

# AN5435

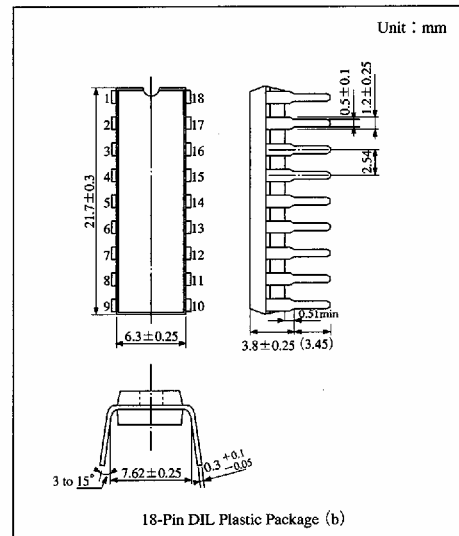
## Color TV Deflection-Signal Processing IC

### Overview

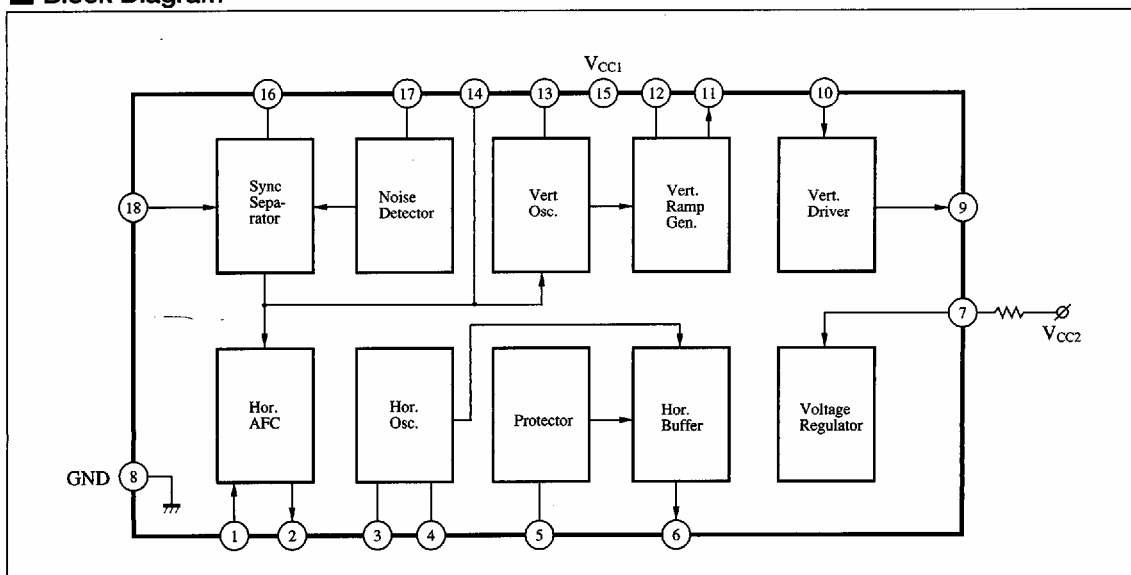
The AN5435 is an integrated circuit designed for color TV deflection-signal processing circuit. It operates with 12V power supply and is suitable for compact and medium-size color TV set.

### 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



### Block Diagram



### ■ Absolute Maximum Ratings (Ta=25°C)

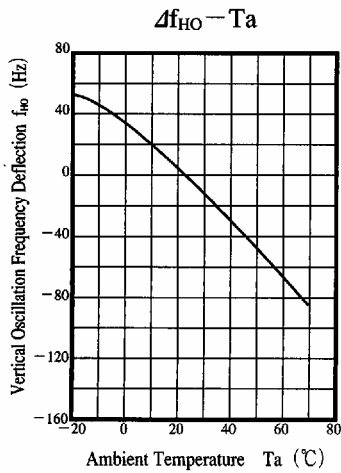
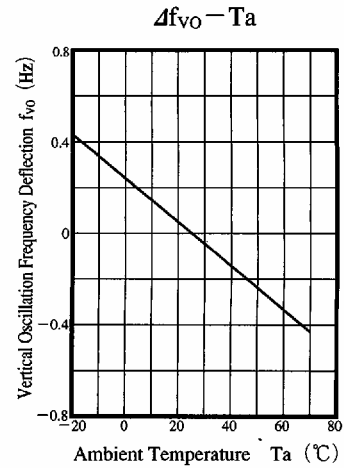
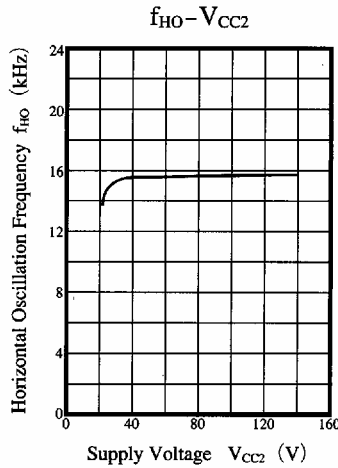
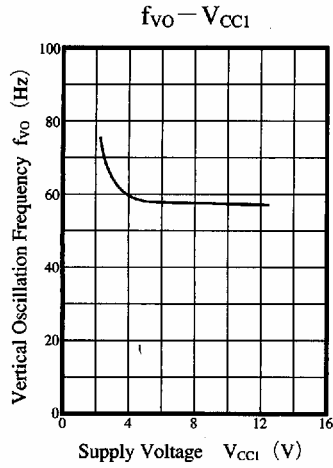
Parameter		Symbol	Rating		Unit
Voltage	Supply voltage	V <sub>7-8</sub>	10.5		V
		V <sub>15-8</sub>	14.4		V
	Circuit voltage	V <sub>1-8</sub>	0	10	V
		V <sub>10-8</sub>	0	V <sub>15-8</sub>	V
		V <sub>12-8</sub>	0	V <sub>15-8</sub>	V
		V <sub>17-8</sub>	-0.6	6	V
V <sub>18-8</sub>	-3	2	V		
Current	Supply current	I <sub>7</sub>	15		mA
		I <sub>15</sub>	20		mA
	Circuit current	I <sub>2</sub>	-3	3	mA
		I <sub>3</sub>	-5	0	mA
		I <sub>4</sub>	-5	5	mA
		I <sub>5</sub>	-1	1	mA
		I <sub>6</sub>	-20	0	mA
		I <sub>9</sub>	-15	0	mA
		I <sub>12</sub>	-1	150	mA
I <sub>13</sub>	0	40	mA		
Power dissipation		P <sub>D</sub>	450		mW
Temperature	Operating ambient temperature	T <sub>opr</sub>	-20 to +70		°C
	Storage temperature	T <sub>stg</sub>	-55 to +150		°C

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

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

Parameter	Symbol	Condition	min	typ	max	Unit
Circuit current	I <sub>7</sub>	Apply 12V with 240Ω to Pin⑦	7.5	11.2	15.0	mA
Circuit current	I <sub>15</sub>	V <sub>15-8</sub> =12V	15.5	23.0	32.0	mA
Protector operating voltage	V <sub>5-8</sub>	Apply 12V with 240Ω to Pin⑦	0.64	0.7	0.76	V
Oscillation starting voltage (V·O <sub>SC</sub> )	V <sub>osc-s(1)</sub>	f <sub>VO</sub> =40 to 70Hz, 1.0V <sub>P-P</sub> or more	—	—	6.2	V
Vertical oscillation frequency	f <sub>VO</sub>	V <sub>CC1</sub> =12V	53	55	58	Hz
f <sub>VO</sub> supply voltage dependency	Δf <sub>VO</sub> /V <sub>CC</sub>	f <sub>VO</sub>  9.6V to f <sub>VO</sub>  14.4V	0	0.93	1.3	Hz
Pulse width (V·O <sub>SC</sub> )	τ	V <sub>CC1</sub> =12V	500	600	820	μs
Vertical pull-in range	f <sub>VP</sub>	R <sub>OSC</sub> =10.93kΩ (f <sub>VO</sub> =48±1.5Hz)	—	—	50	Hz
Vertical saw-tooth wave amplification	v <sub>(saw)</sub>	R <sub>saw</sub> =26.4kΩ	1.8	2.0	2.2	V <sub>P-P</sub>
f <sub>VO</sub> ambient temperature dependency *1	Δf <sub>VO</sub> /Ta	Ta=-20 to +70°C	-220	-170	0	ppm/°C
v <sub>(saw)</sub> ambient temperature dependency *1	Δv <sub>(saw)</sub> /Ta	Ta=-20 to +70°C	—	—	30	mV <sub>P-P</sub> /°C
Oscillation starting voltage (H. OSC)	V <sub>osc-s(2)</sub>	f <sub>HO</sub> =10 to 20Hz, 1.4V <sub>P-P</sub> or more (V <sub>CC2</sub> =6.5V)	—	—	6	V
Horizontal oscillation frequency	f <sub>HO</sub>	V <sub>CC2</sub> =12V	15.0	15.6	16.25	kHz
f <sub>HO</sub> supply voltage dependency	Δf <sub>HO</sub> /V <sub>CC</sub>	f <sub>HO</sub>  13V to f <sub>HO</sub>  10V	0	25	45	Hz
Pulse width duty ratio (H. OSC)	τ	V <sub>CC2</sub> =12V	32.0	36.0	39.5	%
f <sub>HO</sub> control sensitivity	β	I <sub>O</sub> =±100mA	19	21	23	Hz/μA
f <sub>HO</sub> ambient temperature dependency *1	Δf <sub>HO</sub> /Ta	Ta=-20 to +70°C	-210	-100	0	ppm/°C
AFC loop gain *1	f <sub>AFC</sub>	μ × β	5800	7700	9600	Hz/rad

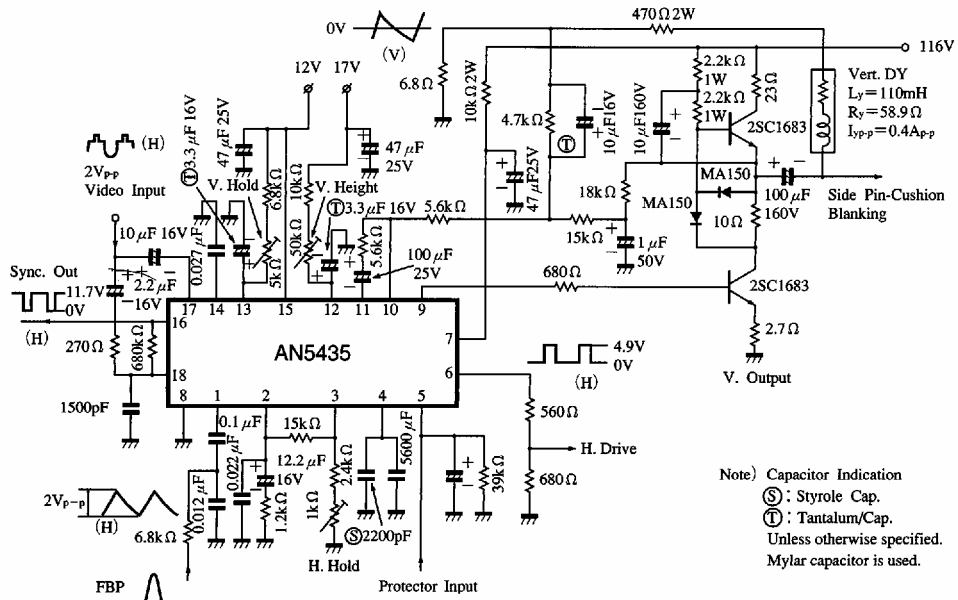
\*1 Reference value for design



**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**



Note) Capacitor Indication  
 Ⓢ: Styrole Cap.  
 Ⓣ: Tantalum/Cap.  
 Unless otherwise specified.  
 Mylar capacitor is used.