

AN5795NK

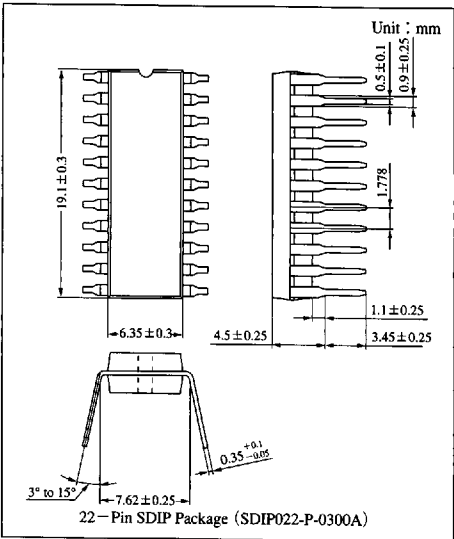
Deflection Signal Processor IC for CRT

Overview

The AN5795NK is a deflection signal processor IC for CRT. It can support up to 130kHz horizontal oscillation frequency. It incorporates horizontal position adjustment and duty-cycle adjustment functions.

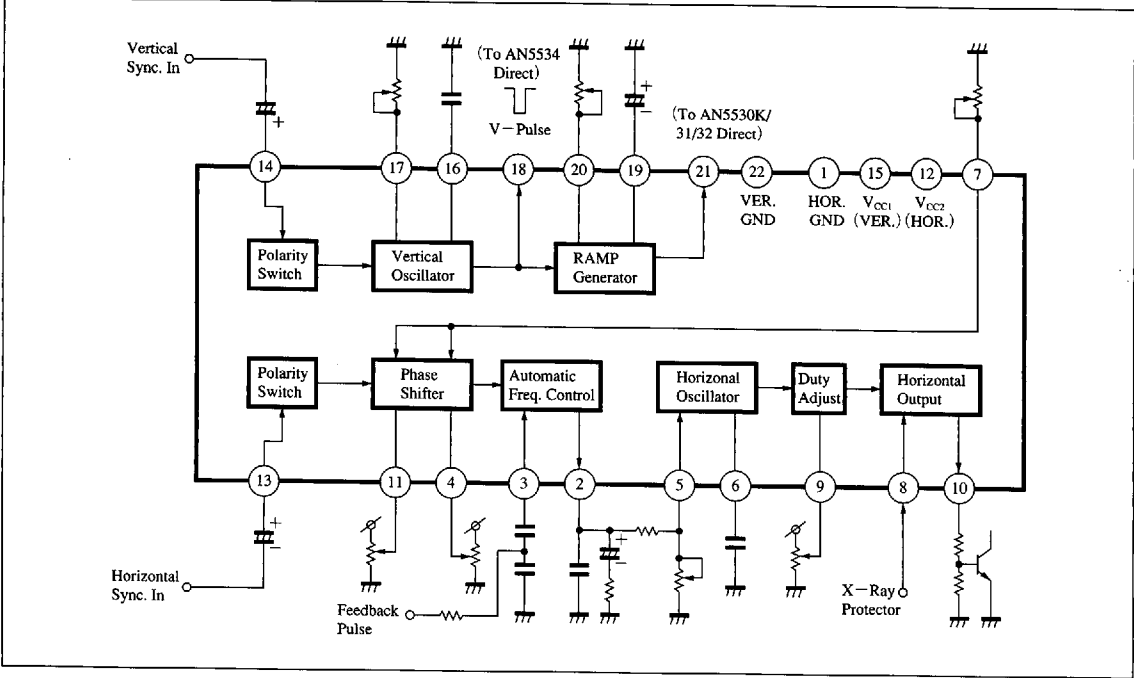
Features

- Supporting horizontal and vertical synchronization inputs for either polarity
- Horizontal oscillation frequency : f_H max. = 130kHz
- Built-in vertical saw-tooth wave generator
- Vertical oscillation pulse width : 600 μ s



ICs for TV

Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	13.2	V
Supply current	I_{CC}	40.0	mA
Power dissipation ^{Note 2)}	P_D	530	mW
Operating ambient temperature ^{Note 1)}	T_{opr}	-20 to +70	°C
Storage temperature ^{Note 1)}	T_{sig}	-55 to +150	°C

Note 1) $T_a = 25^\circ\text{C}$ except operating ambient temperature and storage temperature.

Note 2) Allowable power dissipation of the package at $T_a = 70^\circ\text{C}$.

Recommended Operating Range ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Range
Operating supply voltage range	V_{CC}	9.8V to 13.0V

Electrical Characteristics ($T_a = 25 \pm 2^\circ\text{C}$)

Parameter	Symbol	Condition	min	typ	max	Unit
Circuit voltage	I_{I5}		6.9	8.5	10.1	mA
	I_{I2}		9.4	10.8	12.0	mA
	V_3		6.2	7.0	7.8	V
	V_5		6.3	7.1	7.9	V
	V_7		6.4	7.4	8.2	V
	V_{13}		2.4	2.9	3.4	V
	V_{14}		2.4	2.9	3.4	V
	V_{17}		6.4	7.4	8.2	V
	V_{20}		4.9	5.9	6.8	V
Horizontal output voltage (H)	$V_{10-1(H)}$		3.8	4.3	4.9	V
Horizontal output voltage (L)	$V_{10-1(L)}$		-0.2	0.1	0.2	V
X-ray protective circuit operation voltage	V_{8-1}		0.75	0.86	0.97	V
Horizontal oscillation starting supply voltage	$V_{fh, s}$	$f_{ho} = 15.5\text{kHz}$	—	—	9.7	V
Horizontal oscillation frequency (free-run)	$f_{ho} (1)$	Pin⑤ = 39k Ω , Pin⑥ = 1200pF	15.0	15.75	16.5	kHz
Horizontal oscillation frequency (max.)	$f_{ho} (2)$	Pin⑤ = 18k Ω , Pin⑥ = 270pF	100	115	130	kHz
Oscillation frequency control sensitivity	β	$\Delta I = \pm 80\mu\text{A}$	75.0	82.0	90.0	Hz/ μA
Horizontal output duty (min.)	$t_d (1)$	Pin⑨ = 7.3V	7.0	9.9	12.5	%
Horizontal output duty (max.)	$t_d (2)$	Pin⑨ = 9.4V	90.5	94.5	97.5	%
Horizontal phase adjustment (min.)	$t_p (1)$	Pin⑪ = 1.2V, Pin⑦ = 24k Ω	0.5	1.0	1.5	μs
Horizontal phase adjustment (max.)	$t_p (2)$	Pin⑦ = 24k Ω , Pin⑪ = 5V	3.2	3.7	4.2	μs
Horizontal phase adjustment quantity	$t_p (3)$	Pin⑦ = 83k Ω , Pin⑪ = 5V	11.5	12.4	13.3	μs
Horizontal phase pulse width (min.)	$t_{pw} (1)$	Pin④ = 1.5V, Pin⑦ = 24k Ω	0.5	1.0	1.5	μs
Horizontal phase pulse width (max.)	$t_{pw} (2)$	Pin⑦ = 83k Ω , Pin④ = 5V	11.1	12.2	13.2	μs
Hsync input amplitude (min.)	V_{13-1}	$V_{CC} = 12\text{V}$	—	—	2.9	V_{P-P}
Vertical oscillation start supply voltage	$V_{fv, s}$	$f_{vo} = 54\text{Hz}$	—	—	7.8	V
Vertical oscillation frequency (free-run)	$f_{vo} (1)$	Pin⑪ = 49k Ω , Pin⑫ = 0.039 μF	45	50	55	Hz
Vertical oscillation frequency (max.)	$f_{vo} (2)$	Pin⑪ = 13.9k Ω Pin⑫ = 0.039 μF	140	150	160	Hz
Vertical pulse output width	t_{vo}	$f_{vin} = 60\text{Hz}$, $f_{vo} = 50\text{Hz}$	0.45	0.50	0.55	ms
Vertical pull-in range	f_{pv}	$f_{vin} = 140\text{Hz}$, $f_{vo} = 50\text{Hz}$	89	90	91	Hz
Vsync input amplitude (min.)	V_{14-22}	$f_{vin} = 60\text{Hz}$, $f_{vo} = 50\text{Hz}$	—	—	2.9	V_{P-P}

■ Electrical Characteristics [Reference Value] (Ta=25±2℃)

Parameter	Symbol	Condition	Reference value	Unit
Horizontal oscillation supply fluctuation	$\Delta f_{ho}/\Delta V_{CC}$	$V_{CC2}=10.8$ to $13.2V$ $f_{ho}=31.5kHz$	141	Hz/V
Horizontal oscillation temperature fluctuation	$\Delta f_{ho}/\Delta t$	$V_{CC2}=12V$ $f_{ho}=31.5kHz$	2.7	Hz/℃
Phase detection sensitivity	μ	$V_{CC2}=12V$	67	$\mu A/\mu s$
Horizontal output duty supply fluctuation	$\Delta t_d/\Delta V_{CC}$	$V_{CC2}=10.8$ to $13.2V$ $t_d=32\%$, $f_{ho}=31.5kHz$	0.7	%/V
Horizontal output duty temperature fluctuation	$\Delta t_d/\Delta t$	$t_d=32\%$, $f_{ho}=31.5kHz$	0.023	%/℃
Horizontal output drive current	I_{I0}	$V_{CC2}=12V$	5 (max.)	mA
Horizontal phase supply fluctuation	$\frac{\Delta t_p/\Delta t_{pref}}{\Delta V_{CC}}$	$V_{CC2}=10.8$ to $13.2V$ $t_{pref}=6\mu s$	0.16	%/V
Horizontal phase temperature fluctuation	$\frac{\Delta t_p/\Delta t_{pref}}{\Delta t}$	$t_{pref}=6\mu s$	0.03	%/℃
Horizontal phase pulse supply fluctuation	$\Delta t_{pw}/\Delta V_{CC}$	$V_{CC2}=10.8$ to $13.2V$ $t_{pwref}=6\mu s$	0.48	%/V
Horizontal phase pulse temperature fluctuation	$\Delta t_{pw}/\Delta t$	$t_{pwref}=6\mu s$	0.03	%/℃
Vertical oscillation supply fluctuation	$\Delta f_{vo}/\Delta V_{CC}$	$V_{CC1}=10.8$ to $13.2V$ $f_{vo}=50Hz$	0.59	Hz/V
Vertical oscillation temperature change	$\Delta f_{vo}/\Delta t$	$f_{vo}=50Hz$	0.01	Hz/℃

Note) The above characteristics are only theoretical values on design, and are not entirely guaranteed by the inspection.



■ Pin Descriptions

Pin No.	Pin name	Pin No.	Pin name
1	Horizontal system GND	12	V_{CC2} (Hor. system power supply)
2	AFC output	13	Hor. sync. signal input
3	FBP input for AFC	14	Ver. sync. signal input
4	Hor. phase pulse width control	15	V_{CC1} (Ver. system power supply)
5	Resistor pin for hor. oscillation	16	Capacitor pin for ver. oscillation
6	Capacitor pin for hor. oscillation	17	Resistor pin for ver. oscillation
7	Current control for phase adj.	18	Vertical pulse output
8	X-RAY protector	19	Capacitor pin for RAMP generation
9	DUTY control	20	Resistor pin for RAMP generation
10	Horizontal output	21	RAMP waveform output
11	Hor. phase adj.	22	Vertical system GND