

SL6701

AM IF AND DETECTOR (DOUBLE CONVERSION)

The SL6701A 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 SL6701A 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 and an AGC generator with optional delayed output. This device is characterised for operation from -55°C to $+125^{\circ}\text{C}$.

FEATURES

- High Sensitivity: 10 μV 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

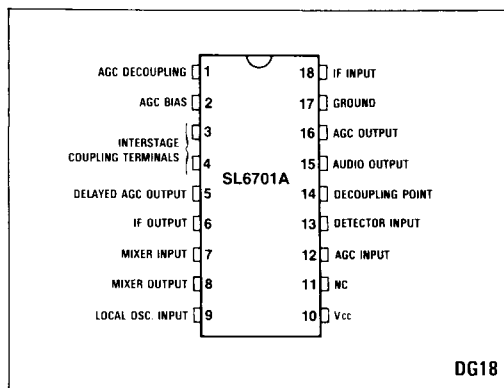


Fig.1 Pin connections - top view

ORDERING INFORMATION

SL6701 A DG ✓
SL6701 AB DG ✓

ABSOLUTE MAXIMUM RATINGS

Supply voltage	7.5V
Storage temperature	-55°C to $+150^{\circ}\text{C}$
Operating temperature	-55°C to $+125^{\circ}\text{C}$

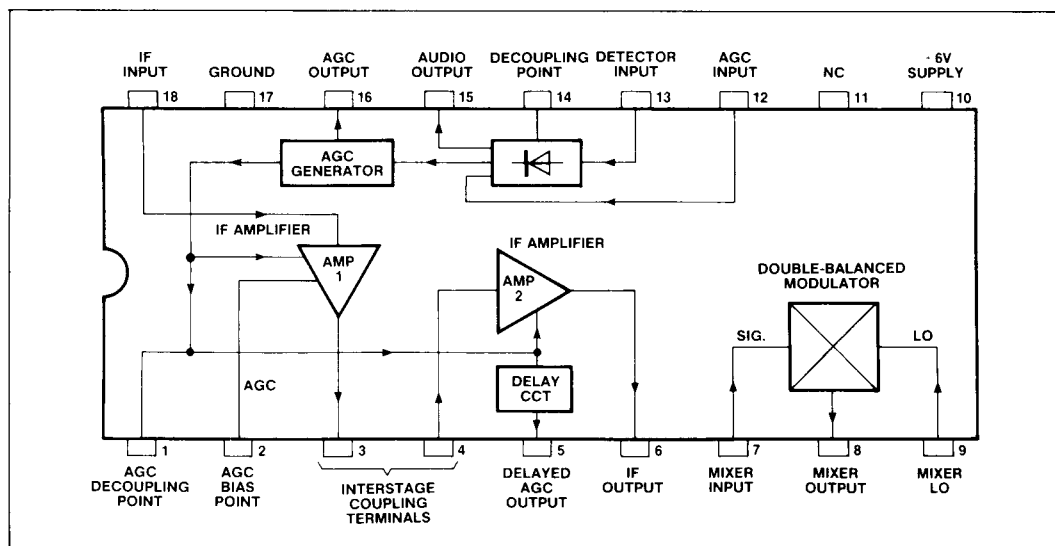


Fig.2 SL6701A block diagram

SL6701

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	
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} (LO)	3	5	8	kΩ	
Mixer LO 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

There is no squelch in the SL6701A 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	} 2.5V*
3	3.68V	12	
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

* Pins 11 and 12 connected together

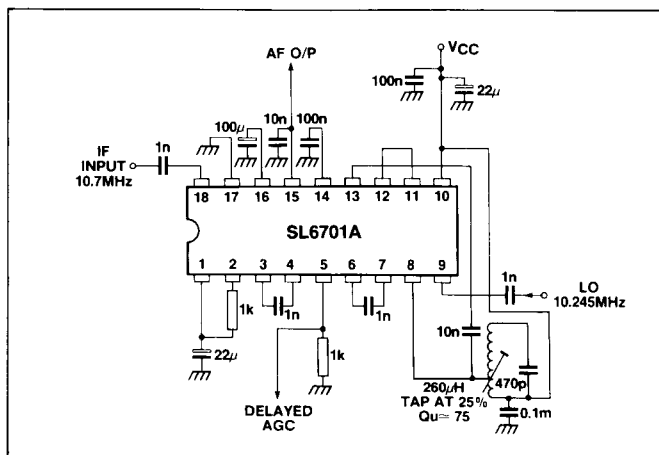


Fig.3 SL6701A AM double conversion receiver with noise blanker

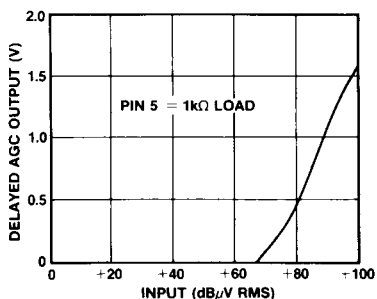
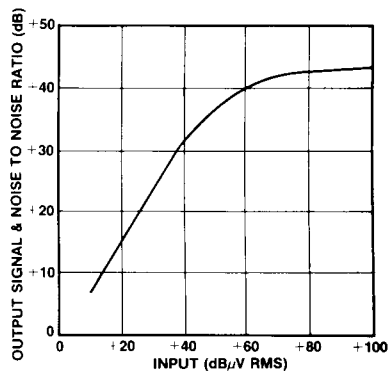
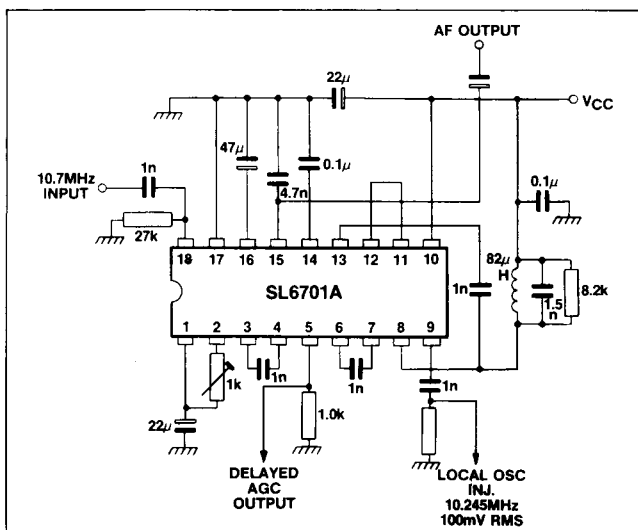
Fig.4 Typical delayed AGC output variation with input signal
($f = 10.7\text{MHz}$, 30% modulation)Fig.5 Typical signal to noise ratio ($S + N/N$) with input signal
($f = 10.7\text{MHz}$, 30% modulation)

Fig.6 Test circuit

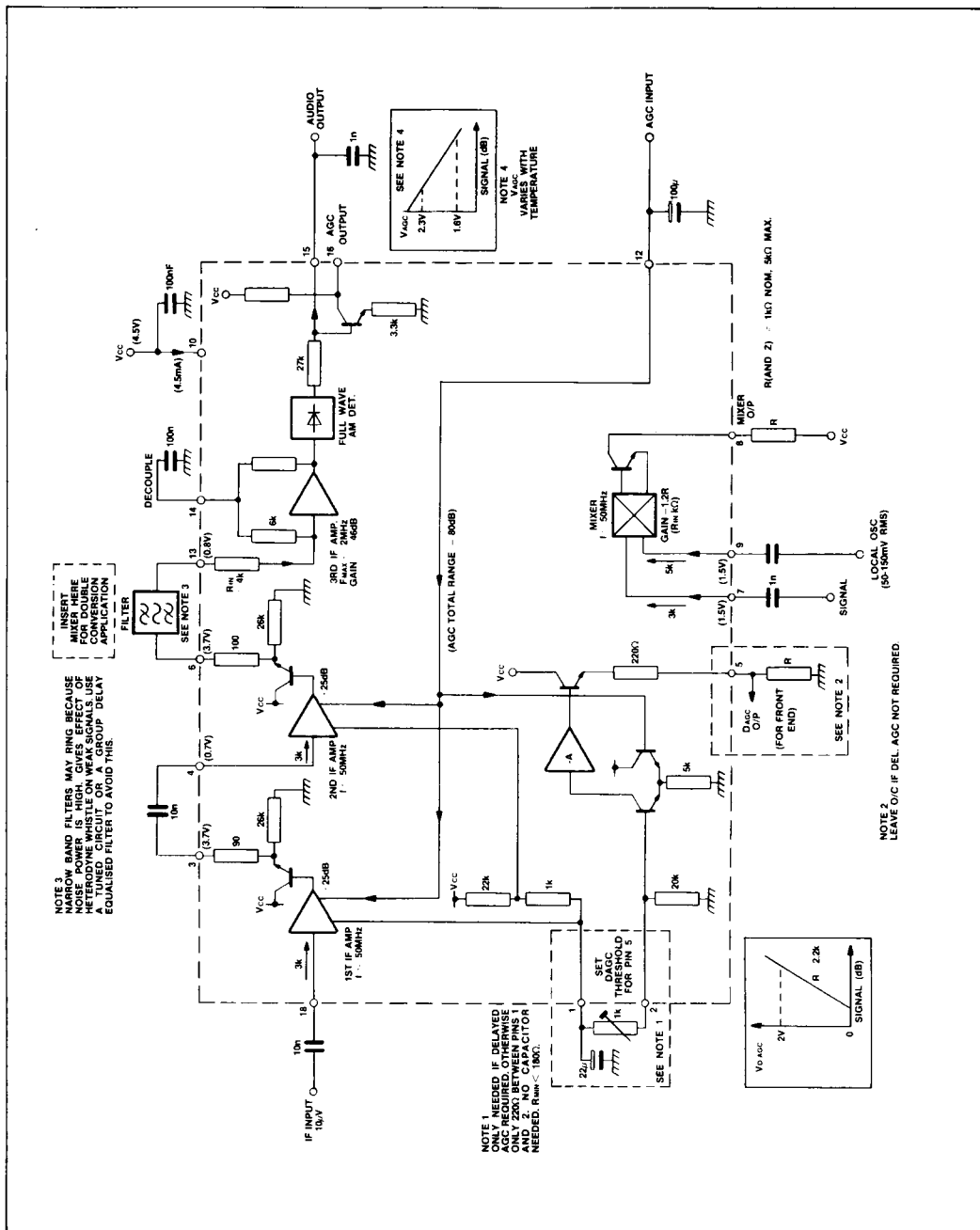


Fig.7 SL6701A typical application circuit showing interfacing