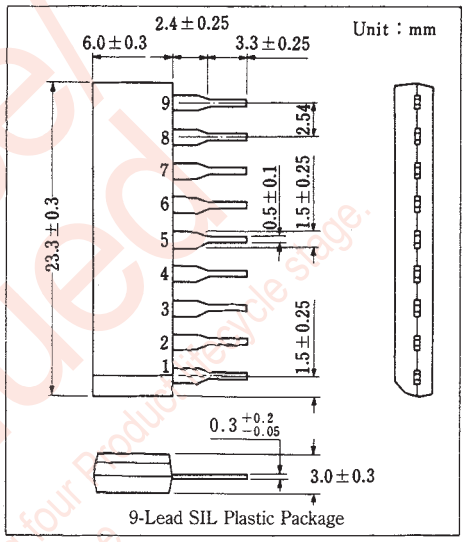
AN5712

B/W TV Video IF Amplifier, RF AGC Circuit

■ Outline

The AN5712 is one of IC's for AN5700 seires 12V operation and Black/White TV. It is an integrated circuit designed for B/W TV video IF amplifier and RF AGC circuit.



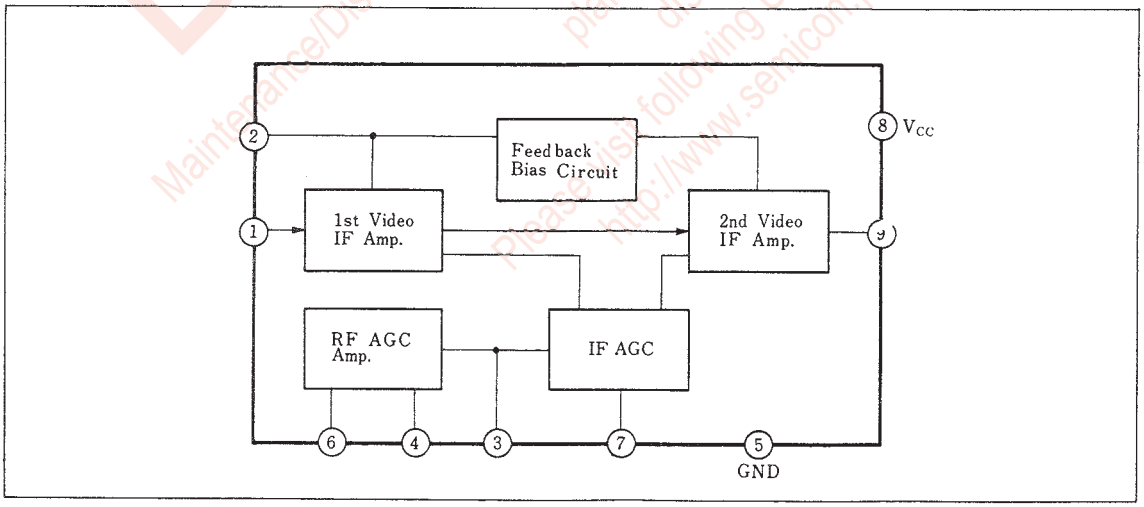
■ Features

- Good noise characteristics in strong signal condition made possible by IF AGC delayed operation inside circuit
- Wide range of gain reduction and IF AGC

■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	VIF Input	6	RF AGC Output
2	Decoupling	7	Decoupling
3	AGC Voltage Input	8	V_{CC}
4	RF AGC Ref. Voltage	9	VIF Output
5	GND	—	—

■ Block Diagram



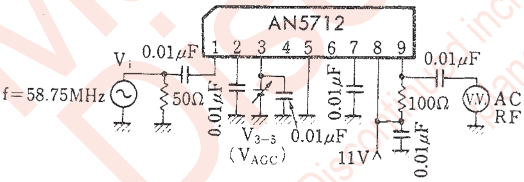
■ Absolute Maximum Ratings (Ta=25℃)

Item		Symbol	Rating	Unit
Supply Voltage		V_{CC}	13.2	V
Supply Current		I_{CC}	29	mA
Power Dissipation		P_D	383	mW
Temperature	Operating Ambient Temperature	T_{opr}	−20～+70	℃
	Storage Temperature	T_{stg}	−40～+150	℃

■ Electrical Characteristics (Ta=25℃)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Total Circuit Current	I_{tot}		V_{CC}=11.0V	14	19	24	mA
Transfer Admittance	$\|Y_{21}\|$	1	f=58.75MHz	50	120	200	mS
AGC Range	H_{AGC}	1	f=58.75MHz	60			dB
Input Resistance	R_i	2	f=58.75MHz, V_i=30mV_{rms}		2		kΩ
Input Capacitance	C_i	2	f=58.75MHz, V_i=30mV_{rms}		7.5		pF
Output Capacitance	C_O	3	f=58.75MHz, V_i=30mV_{rms}		4		pF
Noise Figure	NF	4			9		dB
Voltage Gain(RF AGC)	G_V	5		105	130	150	times
Upper Voltage (RF AGC)	$V_{(Upper)}$		V_{CC}=11.0V, V_{3-5}=4.5V	8.3	8.8	9.3	V
Lower Voltage (RF AGC)	$V_{(Lower)}$		V_{CC}=11.0V, V_{3-5}=3V			0.1	V

Test Circuit 1 ($|Y_{21}|$, H_{AGC})



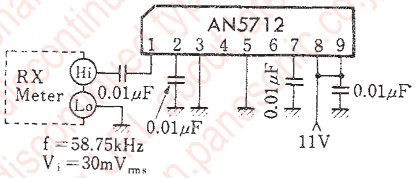
$$|Y_{21}|=\frac{i_2}{V_i}=\frac{V_O}{R_O}\cdot\frac{1}{V_i}=\frac{V_O(mV)}{100(\Omega)}\cdot\frac{1}{2(mV_{rms})}=5V_O\ (mS)$$

AGC Range : ① V_i=2mV_{rms}, output when V_{3-5}=0V is assumed $V_{O①}$

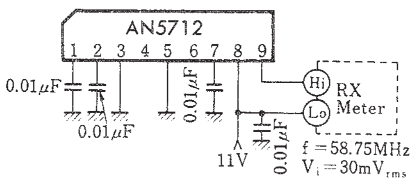
② V_i=200mV_{rms}, output when V_{3-5}=4V is assumed $V_{O②}$

$$20\log\frac{V_{O②}}{V_{O①}}<-20dB$$

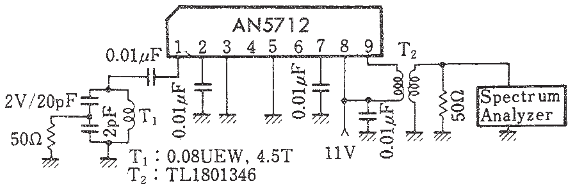
Test Circuit 2 (R_i, C_i)



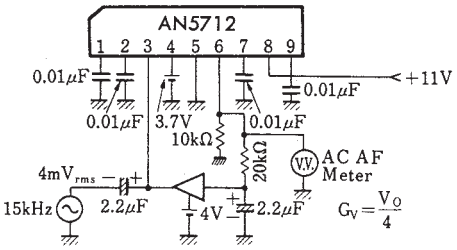
Test Circuit 3 (C_o)



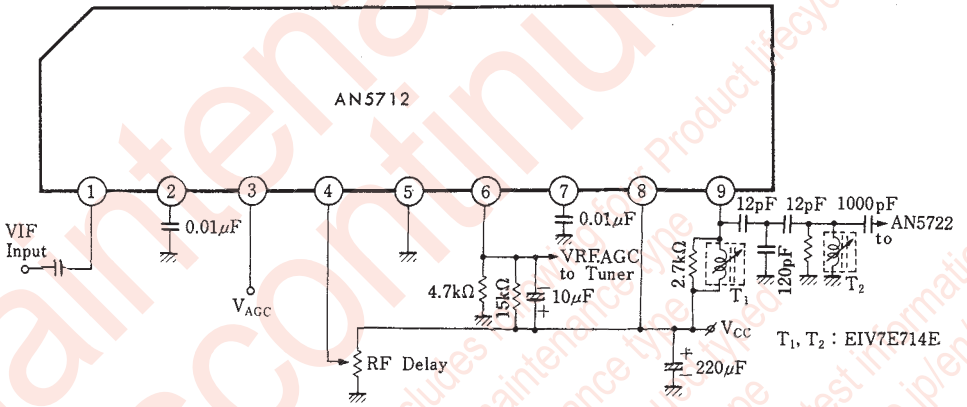
Test Circuit 4 (NF)



Test Circuit 5 (G_V)



■ Application Circuit



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