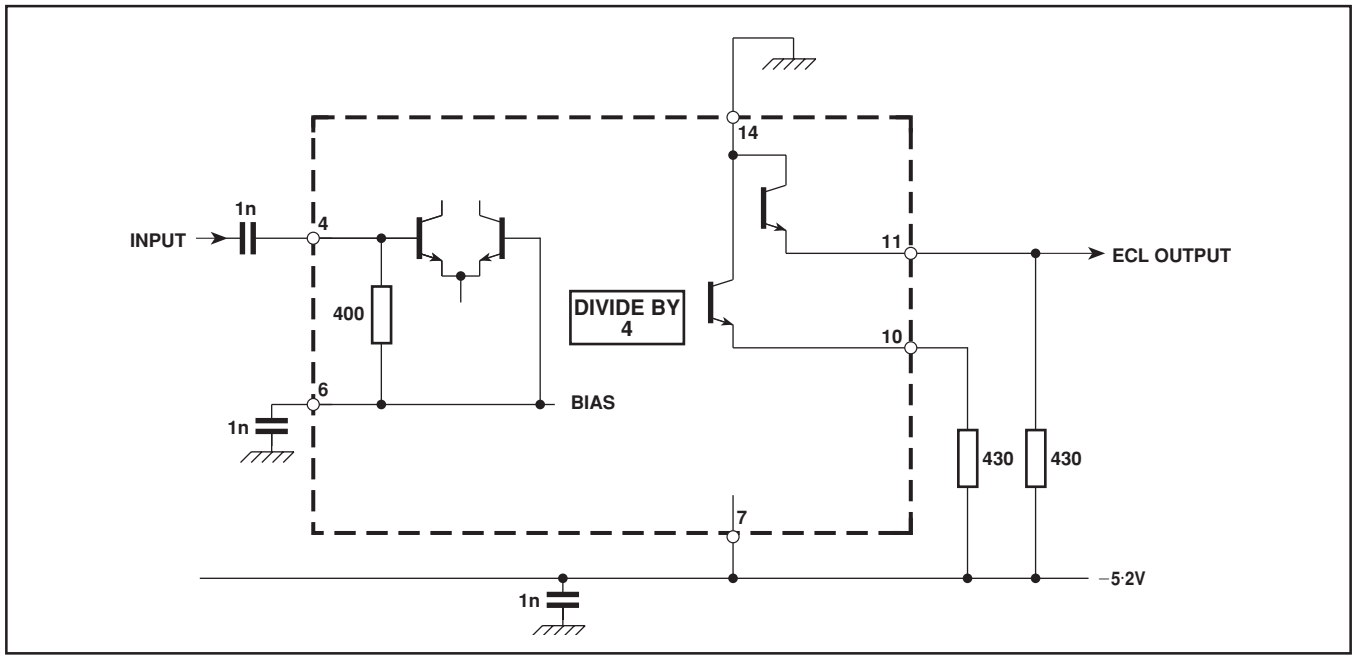
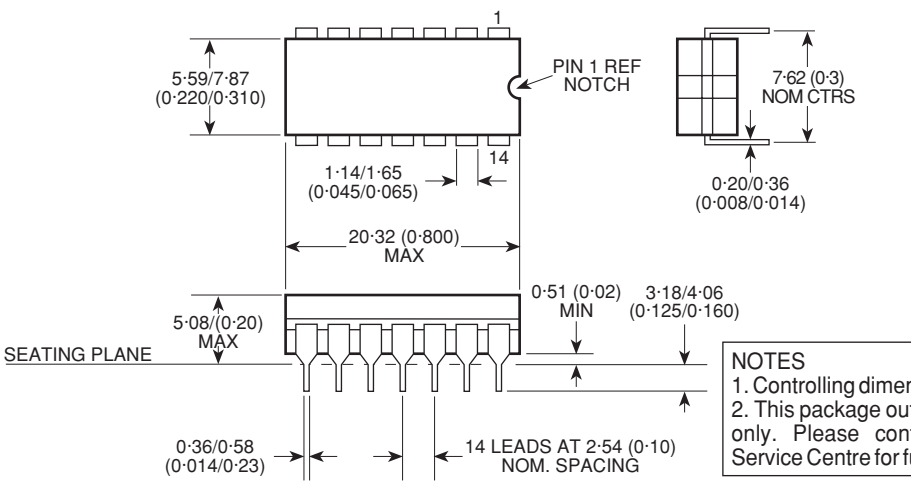


Fig. 8 Typical application showing interfacing

NOTES

PACKAGE DETAILS

Dimensions are shown thus: mm (in).



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.

14-LEAD CERAMIC DIL – DG14

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