

AN5150N, AN5151N

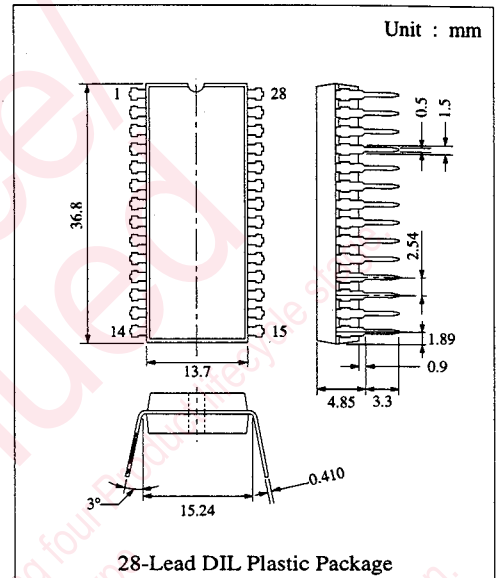
VIF, SIF, Video, Synchronous Signal Processor IC

■ Description

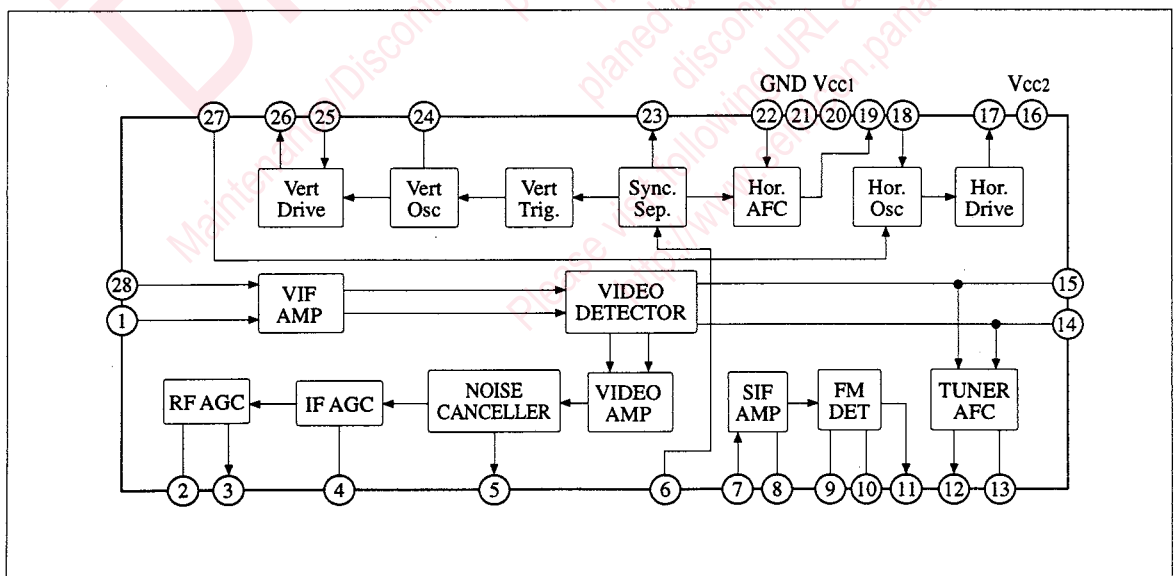
The AN5150N and the AN5151N are single chip integrated circuits designed for processing all small signals (except Chroma Signal).

■ Features

- High integration technology makes possible integration of Video IF circuit, Tuner AFC circuit, Sound IF circuit and Deflection-Jungle circuit on a single chip
- Two kinds of ICs provided for Tuner AGC, the polarity of the AN5150N is reverse and the AN5151N is forward type
- Supply voltage range : 8~12V (typ. 10V)



■ Block Diagram



Absolute Maximum Ratings (Ta=25°C)

Item		Symbol	Rating		Unit
Supply Voltage		V _{CC} (V 20-21)	12		V
Supply Current		I ₂₀	85		mA
		I ₁₆	15		mA
Circuit Voltage		V 2, 3, 4, 12, 24-21	V 20-21	0	V
		V 8-21	5.5	0	V
		V 13-21	4.2	0	V
		V 17, 18-21	V 16-21	0	V
Circuit Current		I 5, 6, 11, 23, 26	-10	+0.3	mA (peak)
		I 19	-0.6	+0.6	mA (peak)
		I 25	0	+10	mA (peak)
		I 17	-4	+10	mA (peak)
Power Dissipation (Ta = 70 °C)		P _D	1100		mW
Temperature	Operating Ambient Temperature	T _{opr}	-20 ~ +70		°C
	Storage Temperature	T _{stg}	-55 ~ +150		°C

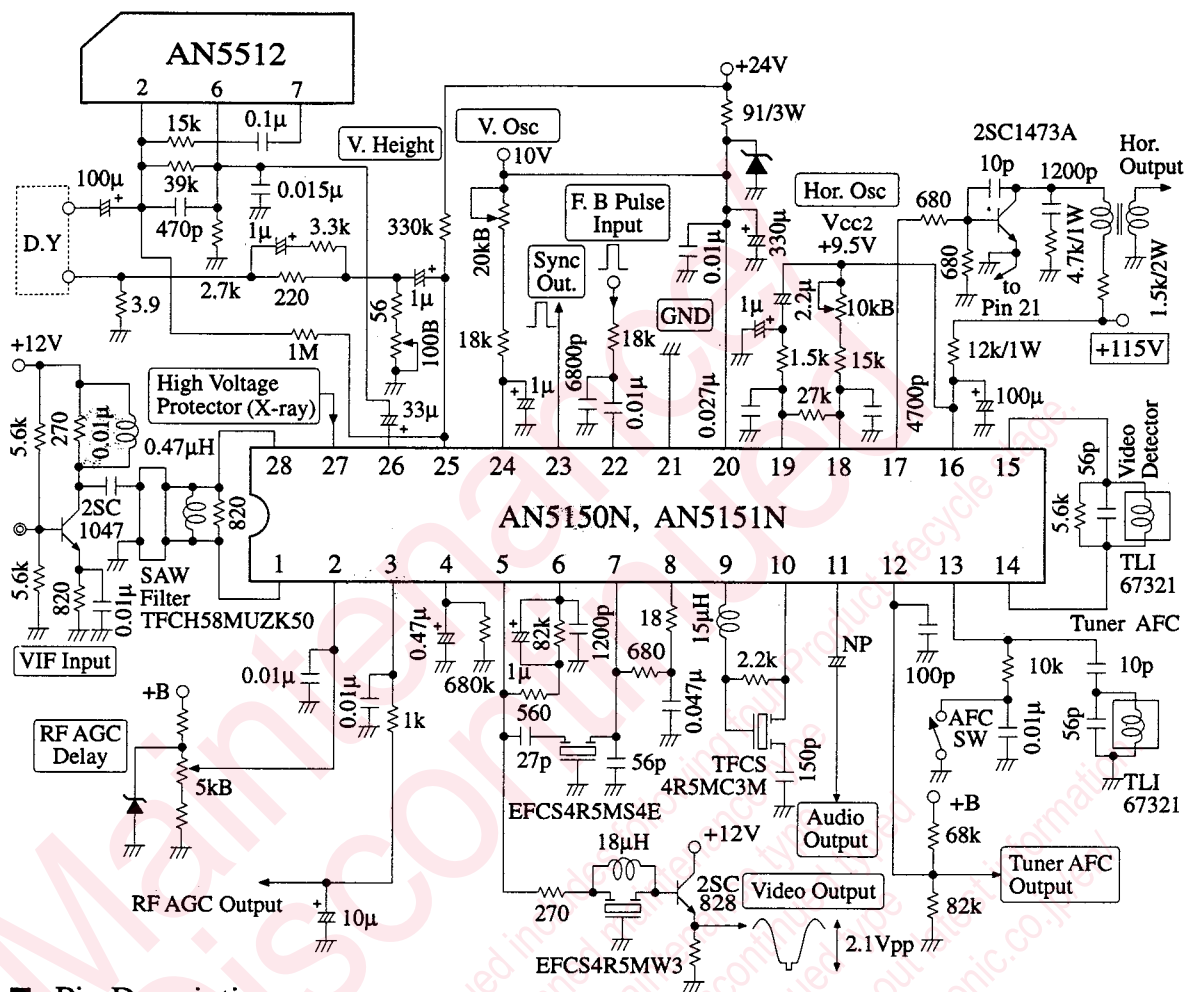
Electrical Characteristics (Ta=25°C)

Item	Symbol	Condition	min.	typ.	max.	Unit	
VIF							
Video Detector Output	V _O	f=58.75MHz, V _i = 80dBμ, m=87.5%	1.8	2.1	2.4	V _{p-p}	
Input Sensitivity	V _S	V _O = -3dB		50	55	dBμ	
Max. Allowable Input	V _{I(max)}	V _O > +0dB	105	110		dBμ	
Signal to Noise Ratio	S/N	V _i =80dBμ	51	56		dB	
Differential Gain	DG	f=58.75MHz, V _i = 80dBμ, m=87.5%		4.0	8.0	%	
Differential Phase	DP	f=58.75MHz, V _i = 80dBμ, m=87.5%		3.0	6.0	deg	
Frequency Characteristics	f _C	V _O = -3dB	4.5	6.0	8.0	MHz	
Sync. Top Voltage	V _P		1.9	2.3	2.7	V	
Noise Inverter Det. Level	V _{NT}		1.0	1.4	1.8	V	
Noise Inverter Pull-In Level	V _{NI}		3.0	3.4	3.8	V	
Audio IF Output	V _{SIF}	P/S = 20dB	100	104	107	dBμ	
Input Resistance (Pin 1)	R _{il}	f=58.75MHz	0.8	1.0	1.2	kΩ	
Input Capacitance (Pin 1)	C _{il}	f=58.75MHz	3.0	4.0	5.0	pF	
Output Capacitance (Pin 5)	R _{O5}	f=500kHz	30	50	150	Ω	
RF AGC Gain	G _{RF AFC}	f=10kHz, V ₄ = 5mV	AN5150N	40	46	52	dB
			AN5151N	37	42	48	dB
RF AGC Max. Voltage	V _{3(max)}		AN5150N	7.4	8.0	8.6	V
			AN5151N	8.2	8.8	9.4	V
RF AGC Min. Voltage	V _{3(min)}		AN5150N	0	0.1	0.5	V
			AN5151N	3.6	4.2	4.8	V
AFC Center Voltage	V ₁₂		4.0	5.4	6.0	V	
AFC Defeat SW Operating Voltage	V _{AFC SW}	R _S = 10kΩ	0.5	2.6	3.0	V	
AFC Max. Output Voltage	V _{12(max)}		8.5	9.6	10.0	V	
AFC Min. Output Voltage	V _{12(min)}		0	0.7	1.2	V	
Phase Detector Sensitivity	μ	R _L = 68kΩ // 82kΩ	30	50	90	mV/kHz	

■ Electrical Characteristics (Ta=25°C) (Continue)

Item	Symbol	Condition	min.	typ.	max.	Unit
SIF						
Total Detector Output	V _o	f _o =4.5MHz, f _m =400Hz Δf=±25kHz, V _i = 100mVrms	200	300	440	mVrms
Input Limiting Voltage	V _{i(lim)}	f _o =4.5MHz, f _m =400Hz Δf=±25kHz		280	450	μVrms
Det. Signal Distortion	THD	f _o =4.5MHz, f _m =400Hz Δf=±25kHz, V _i = 100mVrms		0.6	1.0	%
AM Rejection	AMR		43	55		dB
Input Impedance	R _{i7}	f=4.5MHz	6	20	100	kΩ
	C _{i7}		1.3	4.3	7.3	pF
Detector Input Impedance	R _{D9}	f=4.5MHz	2.0	5.1	8.1	kΩ
	C _{D9}		2.1	5.1	8.1	pF
	R _{D10}		50	200		kΩ
	C _{D10}		2.9	3.4	3.9	pF
	Deflection					
Sync Sep Horizontal Pulse Width (1)	τ _{sync 1}	Video Input 25Vpp, APL=50%, Vcc1=10V	4.8	5.1	5.4	μs
Sync Sep Horizontal Pulse Width (2)	τ _{sync 2}	Video Input 1.0Vpp, APL=50%, Vcc1=10V	4.9	5.2	5.5	μs
Hor. AFC Hor. Pulse Width (1)	τ _{sync 3}	Video Input 2.5Vpp, APL=50%, Vcc1=10V	4.8	5.1	5.4	μs
Hor. AFC Hor. Pulse Width (2)	τ _{sync 4}	Video Input 1.0Vpp, APL=50%, Vcc1=10V	4.9	5.2	5.5	μs
Vert Osc Start Supply Voltage	V _{fvo.s}	Vcc1 when fvo is 40~60Hz and output is 0.7Vpp or more		4.9	6	V
Vert Osc Frequency	f _{vo}	Osc freq. when Rsc(v) = 30kΩ, Vcc1=10V	54.5	57.5	60.5	Hz
Vert Osc Pulse Width	τ _{vo}	Osc P. W. when Rsc(v) = 30kΩ, Vcc1=10V	470	650	830	μs
Hor. Freq. Var. vs Supply Voltage	Δf _H /V _{CC}	Difference to fvo when Vcc1=12V and 8V	0	1.0	1.3	Hz
Vertical Pull-in Range	f _{PV}	Video Input 2Vpp, Vcc1=10V	39	43	47	Hz
Hor.Osc Start Supply Voltage	V _{hHO.s}	Pin 16 voltage when f _{HO} is 10~20kHz and output is 1 Vpp or more		3.7	5	V
Horizontal Osc Frequency	f _{HO}	Osc freq. when Rsc(H)=21kΩ, Vcc2=20V	15.0	15.75	16.25	kHz
Horizontal Osc Pulse Width	τ _{HO}	Osc P. W. when Rsc(H)=21kΩ, Vcc2=20V	21	24	27	μs
Vert Freq. Var. vs Supply Voltage	Δf _{vo} /V _{CC}	Diff. to osc freq. when Vcc2=10V and 8V	0	50	100	Hz
Hor. Osc Control Sensitivity	β	Var. of Osc Freq when ΔI±100μA is flowed	73	81	89	Hz/μA
Phase Detection Sensitivity	μ _P	Video Input 2Vpp, R(μ)=3.14kΩ, μ=V19X10	13.5	16.5	19.5	μA/μs
X-ray Protector Operating Voltage	V ₂₇₋₂₁		0.81	0.87	0.93	V
X-ray Protector Input Resistance	R ₂₇		16	19	22.5	kΩ

■ Application Circuit



■ Pin Descriptions

Pin No.	Pin Name	Pin No.	Pin Name
1	VIF Input	15	Video Det. Coil (2)
2	RF AGC Delay Adj.	16	VCC2
3	RF AGC Output	17	Hor. Output
4	IF AGC	18	Hor. Osc.
5	Video Output	19	Hor. AFC Output
6	Sync. Sep. Input	20	VCC1
7	SIF Input	21	GND
8	Input Bias	22	FB Pulse Input
9	SIF Output	23	Sync. Sep. Output
10	SIF Det. Input	24	Vert. Osc.
11	Sound Output	25	Vert. Sawtooth
12	Tuner AFC Output	26	Vert. Output
13	Tuner AFC Coil	27	Over Voltage Protection
14	Video Det. Coil (1)	28	VIF Input (2)

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