

ELECTRICAL CHARACTERISTICS

These characteristics are guaranteed over the following conditions (unless otherwise stated)

- Test circuit Fig (4)
- Frequency 60MHz
- Supply voltage 9 volts
- Ambient temperature 22±2°C

Characteristic	Value			Units	Conditions
	Min.	Typ.	Max.		
Small signal voltage gain	8	10	12	dB	Vin = -30dBm
High level slope gain	-1	0	+1	dB	
Upper cut off frequency	250	500		MHz	
Lower cut off frequency		3	10	MHz	-3dB w.r.t. ± 60MHz
Supply current		17	25	mA	
Phase change with input amplitude		1.1	3	degrees	-Vin = 30dBm to +10dBm
Input impedance	2. pF parallel with 1kΩ				f = 10 - 200MHz
Output impedance	15Ω series with 25nH				

OPERATING NOTES

1. Supply Voltage Options

An on chip resistor is provided which can be used to drop the supply voltage instead of the external 180 ohms shown in the test circuit. The extra dissipation in this resistor reduces the maximum ambient operating temperature to 100°C. It is also possible to use a 6 volt supply connected directly to pins 1 and 2. Problems with feedback on the supply line etc may occur in this connection and RF chokes may be required in the supply line between stages.

2. Layout Precautions

The internal decoupling capacitors help prevent high frequency instability however normal high frequency layout precautions are still necessary. Coupling capacitors should be physically small and be connected with short leads. It is most important that the ground connections are made with short leads to a continuous ground plane.

3. Low Frequency Response

The LF response is determined by the on chip capacitors. It can be extended by extra external decoupling on pins 5 and 1.

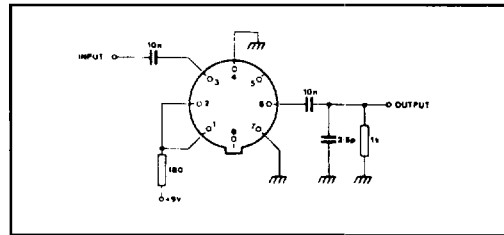


Fig.4 Test circuit

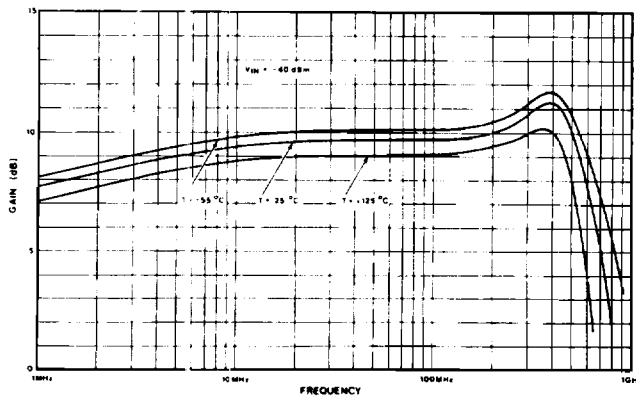


Fig 5 Small signal frequency response

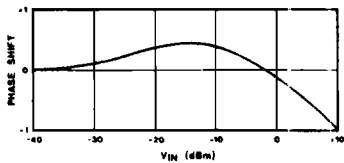


Fig.6 Phase v. input

TYPICAL APPLICATION—6 STAGE LOG STRIP

- Input log range 0dBm to—70dBm
- Low level gain 60dB (—70dBm in)
- Output dynamic range 20dB
- Phase shift (over log range) $\pm 3^\circ$
- Frequency range 10—200MHz

The circuit shown in Fig 9 is designed to illustrate the use of the SL531 in a complete strip. The supply voltage is fed to each stage via an external 180Ω resistor to allow operation to 125°C ambient. If the ambient can be limited to +100°C then the internal resistor can be used to reduce the external component count. Interstage coupling is very simple with just a capacitor to isolate bias levels being necessary. No connection is necessary to pin 5 unless operation below 10MHz is required. It is important to provide extra decoupling on pin 1 of the first stage to prevent positive feedback occurring down the supply line. An SL560 is used as a unity gain buffer the output of the log strip being attenuated before the SL560 to give a nominal 0dBm output into 50Ω.

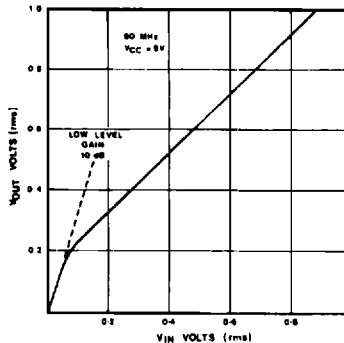


Fig.7 Transfer characteristics linear plot

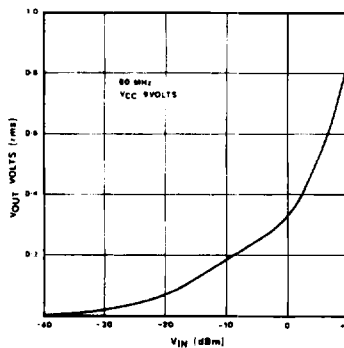


Fig.8 Transfer characteristics logarithmic input scale

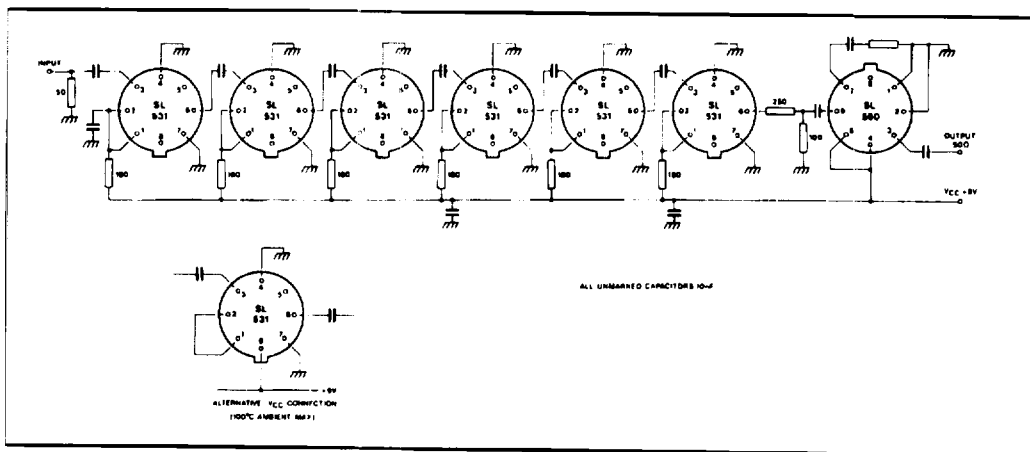


Fig.9 Circuit diagram 6 stage strip