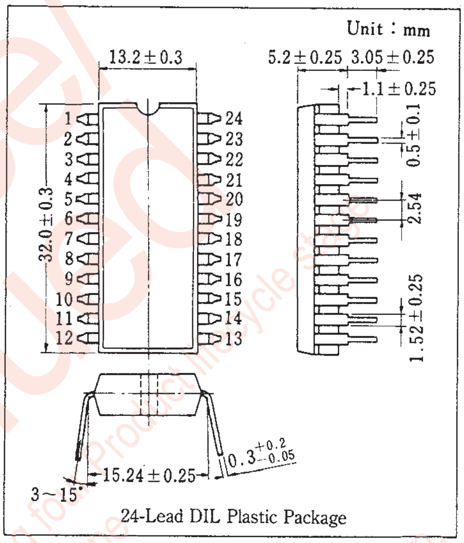
AN5411

Color TV Deflection Signal Processing Circuit

■ Outline

The AN5411 is an integrated circuit designed for color TV deflection signal processing circuits.

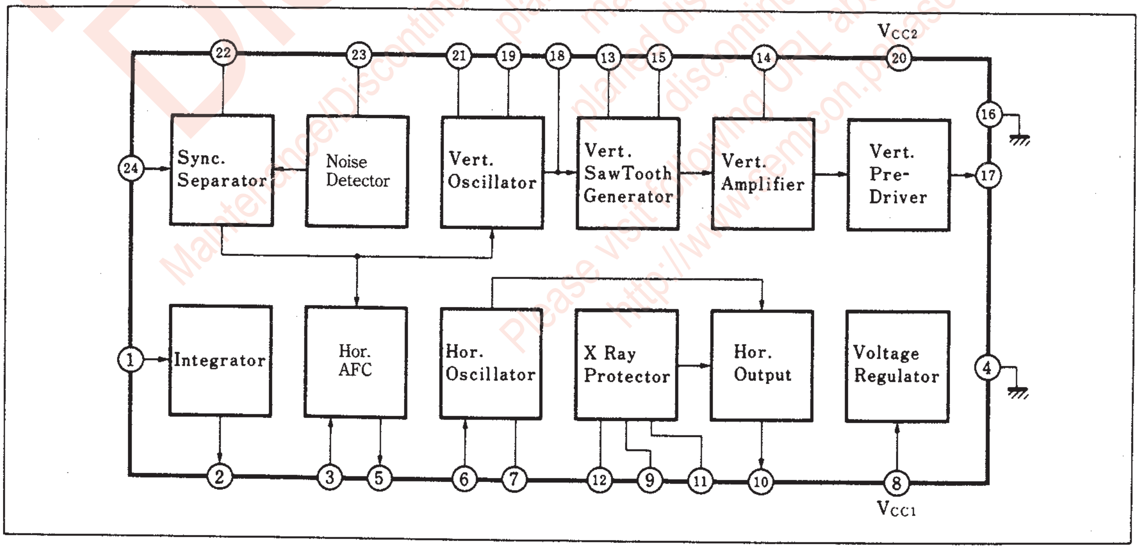


24-Lead DIL Plastic Package

■ Features

- Easier vertical deflection circuit design when used with the output circuit AN5520
- High loop gain in vertical circuit and non-adjustment for vertical linearity
- Incorporating vertical and horizontal oscillator circuit. operations highly stable against changes in supply voltage and temperature
- Built-in high tension protector circuit

■ Block Diagram



■ Absolute Maximum Ratings (T_a=25℃)

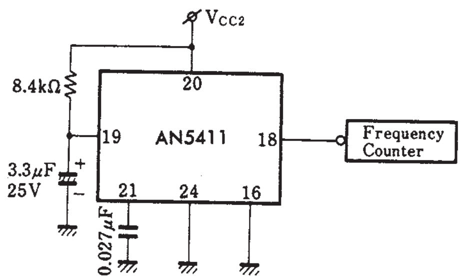
Item		Symbol	Rating		Unit
Voltage	Supply Voltage	$V_{20-16(4)}$	14.4		V
		$V_{8-4(16)}$	15.0		V
	Circuit Voltage	$V_{1-4,16}$	−3	7	V
		$V_{12-4,16}$	0	$V_{8-4,16}$	V
		$V_{14-16,4}$	0	$V_{20-16,4}$	V
		$V_{15-16,4}$	0	$V_{20-16,4}$	V
		$V_{23-4,16}$	0	6.0	V
		$V_{24-4,16}$	−3	1	V
Current	Circuit Current	I_5	−1.5	1.5	mA
		I_6	−1.2	0	mA
		I_7	−1.4	1.2	mA
		I_{10}	0	10	mA
		I_{15}	0	3	mA
		I_{17}	−2	0	mA
		I_{19}	0	40	mA
Power Dissipation		P_D	600		mW
Temperature	Operating Ambient Temperature	T_{opr}	−20～+70		℃
	Storage Temperature	T_{stg}	−55～+150		℃

■ Electrical Characteristics (T_a=25℃)

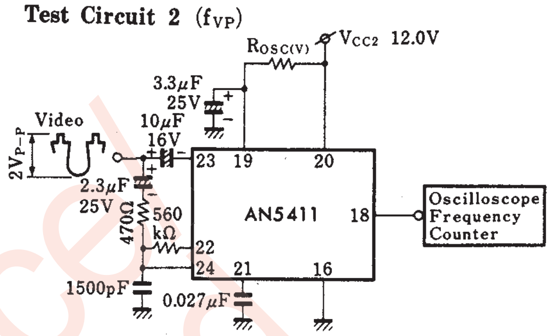
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Circuit Current	I_8		V_{CC}=12V	7.7	10	12.3	mA
	I_{20}		V_{CC}=12V	20.8	26	31.2	mA
Oscillation Starting Voltage (V· Osc)	$V_{OSC-S(1)}$	1	f_{VO}=40～70Hz, $0.7V_{P-P}$ or more Output of Amplification			6.2	V
Vertical Oscillation Frequency	f_{VO}	1	V_{CC}=12V	53	55.6	58	Hz
f_{VO} Change with Supply Voltage	$\Delta f_{VO}/V_{CC}$	1	$f_{VO}\|_{9.6V}$～$f_{VO}\|_{14.4V}$	0	0.84	1.0	Hz
Pulse width (V· Osc)	τ	1	V_{CC}=12V	500		820	μs
Vertical Pull-in Range	f_{VP}	2	$R_{OSC(V)}$=9.76kΩ, f_{VO}=48Hz			50	Hz
f_{VO} Change with Ambient Temperature*1	$\Delta f_{VO}/Ta$	1	V_{CC2}=12V, Ta=−20～+70℃	0		1.0	Hz
Oscillation Starting Frequency (H· Osc)	$V_{OSC-S(2)}$	3	f_{HO}=10kHz～20kHz $3.0V_{P-P}$(V_{CC}=6.5V)	5.0		6.5	V
Horizontal Oscillation Frequency	f_{HO}	3	V_{CC}=12.0V	15.2		16.5	kHz
f_{VO} Change with Supply Voltage	$\Delta f_{HO}/V_{CC}$	3	$f_{HO}\|_{14.4V}$～$f_{HO}\|_{9.6V}$	0		100	Hz
Pulse Width Duty Ratio (H· Osc)	τ	3	V_{CC}=12V	37		41	%
f_{HO} Control Sensitivity*1	β	4	I_o=±100μA	17	18.9	20.8	Hz/μA
Protector Operating Voltage	V_{12-4}		V_{12-4}=6.9V	5.98		6.18	V
f_{HO} Change with Ambient Temperature*1	$\Delta f_{HO}/Ta$	3	V_{CC1}=12.0V, Ta=−20～+70℃	0		200	Hz
AFC Loop Gain*1	f_{AFC}		$\mu\times\beta$	4500	6050	7600	Hz/rad

*1Design reference value

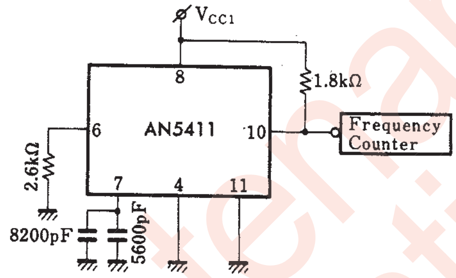
Test Circuit 1 ($V_{OSC-S(1)}$, f_{VO}, $\Delta f_{VO}/V_{CC}$, τ, $\Delta f_{VO}/Ta$)



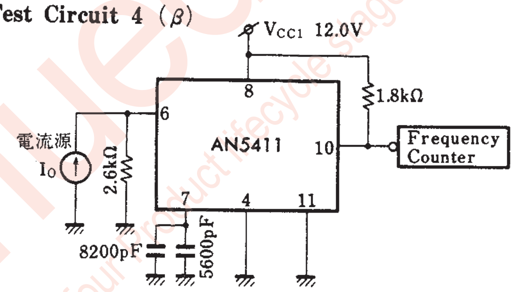
Test Circuit 2 (f_{VP})



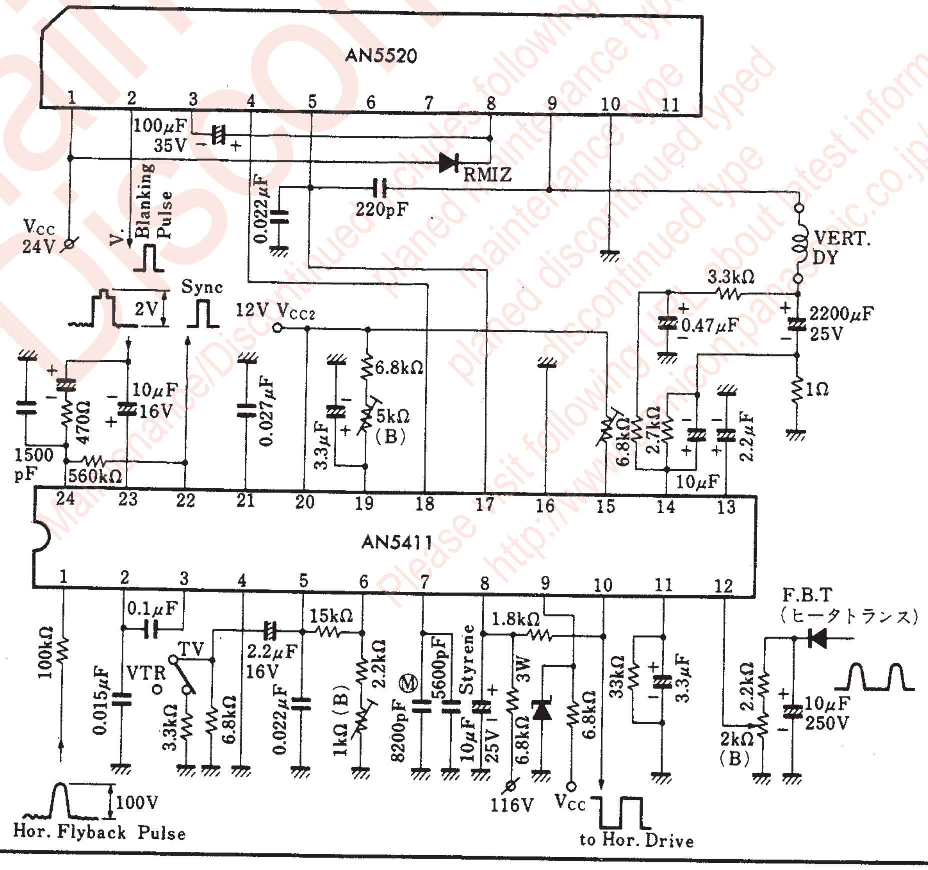
Test Circuit 3 ($V_{OSC-S(2)}$, f_{HO}, $\Delta f_{HO}/V_{CC}$, τ, $\Delta f_{HO}/Ta$)



Test Circuit 4 (β)



■ Application Circuit



■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	Hor. Pulse Input	13	Vert.Saw-tooth Capacitor
2	Hor. Saw-tooth Output	14	Vert. Feedback Input
3	AFC Ref. Signal Input	15	Vert. Height Volume
4	GND	16	GND
5	Hor. AFC Output	17	Vert. Output
6	H. Hold Volume	18	Vert. Osc. Pulse
7	H. Osc.Capacitor	19	Vert. Hold Volume
8	V_{CC1}	20	V_{CC2}
9	X-Ray Protector Input(2)	21	Vert. Sync. Sep.
10	Hor.Output	22	Sync. Sep. Output
11	X-Ray Protector CR	23	Noise Det. Input
12	X-Ray Protector Input(1)	24	Video Signal Output

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