SL610, SL611 & SL612

RF/IF AMPLIFIER

The SL610C, SL611C and SL612C are RF voltage amplifier with AGC facilities. The voltage gain is 10, 20 and 50 times respectively and the upper frequency response varies from 15MHz to 120MHz according to type .

FEATURES

- Wide AGC Range: 50dB
- Easy Interfacing
- Integral Power Supply RF Decoupling

APPLICATIONS

- RF Amplifiers
- IF Amplifiers

QUICK REFERENCE DATA

- Supply Voltage: 6V
- Voltage Gain: 20dB to 34dB

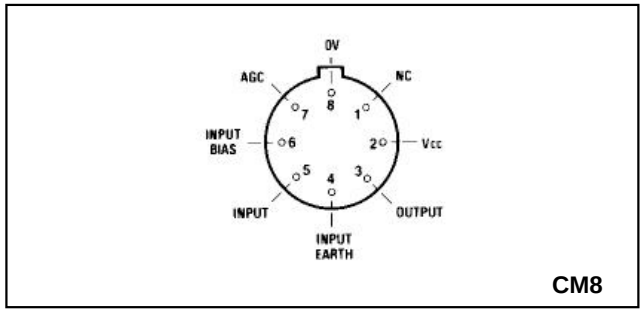

Fig.1 Pin connections (top view)

ABSOLUTE MAXIMUM RATINGS

Supply voltage:	12V
Storage temperature:	-65°C to +150°C
Operating temperature range	-30°C to +85°C
Chip-to-ambient	225°C/W
Chip-to-case	65°C/W

ORDERING INFORMATION

SL610/1/2 C CM
SL610 NA 1C
SL612 NA 1C

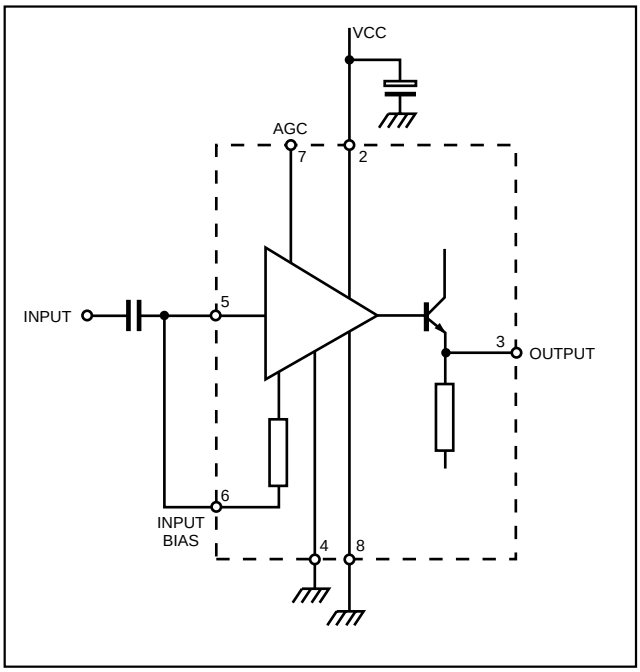

Fig.2 Block diagram

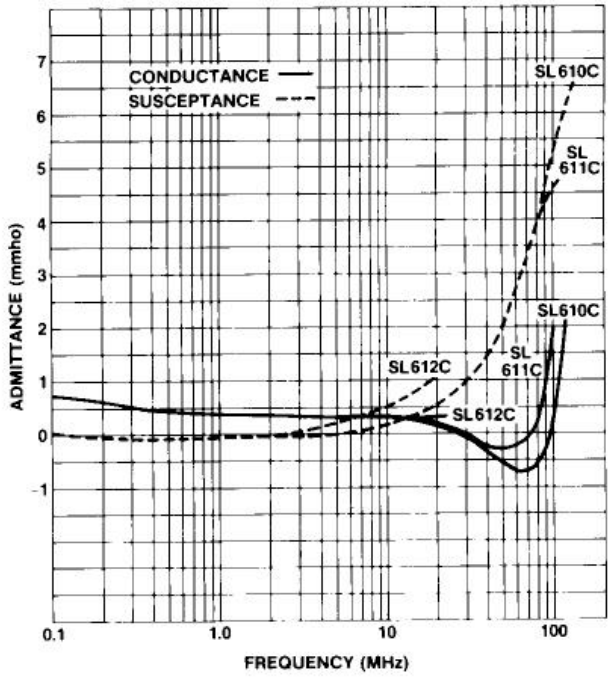

Fig.3 Input admittance with o/c output (G_{11})

SL610/611 & 612

ELECTRICAL CHARACTERISTICS

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

Supply voltage VCC: 6V
Ambient temperature: 22°C ± 2°C
Test frequency: SL610C 30MHz
SL611C 30MHz
SL612C 1.75MHz

Characteristics	Circuit	Value			Units	Conditions
		Min.	Typ.	Max.		
Supply current	SL610C		15	20	mA	
	SL611C		15	20	mA	No signal, Pin 3 open circuit
	SL612C		3.3	5	mA	
Voltage gain	SL610C	18	20	22	dB	R_S = 50Ω
	SL611C	24	26	28	dB	R_L = 22°C
	SL612C	32	34	36	dB	T_{amb} = 22°C
Cut-off frequency (-3dB)	SL610C	85	120		MHz	
	SL611C	50	80		MHz	
	SL612C	10	15		MHz	
Max. output signal (max. AGC)			1.0		V rms	RL = 150Ω (SL610C/611C) RL = 1.2kΩ (SL612C)
Max.input signal (max. AGC)			250		mV rms	
AGC range	SL610C	40	50		dB	
	SL611C	40	50		dB	Pin 7 0V to 5.1V
	SL612C	60	70		dB	
AGC current			0.15	0.6	mA	Current into pin 7 at 5.1V

APPLICATION NOTES

Input circuit

The SL610C, SL611C and SL612C are normally used with pins 5 and 6 connected together and with the input connected via a capacitor as shown in Fig.2.

The input impedance is negative between 30MHz and 100MHz (SL610C, SL611C only) and is shown in Fig.3. The source and inductive is should be shunted by a 1kΩ resistor to prevent oscillation.

An alternative circuit with improved noise figure is shown in Fig.4.

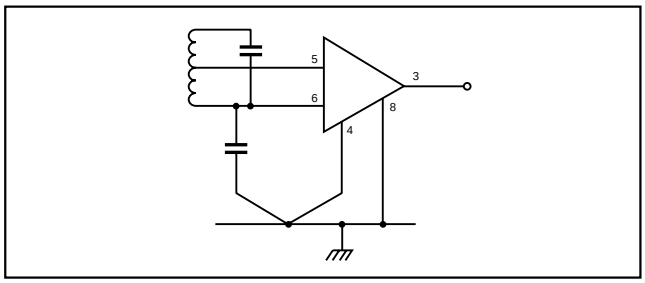

Fig.4 Alternative input circuit

Output circuit

The output stage is an emitter follower and has a negative output impedance at certain frequencies as shown in Fig.5.

To prevent oscillation when the load is capacitive a 47Ω resistor should be conncted in series with the output.

AGC

When pin 7 is open circuit or connected to a voltage less than 2V the voltage gain is normal. As the AGC voltage is increased there is a reduction in gain as shown in Fig.6. This reduction varies with temperature.

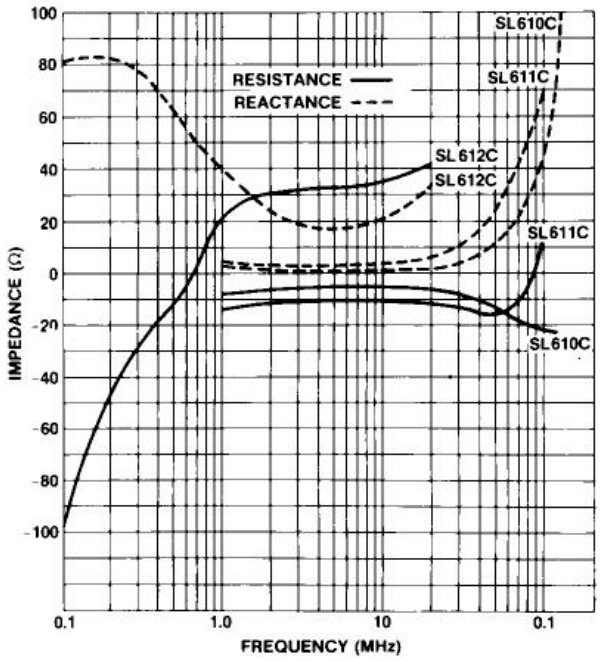

Fig.5 Typical output impedance with s/c input (G22)

Typical applications

The circuit of Fig.7 is a general purpose RF preamplifier. The voltage gain (from pin 5 to pin 3) is shown in Fig.8. Fig.9 is the IF section of a simple SSB transceiver. At 9MHz it has a gain of 100dB.

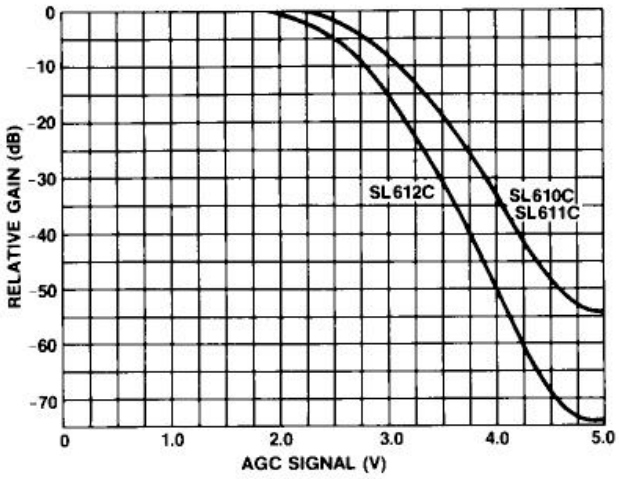

Fig.6 AGC characteristics (typical)

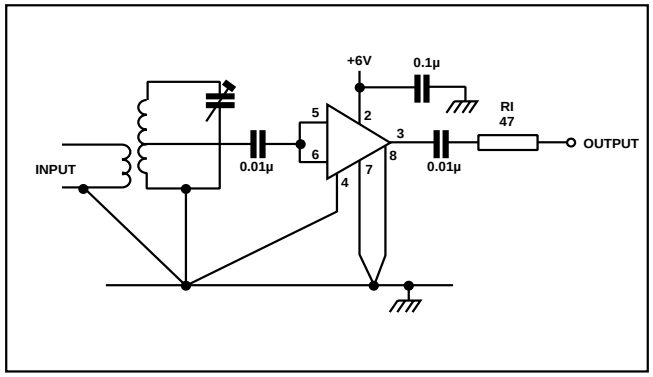

Fig.7 RF preamplifier

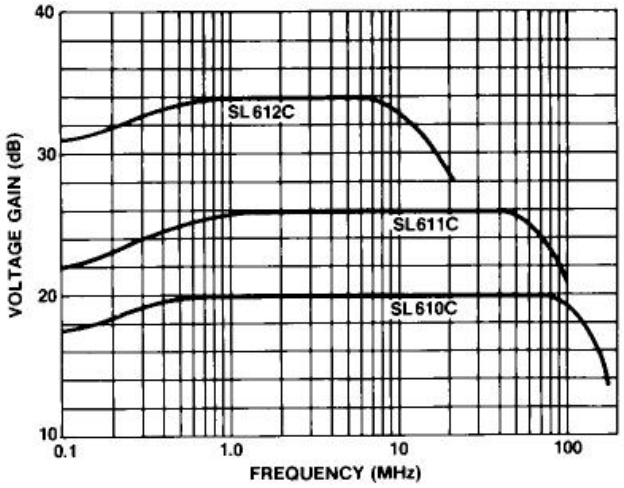

Fig.8 Typical voltage gain (RS = 50Ω)

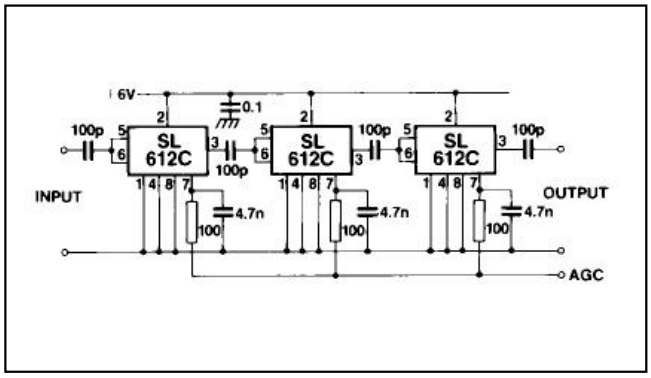

Fig.9 IF amplifier using SL1612

HEADQUARTERS OPERATIONS
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