AN5435

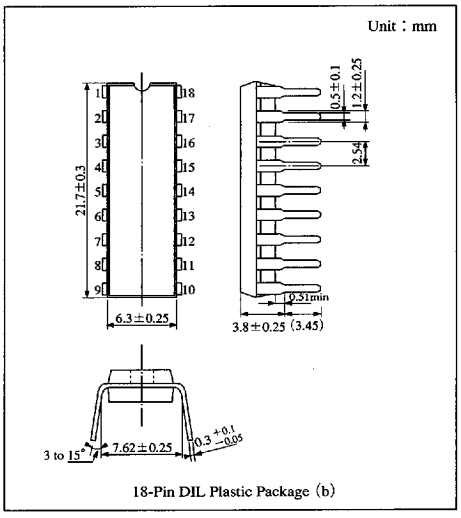
Color TV Deflection-Signal Processing IC

■ Overview

The AN5435 is an integrated circuit designed for color TV deflection-signal processing circuit. It operates with 12V power supply and is suitable for compact and medium-size color TV set.

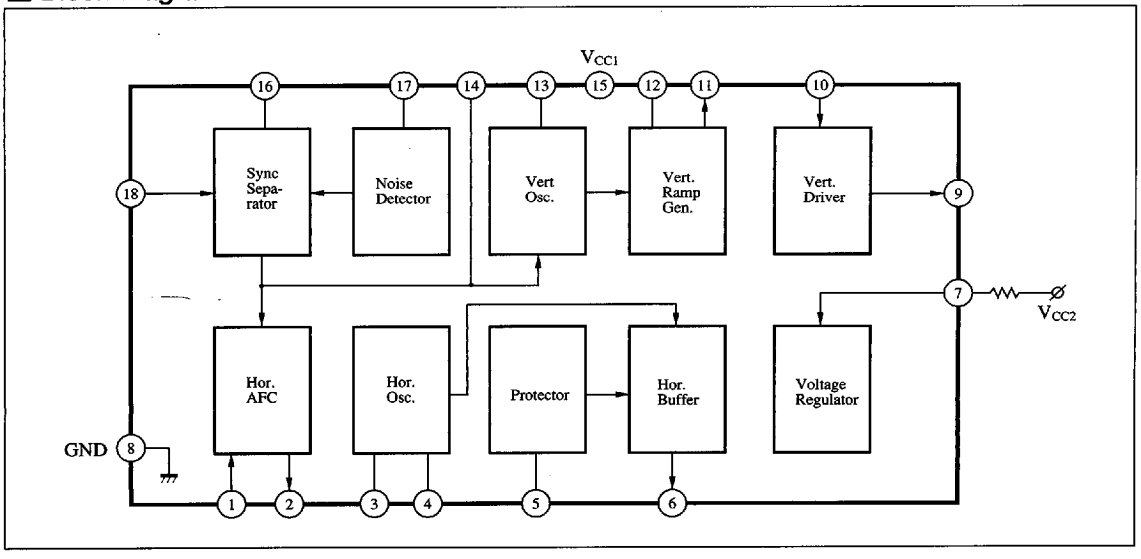
■ Features

- Built-in vertical deflection driver circuit
- Incorporating vertical and horizontal oscillator circuits, operating in high stability against changes in supply voltage and temperature
- Highly stable synchronous separation circuit against noise
- Built-in high voltage protector circuit (X-ray protection)
- 12V supply voltage operation



18-Pin DIL Plastic Package (b)

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Rating		Unit
Voltage	Supply voltage	V_{7-8}	10.5		V
		V_{15-8}	14.4		V
	Circuit voltage	V_{1-8}	0	10	V
		V_{10-8}	0	V_{15-8}	V
		V_{12-8}	0	V_{15-8}	V
		V_{17-8}	−0.6	6	V
		V_{18-8}	−3	2	V
Current	Supply current	I_7	15		mA
		I_{15}	20		mA
	Citcuit current	I_2	−3	3	mA
		I_3	−5	0	mA
		I_4	−5	5	mA
		I_5	−1	1	mA
		I_6	−20	0	mA
		I_9	−15	0	mA
		I_{12}	−1	150	mA
		I_{13}	0	40	mA
Power dissipation		P_D	450		mW
Temperature	Operating ambient temperature	T_{opr}	−20 to +70		℃
	Storage temperature	T_{stg}	−55 to +150		℃

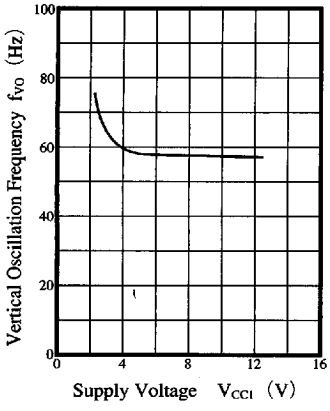
Note) "+" and "−" are flow-in and flow-out currents to/from the circuit, respectively.

■ Electrical Characteristics (Ta=25℃)

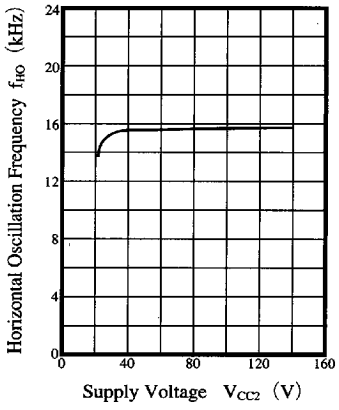
Parameter	Symbol	Condition	min	typ	max	Unit
Circuit current	I_7	Apply 12V with 240Ω to Pin⑦	7.5	11.2	15.0	mA
Circuit current	I_{15}	V_{15-8}=12V	15.5	23.0	32.0	mA
Protector operating voltage	V_{5-8}	Apply 12V with 240Ω to Pin⑦	0.64	0.7	0.76	V
Oscillation starting voltage (V·O_{SC})	$V_{OSC-S(1)}$	f_{VO}=40 to 70Hz,1.0V_{P-P} or more	—	—	6.2	V
Vertical osilltion frequncy	f_{VO}	V_{CC1}=12V	53	55	58	Hz
f_{VO} supply voltage dependency	$\Delta f_{VO}/V_{CC}$	f_{VO}|9.6V to f_{VO}|14.4V	0	0.93	1.3	Hz
Pulse width (V·O_{SC})	τ	V_{CC1}=12V	500	600	820	μs
Vertical pull-in range	f_{VP}	R_{OSC}=10.93kΩ (f_{VO}=48±1.5Hz)	—	—	50	Hz
Vertical saw-tooth wave amplification	$v_{(saw)}$	R_{saw}=26.4kΩ	1.8	2.0	2.2	V_{P-P}
f_{VO} ambient temperature dependency *1	Δf_{VO}/Ta	Ta=−20 to +70℃	−220	−170	0	ppm/℃
$v_{(saw)}$ ambient temperature dependency *1	$\Delta v_{(saw)}$/Ta	Ta=−20 to +70℃	—	—	30	mV_{P-P}/℃
Oscillation starting voltage (H. OSC)	$V_{OSC-S(2)}$	f_{HO}=10 to 20Hz,1.4V_{P-P} or more (V_{CC2}=6.5V)	—	—	6	V
Horizontal oscillation frequency	f_{HO}	V_{CC2}=12V	15.0	15.6	16.25	kHz
f_{HO} supply voltage dependency	$\Delta f_{HO}/V_{CC}$	f_{HO}|13V to f_{HO}|10V	0	25	45	Hz
Pulse width duty ratio (H. OSC)	τ	V_{CC2}=12V	32.0	36.0	39.5	%
f_{HO} control sensitivity	β	I_O=±100mA	19	21	23	Hz/μA
f_{HO} ambient temperature dependency *1	Δf_{HO}/Ta	Ta=−20 to +70℃	−210	−100	0	ppm/℃
AFC loop gain *1	f_{AFC}	$\mu \times \beta$	5800	7700	9600	Hz/rad

*1 Reference value for design

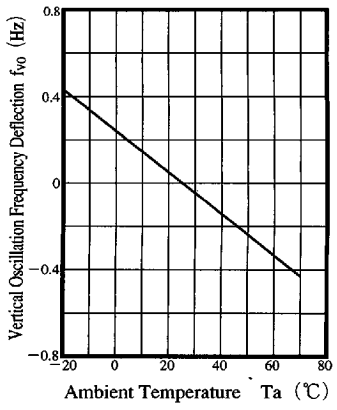
$f_{VO} - V_{CC1}$



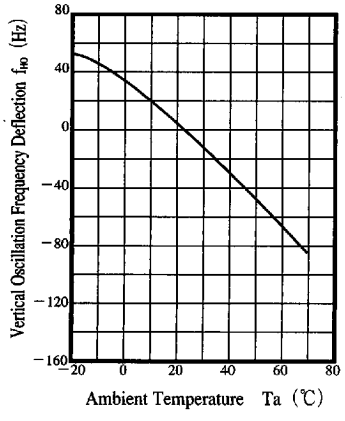
$f_{HO} - V_{CC2}$



$\Delta f_{VO} - Ta$



$\Delta f_{HO} - Ta$



■ Pin Descriptions

Pin No.	Pin name	Pin No.	Pin name
1	Hor. AFC ref.signal input	10	Vert. saw-tooth input
2	Hor. AFC output	11	Vert. saw-tooth capacitor
3	Hor. hold volume	12	Vert. pulse output
4	Hor. osc. capacitor	13	Vert. hold volume
5	X-ray protector input	14	Vert. integral capacitor
6	Hor. output	15	V_{CC1}
7	V_{CC2}	16	Sync. sep. output
8	GND	17	Noise det. input
9	Vert. output	18	Video signal input

■ Application Circuit