

AN5130, AN5132

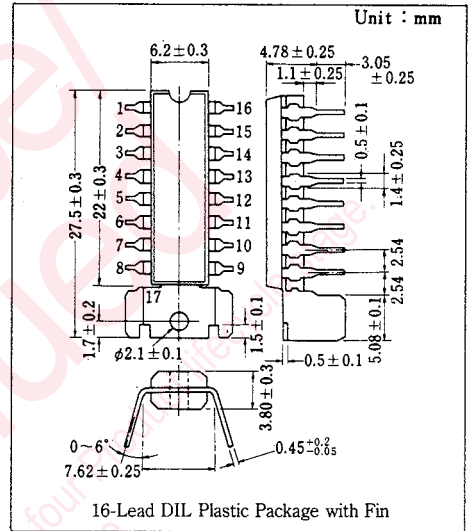
Color TV Video IF Amplifier, Detector, AGC, AFC Circuits

Outline

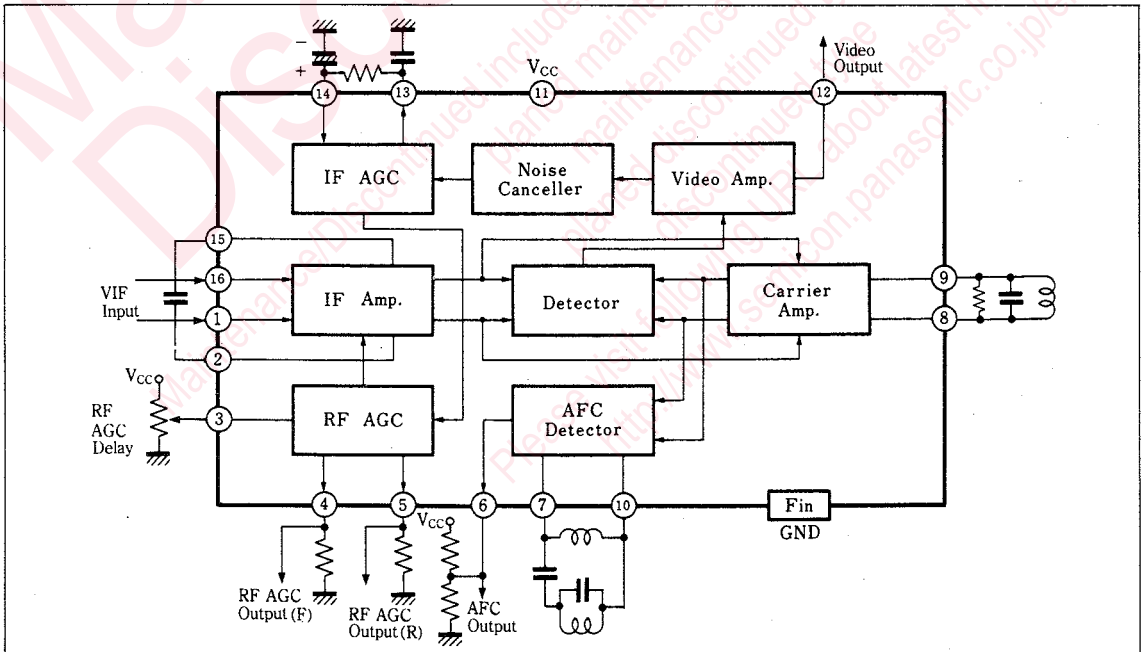
The AN5130 and the AN5132 are integrated circuits designed for color TV video IF signal processing circuit.

Features

- High density one chip integration of video IF amplifier, video detector, video pre-amplifier, AGC and AFC circuits
- Using phase compensation type synchronous detector circuit
- AFC using double balance phase comparator having little influence on video detection
- Provided with forward RF AGC and reverse RF AGC outputs



Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

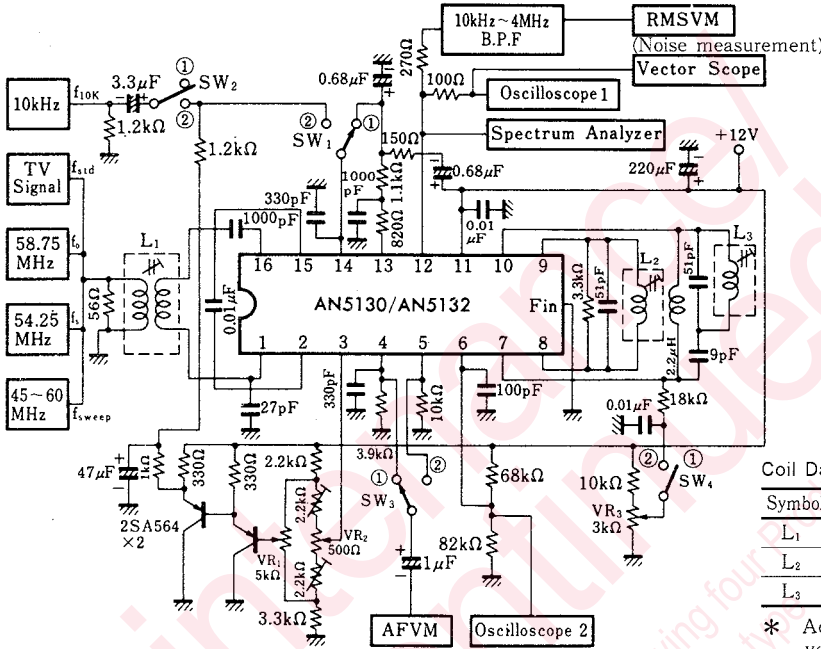
Item		Symbol	Rating		Unit
Voltage	Supply Voltage	V _{cc}	13.8		V
	Circuit Voltage	V _{3-Pin}	V _{11-Pin}	0	V
		V _{5-Pin}	V _{11-Pin}	0	V
		V _{6-Pin}	V _{11-Pin}	0	V
		V _{7,10-Pin}	V _{11-Pin}	0	V
Current	Circuit Current	I ₁₂	+ 1	-10	mA
		I ₄	0	-10	mA
Power Dissipation		P _D	1,100		mW
Temperature	Operating Ambient Temperature	T _{opr}	-20~+70		°C
	Storage Temperature	T _{stg}	-55~+150		°C

Note: ⊕ and ⊖ are flow-in and flow-out currents to/from the circuit.

■ Electrical Characteristics (Ta=25°C)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit	
IF Amplifier Detector								
Detector Output (Video)	V _o	1	Mod.=87.5%	1.7	2.0	2.3	V _{p-p}	
Input Sensitivity	S _(IN)	1	V _o =-3dB	AN5130	53	56	dBμ	
				AN5132	46			
Input Voltage (max.)	V _i	1		AN5130	113		dBμ	
				AN5132	110			
Differential Gain	DG	1		0	4		%	
Differential Phase	DP	1		0	2	5	deg.	
Frequency Characteristics (Video)	f _c	1	V _o =-3dB	AN5130	7	9	15	MHz
				AN5132	6.5	9	15	
Output Voltage (SIF)	V _o	1	P/S=20dB	120	160	200	mV _{rms}	
Input Resistance (Pin ①)	R _i	2	f=58.75MHz	0.7	1.0	1.3	kΩ	
Input Capacitance (Pin ①)	C _i	2		3.6	4.5	5.6	pF	
AGC Circuit								
Voltage Gain (RF AGC)	F	G _{V(F)}	1	R _L =3.9kΩ	24	30	36	dB
	R	G _{V(R)}	1	R _L =10kΩ	27	33	39	
AFC Circuit								
AFC Center Voltage	V ₆		V _{cc} =12V	5.0	6.5	7.1	V	
AFC Defeat SW Operating Voltage	V _(AFC)	1	R _L =68kΩ // 82kΩ, R _s =18kΩ	0.5	1.5	2.5	V	
Phase Detector Sensitivity	μ	1	R _L =68kΩ // 82kΩ	AN5130	70	100	130	mV/kHz
				AN5132	60	100	130	
Serial Characteristics								
Circuit Current	I ₁₁		V _{cc} =12V	39	56	71	mA	

Test Circuit 1 (V_o , $S_{(IN)}$, V_i , DG, DP, f_c , V_o , $G_{V(F)}$, $G_{V(R)}$, $V_{(AFC)}$, μ)



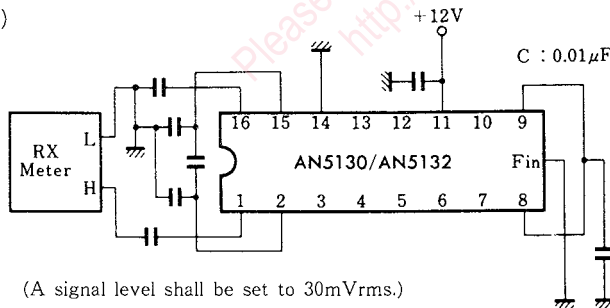
Coil Date

Symbol	Type No.	f(MHz)
L ₁	ZV10S229	50~60*
L ₂	TL167321	58.75
L ₃	TL167321	58.75

* Adjustment shall be made so that the voltage loss is minimized

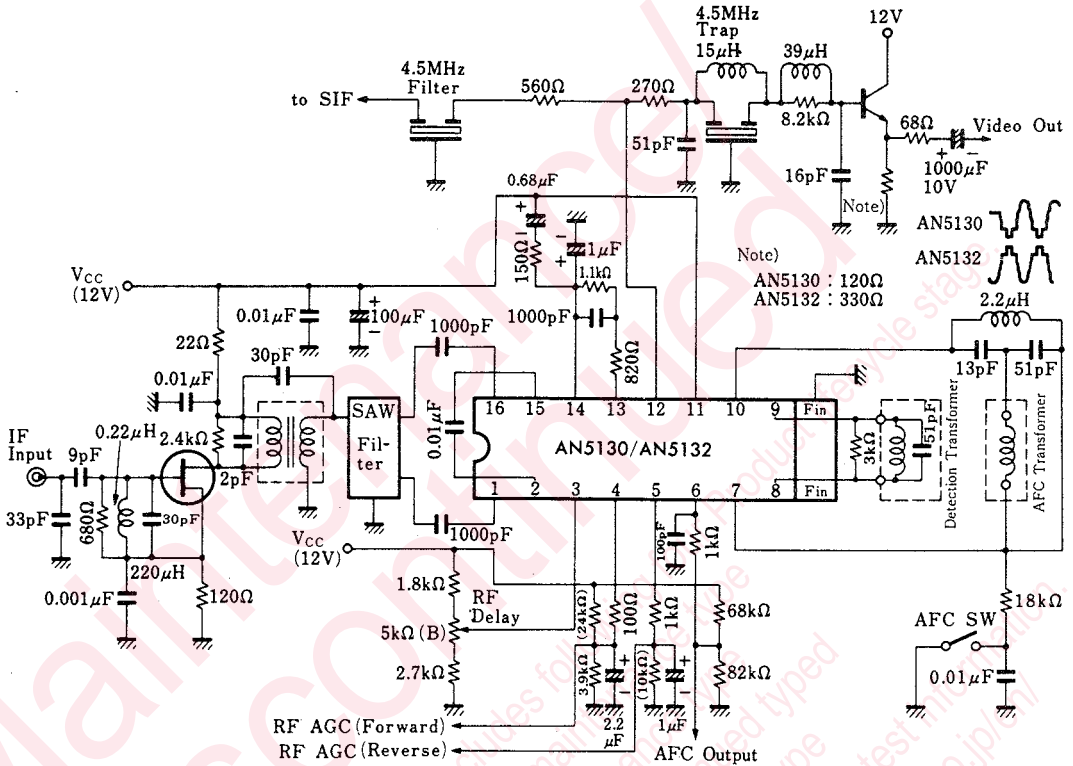
Item to be Measured	Input Signal	SW1	SW2	SW3	SW4	Measuring Equipment
$V_{O(VIF)}$	f_{STD}	①	①	—	—	Oscilloscope 1
$S_{(IN)}$	f_{STD}	①	①	—	—	Oscilloscope 1
$V_{i(max)}$	f_{STD}	①	①	—	—	Oscilloscope 1
f_c	f_o f_m	②	②	—	—	Spectrum Analyzer
$V_{O(SIF)}$	f_o f_s	②	①	—	—	RMSVM
DG, DP	f_{STD} (Staircase)	①	①	—	—	Vector Scope
$G_{V(F)}$	f_{10K}	②	②	①	—	AFVM
$G_{V(R)}$	f_{10K}	②	②	②	—	AFVM
$V_{(AFC)}$	f_m	②	①	—	①→②	Oscilloscope 2
μ	f_m	②	①	—	①	Oscilloscope 2

Test Circuit 2 (R_i , C_i)



(A signal level shall be set to 30mVrms.)

■ Application Circuit



■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	IF Input	10	AFC Coil
2	Input Bias	11	Vcc
3	RF AGC Delay Adj.	12	Det. Output
4	RF AGC Output (F)	13	IF AGC Output
5	RF AGC Output (R)	14	IF AGC Input
6	AFC Output	15	Input Bias
7	AFC Coil	16	IF Input
8	Det. Coil	Fin	GND
9	Det. Coil	-	-

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