

SL6700

IF AMPLIFIER AND AM DETECTOR WITH NOISE BLANKER

The SL6700A is a single or double conversion IF amplifier and detector for AM radio applications. Its low power consumption makes it ideal for hand held applications. Normally the SL6700A will be fed with a first IF signal of 10.7MHz or 21.4MHz; there is a mixer for conversion to the first or second IF, a detector, an AGC generator with optional delayed output and a noise blanker monostable. This device is characterised for operation from -55°C to +125°C.

FEATURES

- High Sensitivity: 10µV Minimum
- Low Power: 8mA Typical at 6V
- Linear Detector
- Full MIL Temperature Range

APPLICATIONS

- Low Power AM/SSB Receivers

QUICK REFERENCE DATA

- Supply Voltage: 4.5V
- Input Dynamic Range: 100dB Typical

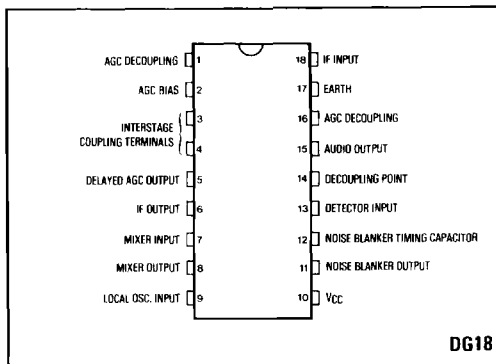


Fig.1 Pin connections (top view)

ORDERING INFORMATION

SL6700 A DG
SL6700 AB DG

ABSOLUTE MAXIMUM RATINGS

Supply voltage	7.5V
Storage temperature	-55°C to +150°C
Operating temperature	-55°C to +125°C

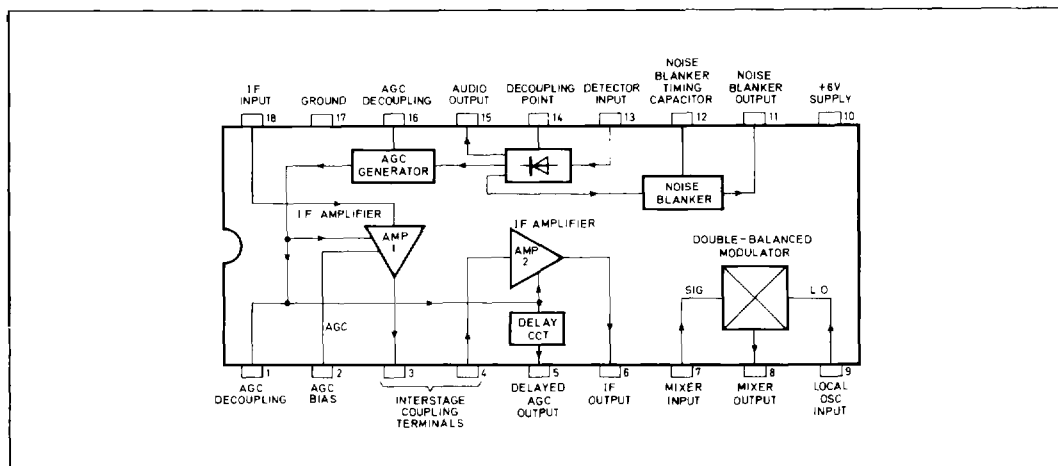


Fig.2 SL6700A block diagram

SL6700

ELECTRICAL CHARACTERISTICS

Test conditions (unless otherwise stated):

T_{amb} -55°C to +125°C Test circuit Fig.6. Modulation frequency 1kHz

Characteristic	Value			Units	Conditions
	Min.	Typ.	Max.		
Supply voltage	4		7	V	Optimum performance at 4.5V
Supply current		3.5	7	mA	
S/N ratio		40		dB	1mV input 80 % modulation
TH distortion		3	5	%	1mV input 30 % modulation
Sensitivity	10	5		μV	10dB S + N/N ratio, 30 %
Audio output level change		6	10	dB	10μV to 50mV input 80 %
AGC threshold		5		μV	
AGC range		80		dB	
AF output level	20	40		mV rms	30 % modulation 1mV input
Delayed AGC threshold		10		mV rms	80 % modulation
Dynamic range		100		dB	Noise floor to overload
IF frequency response	15	25		MHz	3dB gain reduction
IF amplifier gain	40	50	60	dB	10.7MHz (both amplifiers cascaded)
Detector gain	40	46	55	dB	455kHz 80 % AM
Detector Z _{in} pin 13	2	4	6.8	kΩ	
IF amplifier Z _{in} pin 18	1.8	3	4.5	kΩ	
Noise blank level	4.0			V	Logic 1
			0.3	V	Logic 0
Noise blank duration	300	400	500	μs	C pin 12 = 30nF, R pin 12-11 = 18k
Mixer conversion gain	1.0R	1.2R	1.5R	kΩ	R is load resistor in kΩ
Mixer Z _{in} (Signal)	2	3	5	kΩ	
Mixer Z _{in} (L.O.)	3	5	8	kΩ	
Mixer L.O. injection	50	100	150	mV rms	f _c = 10.245MHz
Detector output voltage change	6	8	8.2	dB	1mV rms input, modulation increased from 30% to 80%

OPERATING NOTES

The noise blank duration can be varied from the suggested value of 30μs using the formula: Duration time = 0.7CR, where R is value of resistor between pins 11 and 12 and C is value of capacitor from pin 12 to ground.

There is no squelch in the SL6700A and the delay in the delayed AGC is too large to make this output suitable. Squelch is best obtained from a comparator on the AGC decoupling point, pin 16.

The IF amplifiers may be operated at 455kHz giving a single conversion system.

The mixer may also be used as a product detector. Further application information is available on request.

TYPICAL DC PIN VOLTAGES

(Supply 4.5V, Input 1mV)

Pin	Voltage	Pin	Voltage
1	2.25V	10	4.5V
2	2.09V	11	3.7V
3	3.68V	12	0V
4	0.7V	13	0.77V
5	0.6V	14	1.5V
6	3.7V	15	1.0V
7	1.5V	16	0.7V
8	4.3V	17	0V
9	1.5V	18	0.7V

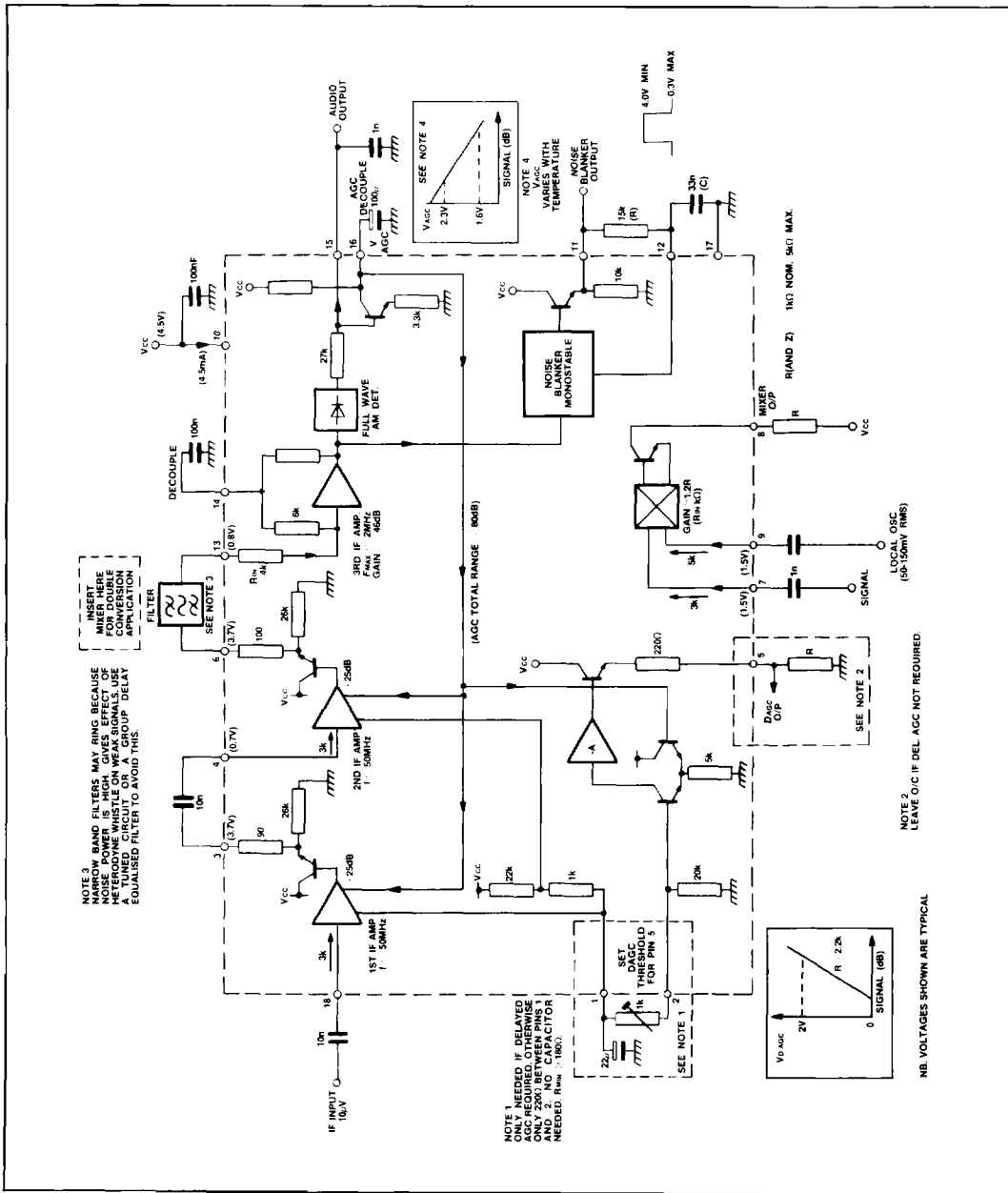


Fig.7 SL6700A Typical application circuit showing interfacing