

# AN5160NK

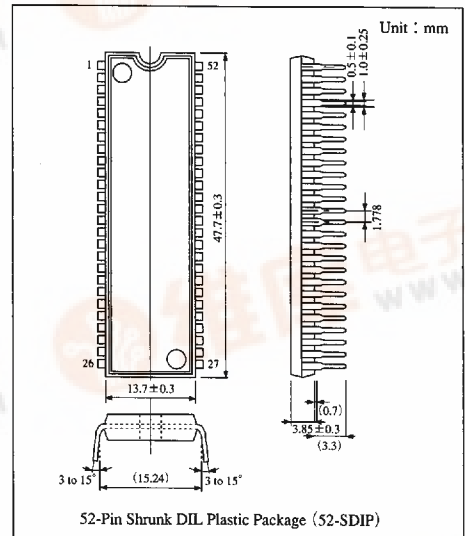
## VIF, SIF, Video Color and Synchronous Signal Processor IC (NTSC System)

### Overview

The AN5160NK is a single chip integrated circuit in which all signal (VIF, SIF, video, color and synchronous signal) processing circuits of the NTSC color TV are integrated.

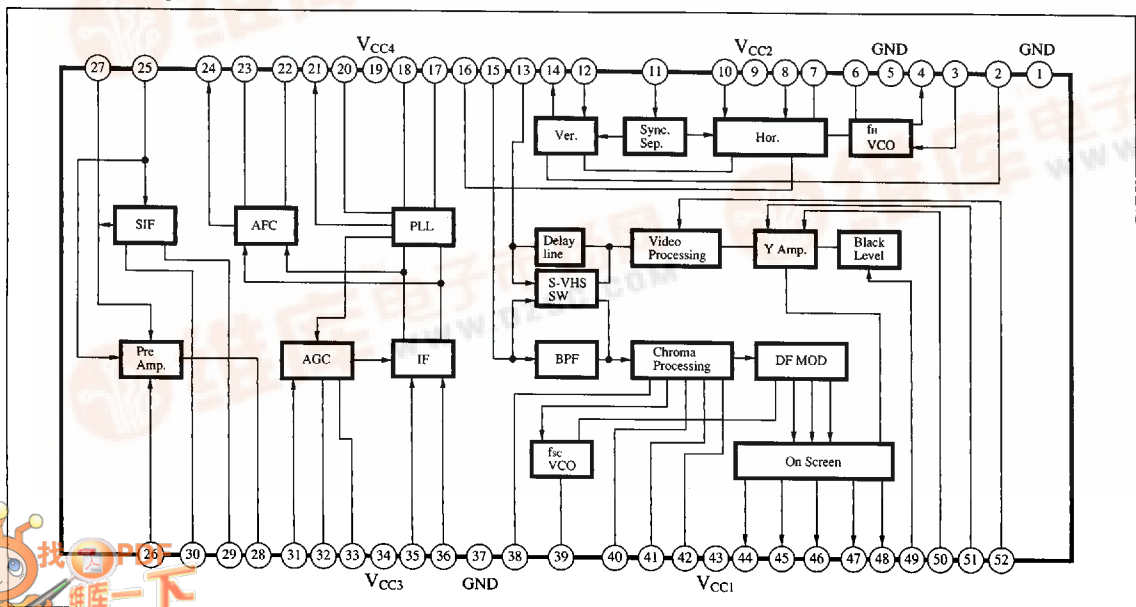
### Features

- VIF circuit using PLL complete synchronous detection
- Audio external-input pin and volume adjusting-circuit built-in
- Y delay line built-in and Y delay line switchable
- Black-level compensating circuit built-in
- 3.58MHz BPF built-in
- APC Killer filter built-in (adjustment free APC)
- On-screen pin attached (Only for green and the other outputs are blanking)
- Compatible with S-VHS system (3.58MHz ON/OFF switching)
- Horizontal/vertical oscillation frequency are adjustment-free.
- Horizontal synchronous lock detecting pin attached
- Can be connected directly to the Panasonic's vertical output IC, AN5534
- Service switch circuit built-in (ver out stop, Y out blanking)
- Y output is black level when no synchronous signal is input



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### Block Diagram



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

Parameter	Symbol	Rating	Unit	Note
Supply voltage	V <sub>CC1</sub>	12	V	
Supply current	I <sub>CC</sub>	I <sub>43</sub>	82	mA
		I <sub>9</sub>	30	
		I <sub>34+19</sub>	61	
Power dissipation	P <sub>D</sub>	1,300	mW	Ta=70°C
Operating ambient temperature	T <sub>opr</sub>	-20 to +70	°C	
Storage temperature	T <sub>stg</sub>	-55 to +150	°C	

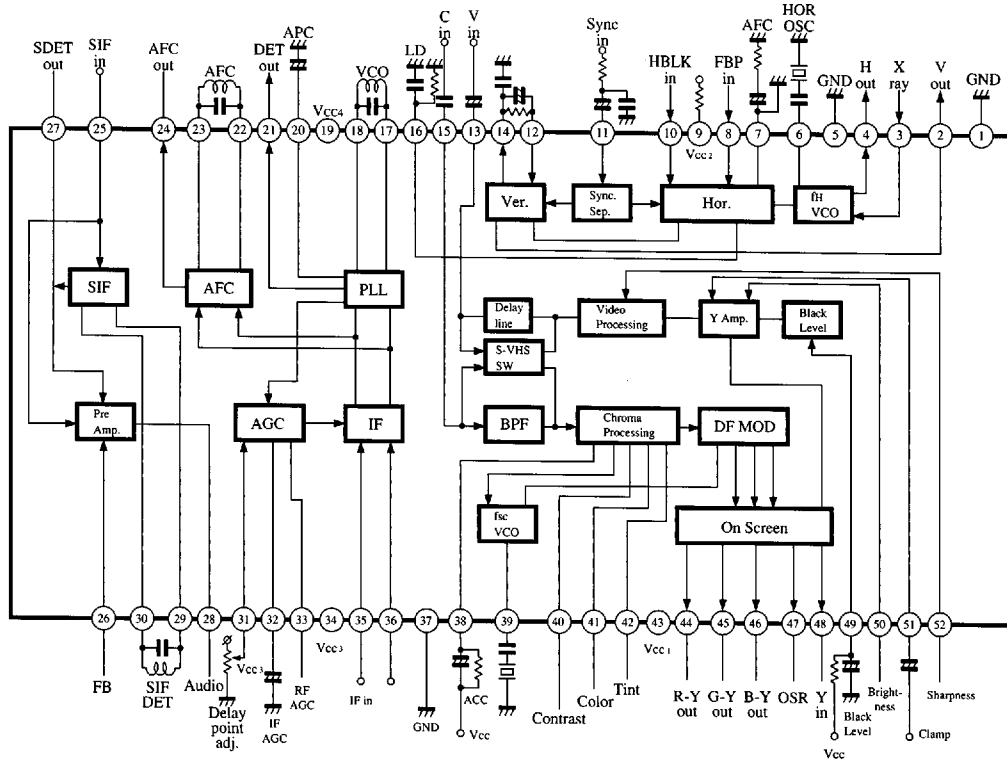
### ■ Recommended Operating Range (Ta=25°C)

Parameter	Symbol	Range
Operating supply voltage range	V <sub>CC1</sub>	8.1V to 9.9V
	V <sub>CC3,4</sub>	4.5V to 5.5V

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

Parameter	Symbol	Condition	min	typ	max	Unit
<b>VIF Section</b>						
Video detection output	V <sub>O21</sub>	m=87.5%, V <sub>in</sub> =80dB $\mu$	1.75	2	2.25	V <sub>PP</sub>
Video frequency characteristics	f <sub>C</sub>	-3dB frequency at 1MHz detection output	4	5.5	—	MHz
VCO oscillator sensitivity	$\beta$	$\Delta V_{20}=0.2V$ (DC : about 2V)	3	4.3	6.5	kHz/mV
RFAGC sensitivity	G <sub>RF</sub>	Difference in input level of V <sub>33</sub> =1V $\rightarrow$ 7V	—	1.5	3	dB
AFC phase detector sensitivity	$\mu$ <sub>AFC</sub>	R <sub>L</sub> =100k $\Omega$ //100k $\Omega$	25	40	55	mV/kHz
<b>SIF Section</b>						
Audio detection output	V <sub>O27</sub>	f <sub>0</sub> =4.5MHz, V <sub>in</sub> =100dB $\mu$ , $\Delta f = \pm 25kHz$ , f <sub>m</sub> =1kHz	125	155	185	mV <sub>rms</sub>
Audio output	V <sub>O28</sub>	f <sub>0</sub> =4.5MHz, V <sub>in</sub> =100dB $\mu$ , $\Delta f = \pm 25kHz$ , f <sub>m</sub> =1kHz	410	530	650	mV <sub>rms</sub>
<b>Video Signal Processing Section</b>						
Video voltage gain	A <sub>V</sub>	Input : f=1MHz, 0.2V <sub>PP</sub> Contrast VR : max.	7.6	9.3	12.2	Times
Video frequency characteristics	f <sub>YC</sub>	Picture quality VR : min., 3dB down from f=1MHz	4.5	5.5	—	MHz
Brightness oscillator sensitivity	BR	Bright VR=7.5 to 8V	-4.5	-3.6	-2.7	Times
<b>Chroma Signal Processing Section</b>						
Color difference output (typ)	e <sub>O1B</sub>	B-Y color bar signal Color VR : 3.3V Contrast VR : 5V	2.3	3	3.7	V <sub>PP</sub>
Color difference output (max)	e <sub>O2B</sub>	B-Y color bar signal Color VR : 5V Contrast VR : 5V	3.7	4.7	5.7	V <sub>PP</sub>
ACC characteristics (1)	ACC <sub>1</sub>	Burst 200 $\rightarrow$ 400mV <sub>PP</sub>	0.9	1	1.1	Times
ACC characteristics (2)	ACC <sub>2</sub>	Burst 200 $\rightarrow$ 20mV <sub>PP</sub>	0.5	0.7	1	Times
Demodulated output ratio (1)	R/B	Color bar signal (Burst 200mV <sub>PP</sub> )	0.72	0.96	1.2	Times
Demodulated output ratio (2)	G/B	Color bar signal (Burst 200mV <sub>PP</sub> )	0.22	0.31	0.39	Times
Demodulated angle R	$\angle R$	Color bar signal (Burst 200mV <sub>PP</sub> )	89	104	119	deg
Demodulated angle G	$\angle G$	Color bar signal (Burst 200mV <sub>PP</sub> )	225	240	255	deg
Color killer tolerance	e <sub>K</sub>	Color bar signal Burst 200mV <sub>PP</sub> =0dB	-55	-42	-30	dB
<b>Synchronous Signal Processing Section</b>						
Horizontal natural oscillation frequency	f <sub>HO</sub>	Output frequency of Pin④	15.45	15.75	16.05	kHz
Horizontal pull-in range	f <sub>PH</sub>		15.25	—	16.25	kHz

■ Application Circuit



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