

# AN3900NSC

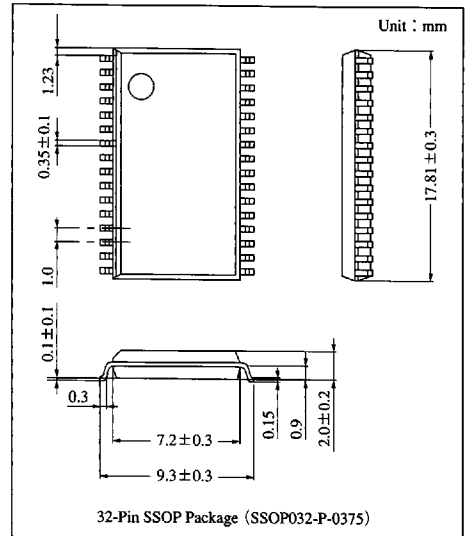
## Stereo Audio PLL IC for 8-mm Video Camera

### Overview

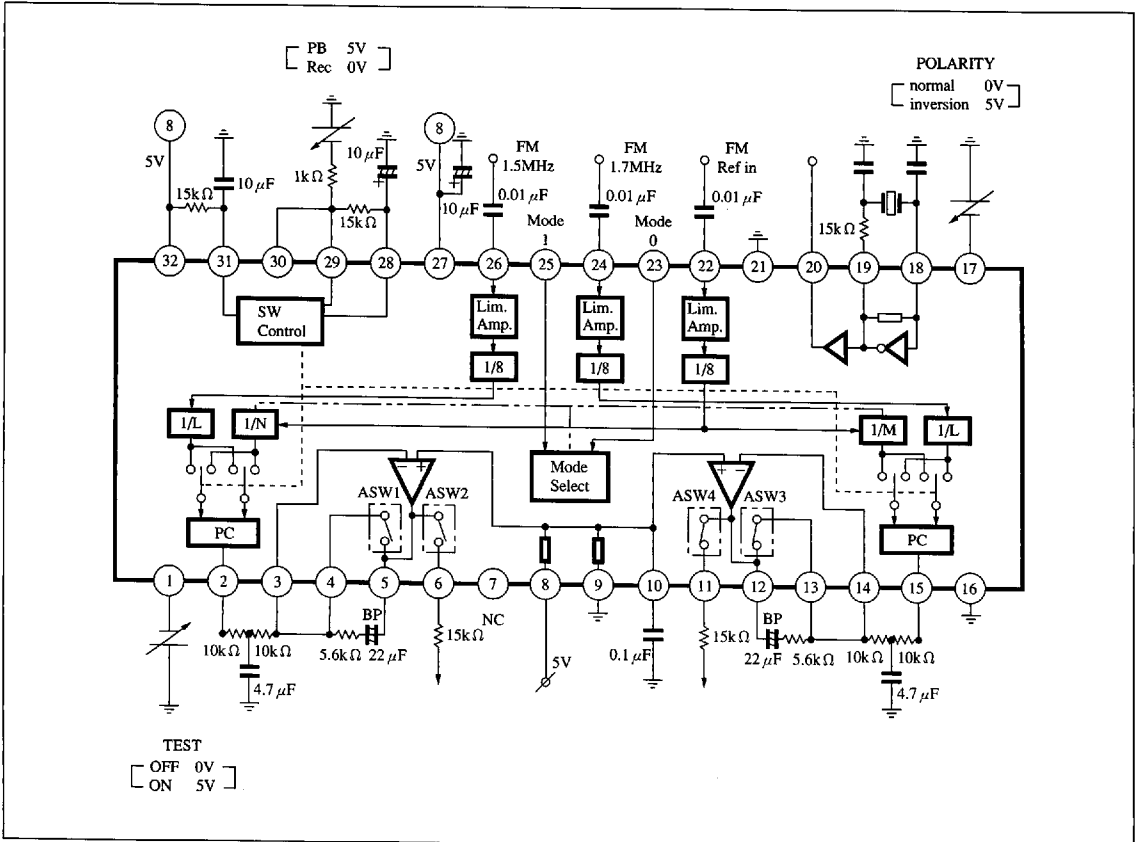
The AN3900NSC is a PLL IC to process 8-mm VCR stereo audio signals. It incorporates limiter amplifiers, frequency dividers, phase comparators, quartz oscillator circuits, and other functions necessary for frequency adjustment of MHz-band signals. It may be used with the AN3986FHP or the AN3986FBP to form a complete system.

### Features

- Compatible with 3 modes of NTSC, PAL, and XT standards
- Built-in a quartz oscillator circuit



### Block Diagram



6932852 0014578 602

## Pin Descriptions

Pin No.	Pin name	Pin No.	Pin name
1	Test mode input	17	Polarity switching
2	Phase comparator output (L channel)	18	Crystal oscillator input
3	Filter amplifier reverse input (L channel)	19	Crystal oscillator output
4	Analog switch output (L channel)	20	Buffered oscillator output
5	Filter amplifier output (L channel)	21	Ground for ECL
6	PLL error output (L channel)	22	Reference input
7	No connection	23	MODE 0
8	V <sub>CC</sub> for analog circuits (5V)	24	R channel FM modulation input
9	GND for analog circuits	25	MODE 1
10	Connecting to a pass-capacitor for ope. amp. bias	26	L channel FM modulation input
11	PLL error output (R channel)	27	V <sub>CC</sub> for ECL (5V)
12	Filter OP. AMP output (R channel)	28	Time-constant input (playback/recording switching)
13	Analog switch output (R channel)	29	VAPB mode
14	Filter OP. AMP reverse input (R channel)	30	Standby mode
15	Phase comparator output (R channel)	31	Time-constant input (at power-on)
16	Ground for I <sup>2</sup> L	32	V <sub>CC</sub> for PLL

## Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	6	V
Power dissipation <sup>Note2)</sup>	P <sub>D</sub>	323	mW
Operating ambient temperature <sup>Note1)</sup>	T <sub>opr</sub>	-20 to +70	°C
Storage temperature <sup>Note1)</sup>	T <sub>stg</sub>	-55 to +125	°C

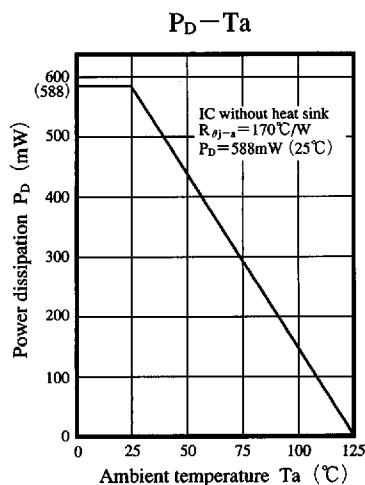
Note 1) T<sub>a</sub> = 25°C except operating ambient temperature and storage temperature.

Note 2) Allowable power dissipation of the package at T<sub>a</sub> = 70°C.

## Recommended Operating Range (T<sub>a</sub> = 25°C)

Parameter	Symbol	Range
Operating supply voltage range	V <sub>CC</sub>	4.5V to 5.5V

## Reference



6932852 0014579 549

Panasonic


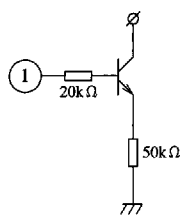
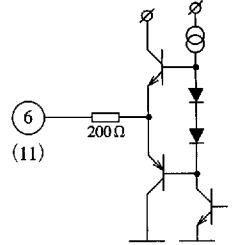

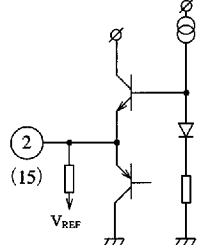

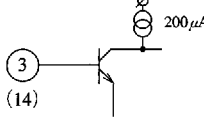
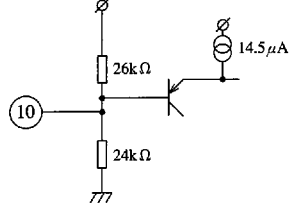
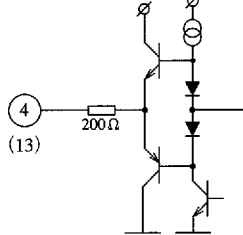

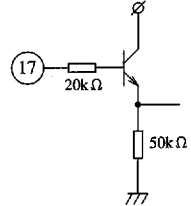

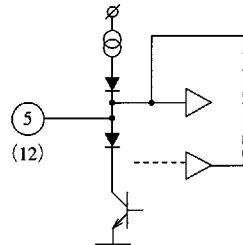

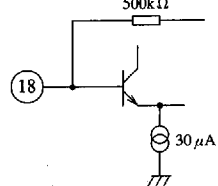
**Electrical Characteristics** ( $V_{CC}=5.0V$ ,  $T_a=25\pm 2^\circ C$ )

Parameter	Symbol	Condition	min	typ	max	Unit
Circuit current at recording	$I_{SR}$	$V_{CC}=5.0V$ $Pin\textcircled{2}, \textcircled{3}, \textcircled{30}=0V$	21	29	37	mA
Supply current at PB mode	$I_{BP}$	$V_{CC}=5.0V$ $Pin\textcircled{2}, \textcircled{3}, \textcircled{30}=5.0V$	12	17	22	mA
NTSC VCO frequency error (R)	$FV_{NR}$	$Pin\textcircled{2} f=3.579MHz$ $V_{IN}=400mV_{P-P}$	-1.0	—	1.0	kHz
NTSC VCO frequency error (L)	$FV_{NL}$	$Pin\textcircled{2} f=3.579MHz$ $V_{IN}=400mV_{P-P}$	-1.0	—	1.0	kHz
PAL VCO frequency error (R)	$FV_{PR}$	$Pin\textcircled{2} f=4.4336MHz$ $V_{IN}=400mV_{P-P}$	-1.0	—	1.0	kHz
PAL VCO frequency error (L)	$FV_{PL}$	$Pin\textcircled{2} f=4.4336MHz$ $V_{IN}=400mV_{P-P}$	-1.0	—	1.0	kHz
XT VCO frequency error (R)	$FV_{XR}$	$Pin\textcircled{2} f=0.1494MHz$ $V_{IN}=3V_{P-P}$	-1.0	—	1.0	kHz
XT VCO frequency error (L)	$FV_{XL}$	$Pin\textcircled{2} f=0.1494MHz$ $V_{IN}=3V_{P-P}$	-1.0	—	1.0	kHz
NTSC Rch reference signal level	$RL_{NR}$	$Pin\textcircled{2} f=3.579MHz$ VCO frequency error < 1kHz	0.09	—	4.0	$V_{P-P}$
NTSC Lch reference signal level	$RL_{NL}$	$Pin\textcircled{2} f=3.579MHz$ VCO frequency error < 1kHz	0.09	—	4.0	$V_{P-P}$
PAL Rch reference signal level	$RL_{PR}$	$Pin\textcircled{2} f=4.4336MHz$ VCO frequency error < 1kHz	0.09	—	4.0	$V_{P-P}$
PAL Lch reference signal level	$RL_{PL}$	$Pin\textcircled{2} f=4.4336MHz$ VCO frequency error < 1kHz	0.09	—	4.0	$V_{P-P}$
XT Rch reference signal level	$RL_{XR}$	$Pin\textcircled{2} f=0.1494MHz$ VCO frequency error < 1kHz	2.0	—	4.0	$V_{P-P}$
XT Lch reference signal level	$RL_{XL}$	$Pin\textcircled{2} f=0.1494MHz$ VCO frequency error < 1kHz	2.0	—	4.0	$V_{P-P}$
Rec holding voltage	$V_{R28-30}$		0.0	—	1.3	V
PB holding voltage	$V_{P28-30}$		3.7	—	5.0	V
Demodulation noise level (R)	$NL_R$	$Pin\textcircled{2} f=3.579MHz$ $V_{IN}=400mV_{P-P}$	—	—	-63	dBv
Demodulation noise level (L)	$NL_L$	$Pin\textcircled{2} f=3.579MHz$ $V_{IN}=400mV_{P-P}$	—	—	-63	dBv
Quartz oscillation output level	$L_{OSC}$	Quartz oscillator, at $f=3.579MHz$	0.3	—	—	$V_{P-P}$
NTSC/PAL/XT change-over voltage NTSC	$V_{N23}$	$Pin\textcircled{25}=0V$	0	—	1.3	V
NTSC/PAL/XT change-over voltage NTSC (2)	$V_{N25}$	$Pin\textcircled{23}=0V$	0	—	1.3	V
NTSC/PAL/XT change-over voltage PAL (1)	$V_{P23}$	$Pin\textcircled{25}=0V$	3.7	—	5.0	V
NTSC/PAL/XT change-over voltage PAL (2)	$V_{P25}$	$Pin\textcircled{23}=5.0V$	0	—	1.3	V
NTSC/PAL/XT change-over voltage XT (1)	$V_{X23}$	$Pin\textcircled{25}=5.0V$	0	—	1.3	V
NTSC/PAL/XT change-over voltage XT (2)	$V_{X25}$	$Pin\textcircled{23}=0V$	3.7	—	5.0	V
Polarity inversion change-over input voltage High	$V_{H17}$		3.7	—	5.0	V
Polarity inversion change-over input voltage Low	$V_{L17}$		0	—	1.3	V
TEST mode input voltage High	$V_{H1}$		3.7	—	5.0	V
TEST mode input voltage Low	$V_{L1}$		0	—	1.3	V

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**Pin Descriptions**


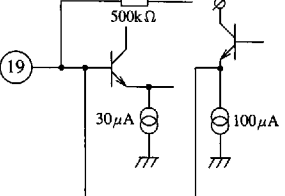

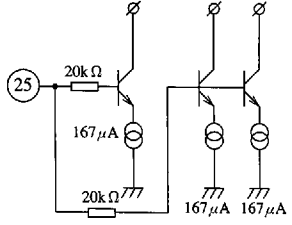

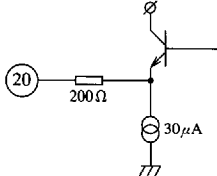
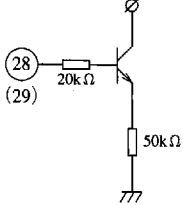

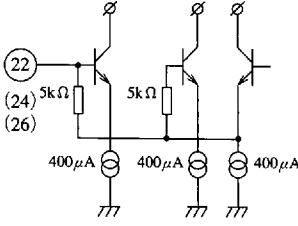
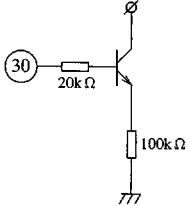

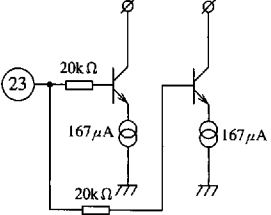

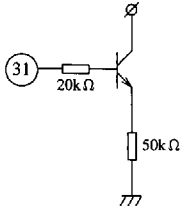
Waveform and input/output equivalent circuit at each pin ( $V_{CC}$  and GND not shown)

Pin No.	Waveform · Voltage	Equivalent circuit	Pin No.	Waveform · Voltage	Equivalent circuit
1			6 · 11	DC2.4V	
2 · 15	 DC2.4V		7	NC	
3 · 14	DC2.4V		10	DC2.4V	
4 · 13	DC2.4V		17		
5 · 12	 DC2.4V		18	 DC2.4V	

Note) The above values are typical ones (at  $V_{CC}=5.0V$ ) and may depend on the operating condition and individual IC.

■ Pin Descriptions (cont.)

Waveform and input/output equivalent circuit at each pin ( $V_{CC}$  and GND not shown)

Pin No.	Waveform · Voltage	Equivalent circuit	Pin No.	Waveform · Voltage	Equivalent circuit
19	 DC2.4V		25		
20	 DC2.4V		28 29	5V for playback, and 0V for recording	
22 24 26	 DC3.2V		30	5V for playback, and 0V for recording	
23			31		

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Note) The above values are typical ones (at  $V_{CC}=5.0V$ ) and may depend on the operating condition and individual IC.

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