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SP8605 1000MHz ÷ 2

SP8606 1300MHz ÷ 2

The SP8605 and SP8606 are emitter coupled logic dividers with ECL compatible outputs when used with external pulldown resistors. Specified from 0°C to +70°C, these devices feature AC coupled inputs and 600mV p-p clock input sensitivity.

FEATURES

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

QUICK REFERENCE DATA

- Supply Voltage: -5.2V
- Power Consumption: 320mW
- Temperature Range: 0°C to +70°C

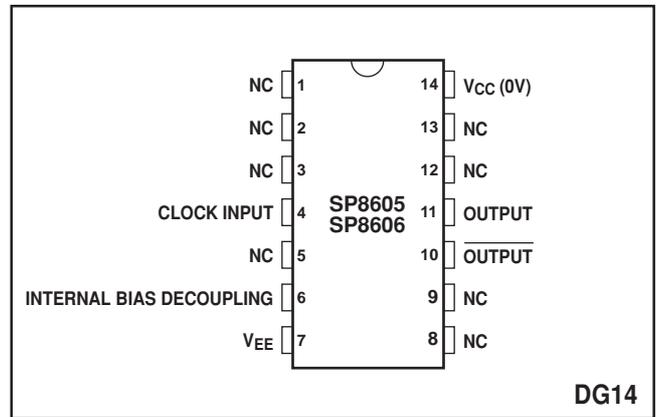


Fig. 1 Pin connections - top view

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

- SP8605 B DG
- SP8605 NA 1C
- SP8606 B DG

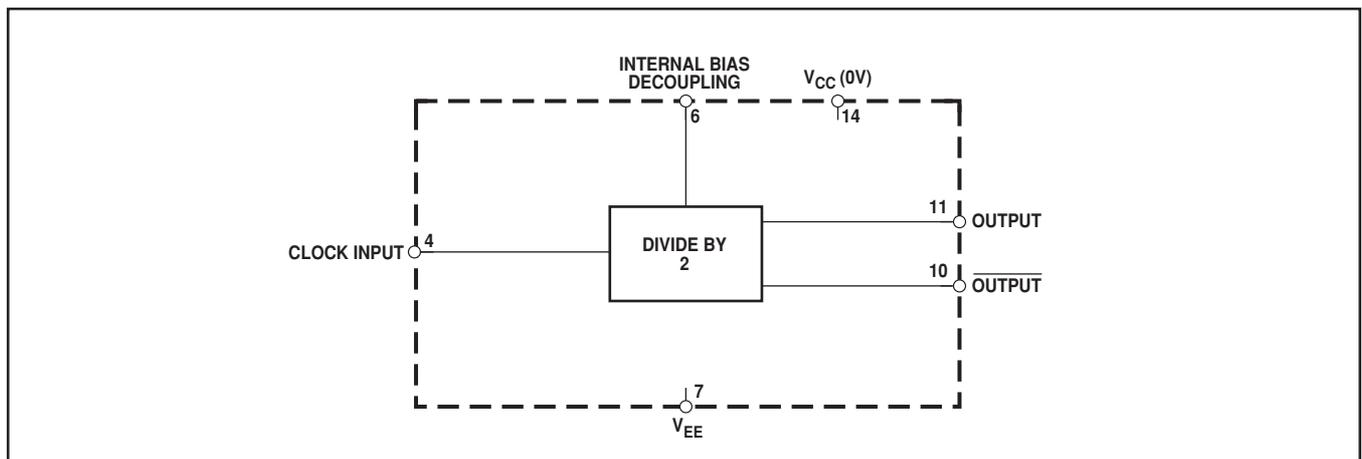


Fig. 2 Functional diagram

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, $T_{AMB} = 0^{\circ}C$ to $+70^{\circ}C$

Characteristic	Symbol	Value		Units	Type	Conditions	Notes
		Min.	Max.				
Maximum frequency (sinewave input)	f_{MAX}	1.0		GHz	SP8605B	Input = 400-1200mV p-p	5
		1.3		GHz	SP8606B	Input = 400-1200mV p-p	5
Minimum frequency (sinewave input)	f_{MIN}		150	MHz	All	Input = 600-1200mV p-p	3
Current consumption	I_{EE}		100	mA	All	$V_{EE} = -5.45V$, outputs unloaded	4
Output low voltage	V_{OL}	-1.92	-1.62	V	All	$V_{EE} = -5.2V$, $R_L = 430$ (25°C)	
Output high voltage	V_{OH}	-0.93	-0.75	V	All	$V_{EE} = -5.2V$, $R_L = 430$ (25°C)	
Minimum output swing	V_{OUT}	500		mV	All	$V_{EE} = -5.2V$, $R_L = 430$	4

NOTES

1. The temperature coefficients of $V_{OH} = +1.2mV/^{\circ}C$, and $V_{OL} = +0.24mV/^{\circ}C$ but these are not tested.
2. The test configuration for dynamic testing is shown in Fig.5.
3. Tested at 25°C and +70°C only.
4. Tested at 25°C only
5. Tested at +70°C only.

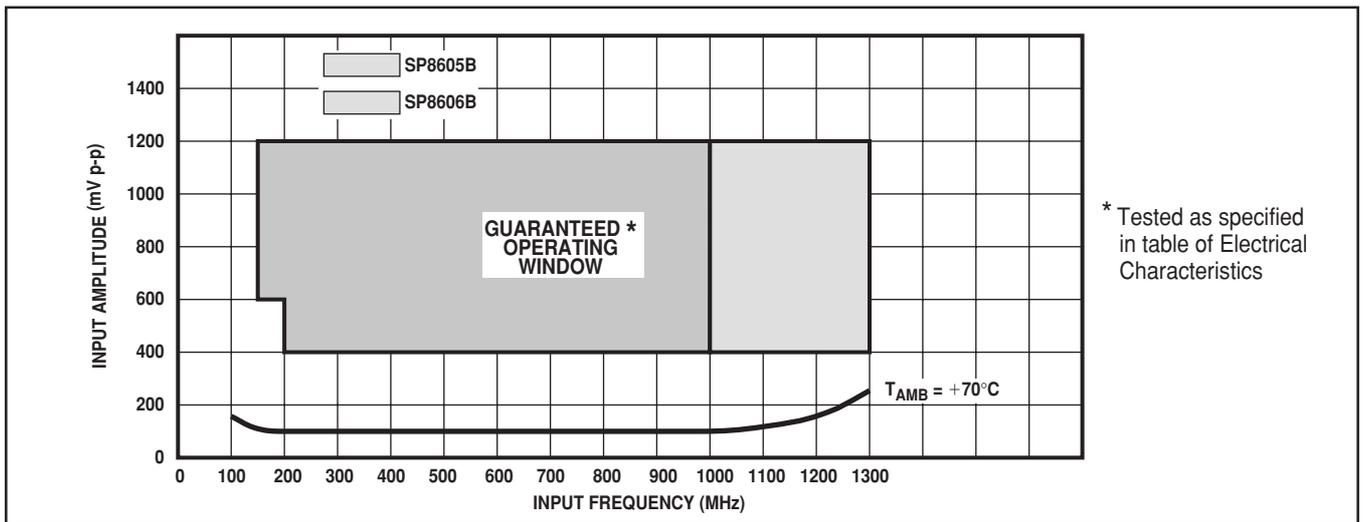


Fig. 3 Typical input characteristics of SP8605B and SP8606B

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 10k 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/ μ s.

4. The input impedance of the SP8605/6 is a function of frequency, see Fig. 4.
5. The emitter follower outputs require external load resistors. These should not be less than 330 and a value of 430 is recommended. Interfacing to ECLIII/10K is shown in Fig. 7.
6. These devices may be used with split supply lines and ground referenced input; a suitable configuration is shown in Fig. 6.
7. All components should be suitable for the frequency in use.

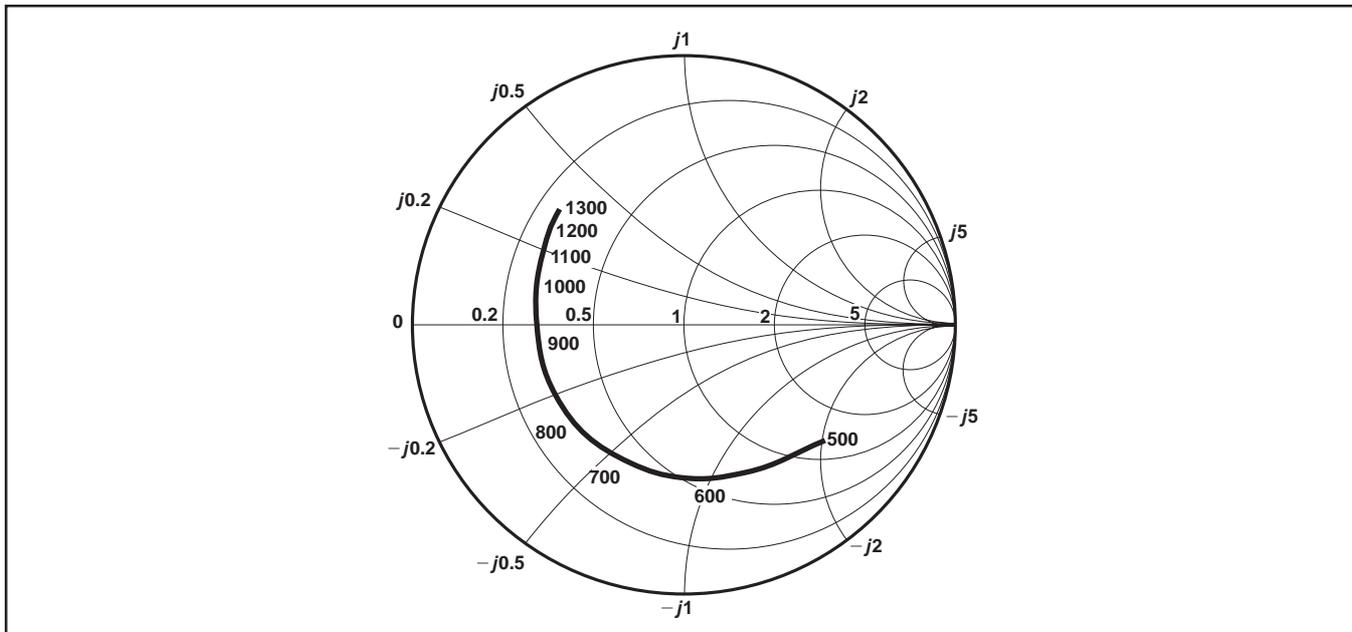


Fig. 4 Typical input impedance. Test conditions: supply voltage = $-5.2V$, ambient temperature = $25^{\circ}C$, frequencies in MHz, Impedances normalised to 50

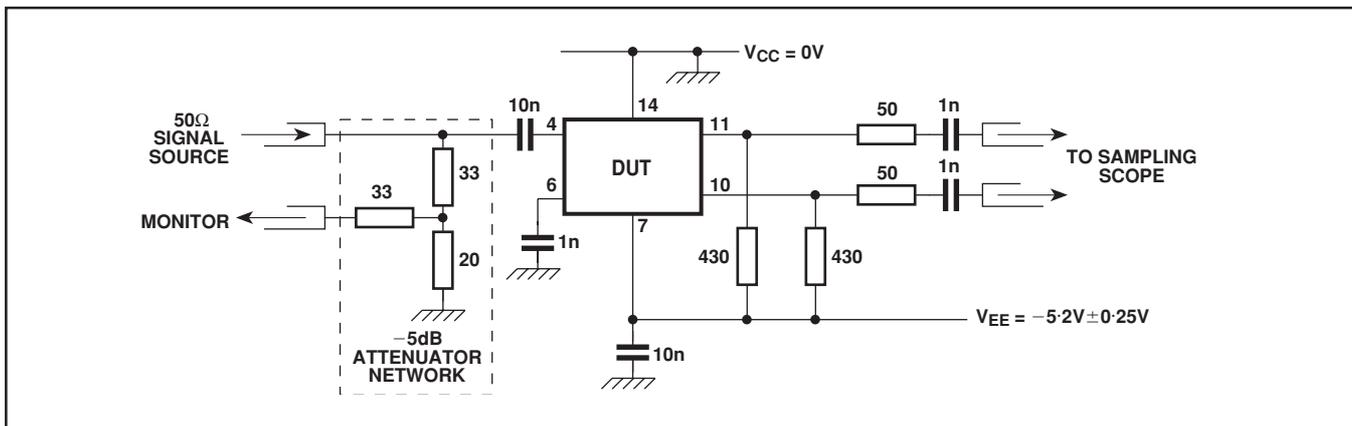


Fig. 5 Toggle frequency test circuit

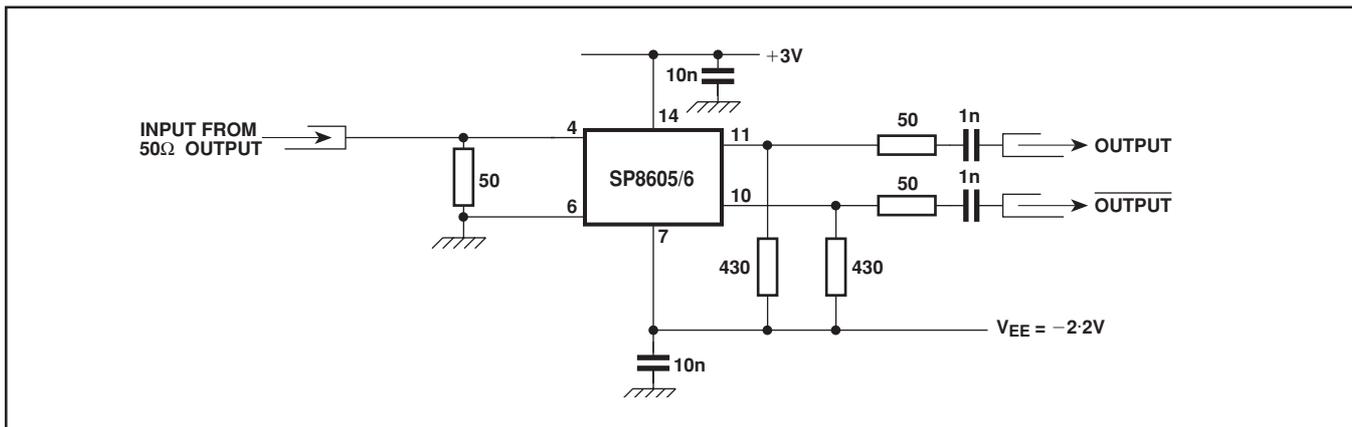


Fig. 6 Circuit for using the input signal about ground potential

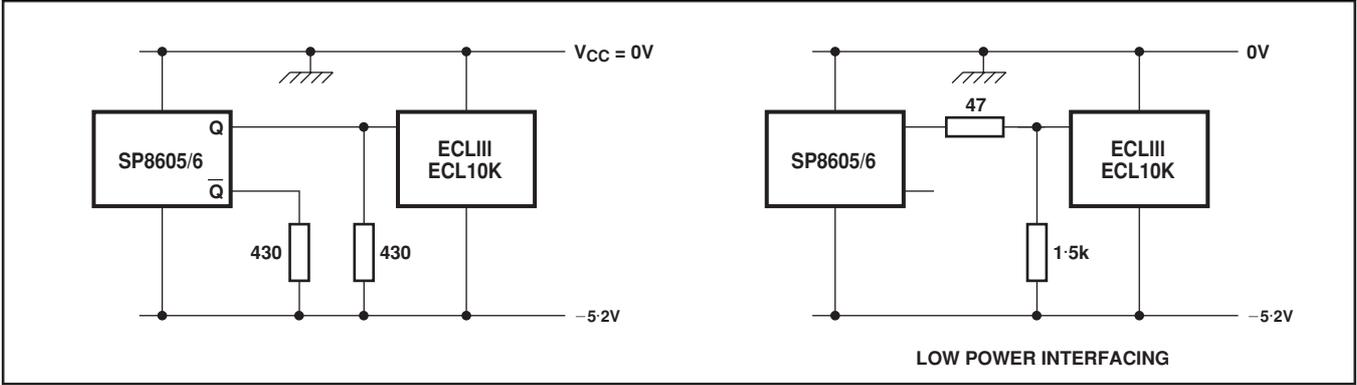


Fig. 7 Interfacing SP8605/6 to ECL10K and ECL111

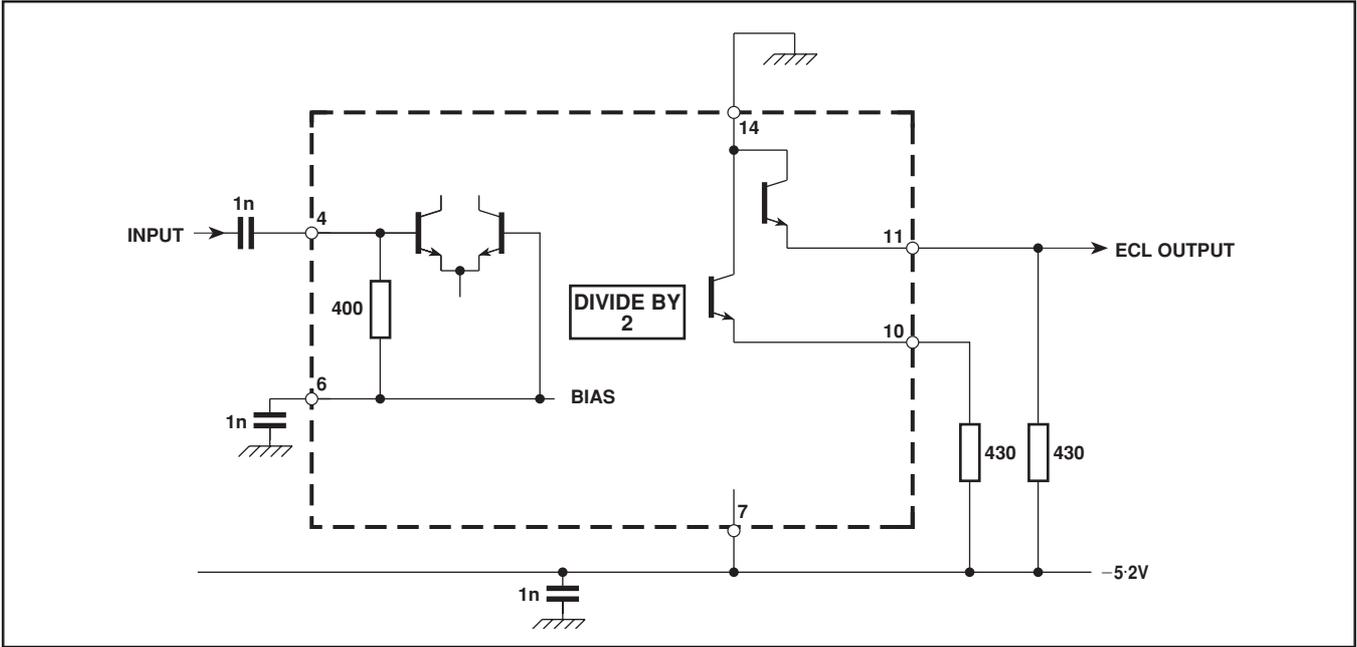
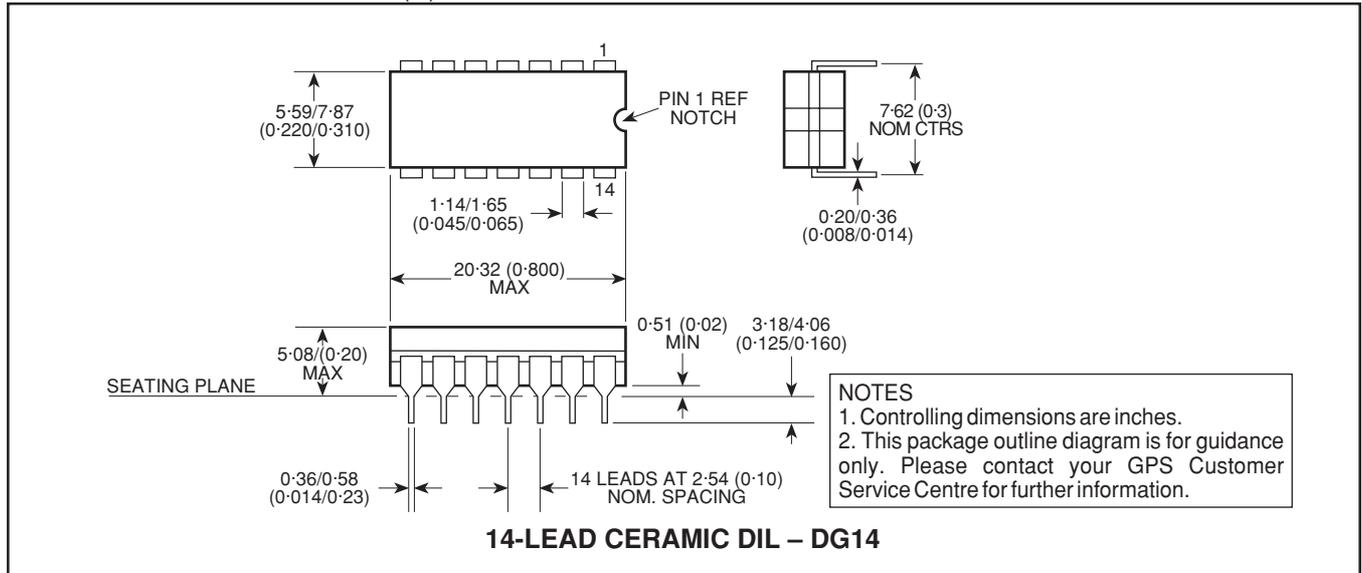


Fig. 8 Typical application showing interfacing

NOTES

PACKAGE DETAILS

Dimensions are shown thus: mm (in).



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