

SL565C

1GHz WIDEBAND AMPLIFIER

The SL565 is a low cost wide bandwidth amplifier featuring differential inputs and outputs and useful performance to 1GHz. Typical applications are in wideband amplifiers, instrumentation, ECM and communications.

FEATURES

- Low Cost
- Wide Bandwidth: 1GHz
- High Gain: 22dB
- Differential Input and Output
- +5V Supply
- High Reverse Isolation

ABSOLUTE MAXIMUM RATINGS

Supply voltage, V_{cc} +8V
 Storage temperature -55°C to +125°C
 Operating temperature -30°C to +85°C
 Chip temperature +150°C

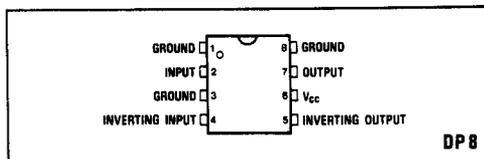


Fig.1 Pin connections - top view

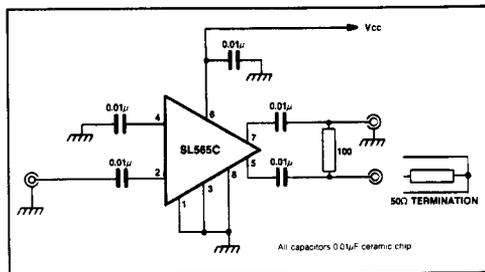


Fig.2 Test circuit

ELECTRICAL CHARACTERISTICS

Test conditions (unless otherwise stated)

$V_{cc} = 5.0V$ $T_{amb} = +25^{\circ}C$. Test circuit Fig.2 except for differential gain measurements.

Characteristic	Value			Units	Conditions
	Min.	Typ.	Max.		
Supply voltage	4.75	5.0	5.5	V	
Supply current		50	70	mA	
Differential gain S_{21}		16		dB	10-900MHz
		21		dB	1GHz
		16		dB	1.3GHz
Single ended gain	8	10	12		100MHz
	13	15	17		500MHz
	8	10	12		1GHz
1dB gain compression		-19		dBm	Input power at 500MHz
Noise figure		13		dB	50Ω source
3rd order input intercept point		-3.5		dBm	50MHz
		-7		dBm	200MHz
		-9.5		dBm	500MHz
2nd order input intercept point		-3.0		dBm	500 and 400MHz inputs
Reverse isolation pins 7 to 4		70		dB	$f = 50MHz$
		60		dB	$f = 50-100MHz$
		20		dB	$f = 500MHz$
		20		dB	$f = 1GHz$
Reverse isolation pins 5 to 4		75		dB	$f = 100MHz$
		30		dB	$f = 1GHz$
Maximum output		600		mV p-p	$f < 500MHz$
		300		mV p-p	$f = 500MHz$ to 1GHz
Maximum output power for 1dB compression		-3		dBm	1GHz
		-2		dBm	500MHz

SL565

OPERATING NOTES

The SL565 is a general purpose wideband gain block, suitable for many applications. The frequency response and input impedance plots are shown in Figs. 3 and 4 respectively.

Like all wideband high frequency circuits, the SL565 should be used with short leads to its associated components, and a ground plane printed circuit board layout is recommended. There are advantages in using the top surface of the PCB as the ground plane with cage jacks e.g. Cambion 450-3750-01-06-00 or similar sockets for each device pin, as then chip capacitors can be installed with minimum lead lengths on top of the board. Resistors should be miniature carbon composition types (metal oxide and

carbon film types often have an appreciable parasitic inductance).

The high reverse isolation makes the SL565 ideal for driving High Speed Divider integrated circuits in both frequency counters and synthesisers, and Fig. 5 shows a typical application in a 100MHz to 1000MHz $\div 10$ prescaler for a frequency counter. This prescaler operates with inputs as low as 70mV rms over the whole frequency range of the device.

Other applications for the SL565 include oscillators using SAW devices as frequency determining elements, where the wide bandwidth of the SL565 enables high frequency oscillators to be produced at minimum cost.

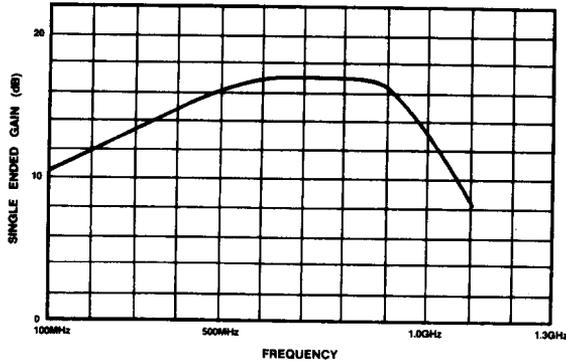


Fig.3 Typical frequency response, SL565C

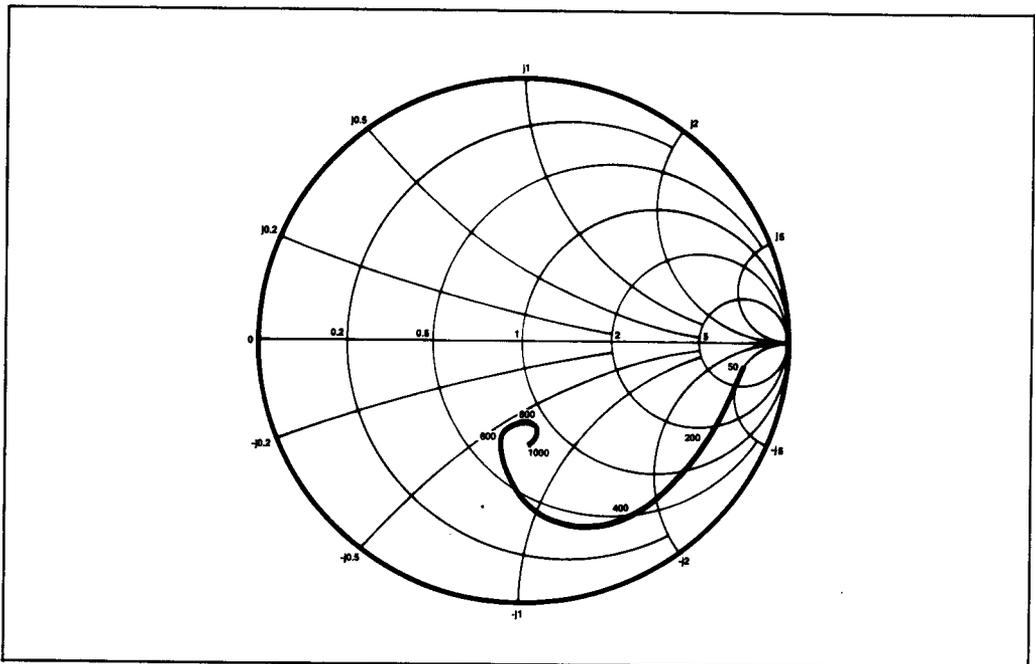


Fig.4 Single-ended input impedance of SL565C, normalised to 50Ω. $V_{cc} = 5V$, $T_{amb} = 25^\circ C$, load = 50Ω, frequencies in MHz.

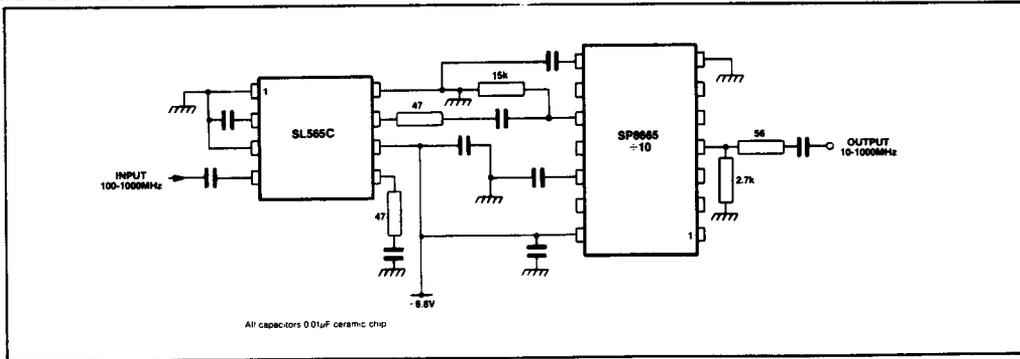


Fig.5 1GHz prescaler

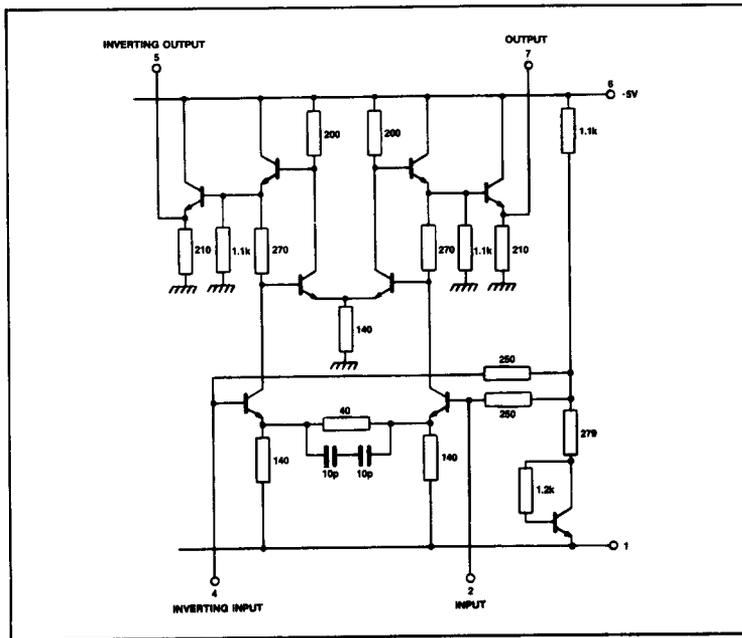


Fig.6 SL565C circuit diagram