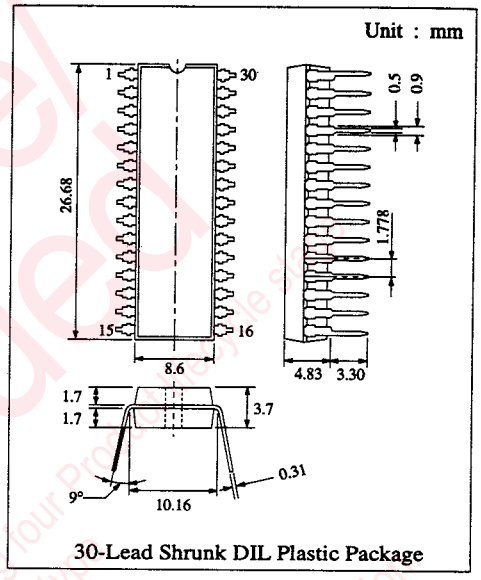
AN5179K

VIF, SIF Circuit for TV/VCR

■ Description

The AN5179K is an integrated circuit for TV/VCR VIF and SIF and improves the audio performance by using the QSS (Quasi Separate Sound) method and provides low power consumption with power supply of 5V.

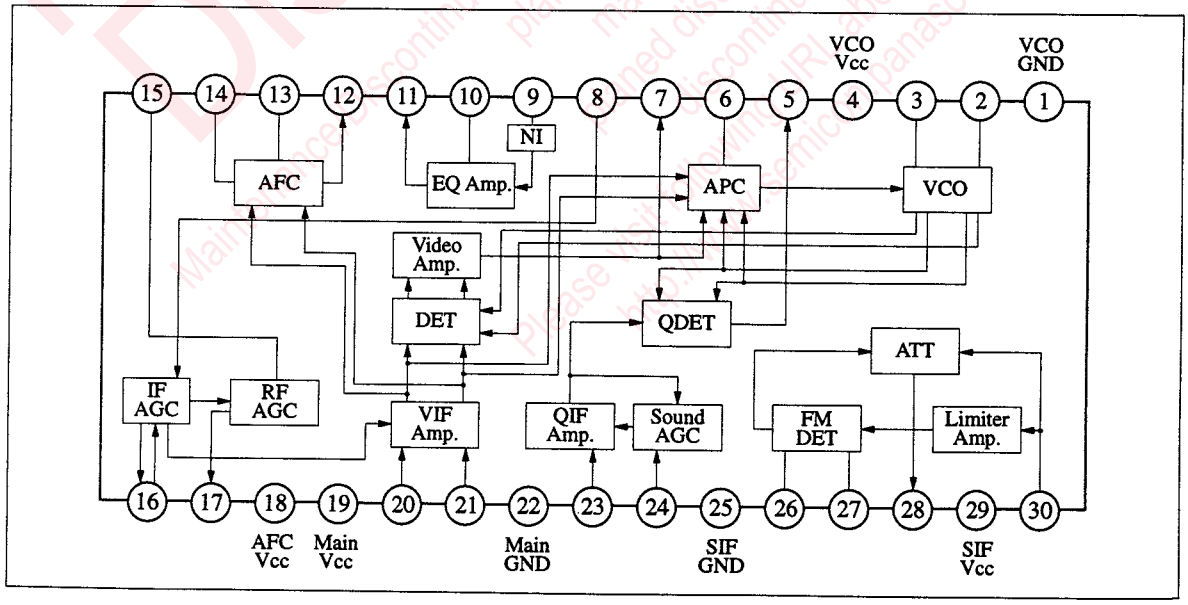


30-Lead Shrunk DIL Plastic Package

■ Features

- PLL complete synchronous detection
- Reduction of buzz by QSS (Quasi Separate Sound) circuit
- External AGC pin for CATV disscramble attached
- AFC output circuit can use another power supply, Vcc2 (5V~12V)
- Built-in DC volume control circuit
- Power supply operating range Vcc1 : 5V
  Vcc2 (5V~12V)
- 30-lead shrunk DIL plastic package.

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	$V_{4,9,29-1,22,25}$	6	V
Supply Voltage	$V_{18-1,22,25}$	12.5	V
Supply Current	Icc	120	mA
Power Dissipation (Ta=70°C)	P_D	720	mW
Operating Ambient Temperature	Topr	-20 ~ +70	°C
Storage Temperature	Tstg	-55 ~ +150	°C

■ Recommended Operating Range (Ta=25°C)

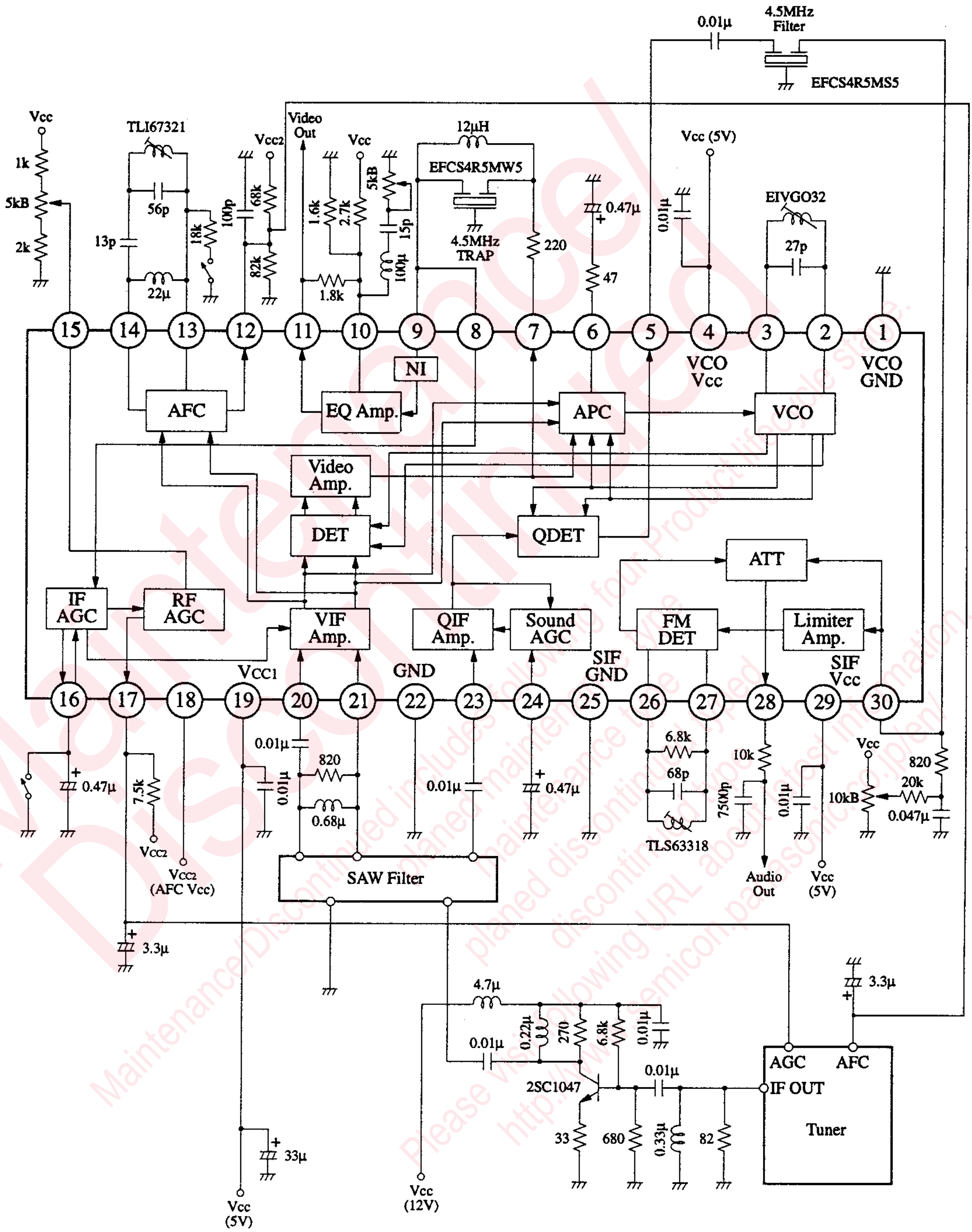
Item	Symbol	Range
Operating Supply Voltage Range	Vcc1	4.5V ~ 5.5V
Operating Supply Voltage Range	Vcc2	Vcc1 ~ 12V

■ Electrical Characteristics (Ta=25°C)

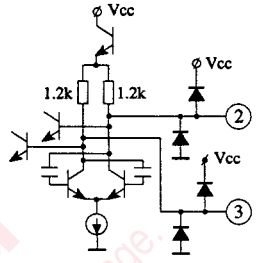
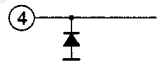
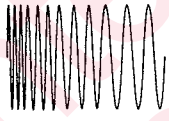
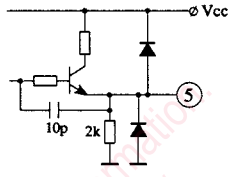
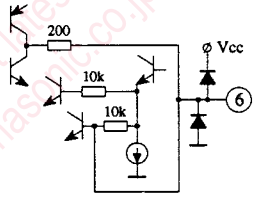
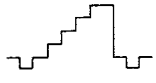
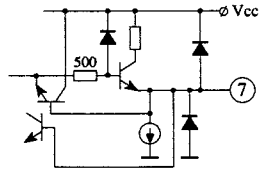
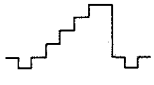
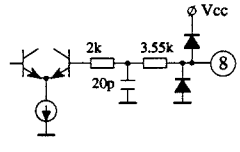
Item	Symbol	Condition	min.	typ.	max.	Unit
Video System						
Video Detection Output	V_{O11}	Typical colour signal (white colour contained) m=87.5%, Vin=80dBμ	1.75	2	2.25	Vp-p
Periodic Peak Value Voltage	Vp		0.75	0.95	1.15	V
Input Sensitivity*	V_{SV}	V_{O11} = -3dB		52	56	dBμ
Maximum Allowable Input*	$V_{MAX.V}$		105	110		dBμ
Video Frequency Characteristics (2)*	$f_{C(2)}$	V_{O11} = -3dB	8	10	12	MHz
S/N Ratio*	S/N		50	55		dB
Differential Gain*	DG			2	6	%
Differential Phase*	DP			2	5	deg
Intermodulation*	IM		43	49		dB
AFC Phase Detector Sensitivity	μ_{AFC}	R_L = 68kΩ//82kΩ	20	30	40	mV/kHz
APC Pull-in Range (h)	fph		1.5			MHz
APC Pull-in Range (l)	fpl				-1.5	MHz
VCO Control Sensitivity	β	V_6 = 2.0V ~ 2.2V	3.5	5.5	7.5	kHz/mV
APC Detection Sensitivity	μ_{APC}	fin = fo ± 500KHz	0.12	0.2	0.3	mV/kHz
Audio System						
QDET Output Level (R_D=10k)	V_{QDET}		110	115	120	dBμ
Input Sensitivity*	V_{SQ}	V_{QDET} = -3dB		55	60	dBμ
Maximum Allowable Input*	$V_{max.Q}$		105	110		dBμ
Audio Detection Output	V_{O28}	fo=4.5MHz, Vin=100dBμ Δf=±25kHz, fm=400Hz	500	630	760	mVrms
Input Limiting Voltage*	$V_{i(lim)}$	V_{O28} = -3dB		48		dBμ
AM Rejection*	AMR	Vin = 90dBμ	46	60		dB
Total Harmonic Distortion*	THD		0	0.3	1	%
Maximum Attentuation*	Att	$V_{30} \leq$ 1.5V	70			dB
DC Characteristics						
Circuit Current Pins 4, 18, 19, 29	$I_{4+18+19+29}$		55	70	90	mA
Video Output Pin Voltage	V_{11}		3	3.5	4	V
Audio Output Pin Voltage	V_{28}		1.1	1.5	1.9	V

Note * : The above characteristics values are of reference values for design but not guaranteed values.

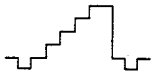
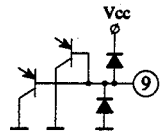
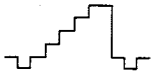
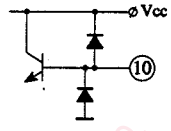
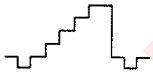
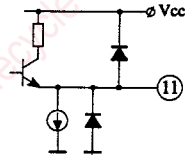
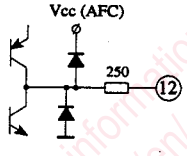
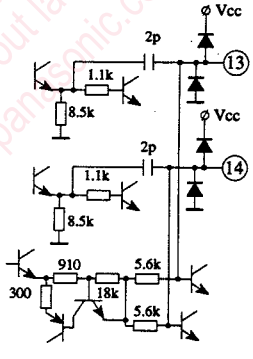
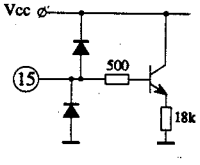
■ Application Circuit



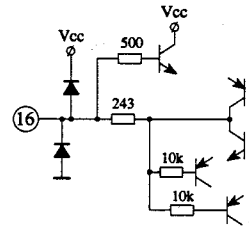
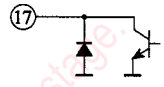
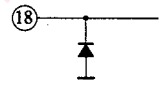
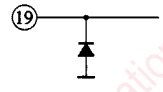
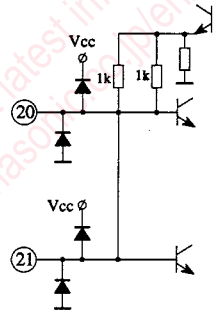
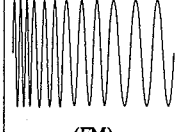
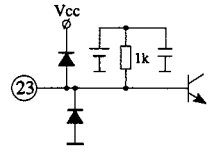
■ Pin Descriptions

Pin No.	Pin Name	Typical Waveform	Description	I/O Impedance	Equivalent Circuit
1	GND (VCO)		GND pin (VCO system)		
2	VCO COIL		External pin for VCO oscillating coil		
3	VCO COIL				
4	Vcc (VCO)		Power supply pin : 5V (VCO system)		
5	QDET OUT	 (FM)	Output pin when an audio carrier was detected using the QSS method	170Ω	
6	APC LPF		External pin for time constant of APC filter	10kΩ	
7	DET OUT		VIF detection signal output pin	30Ω	
8	AGC IN		Input pin for IF AGC voltage from the outside		

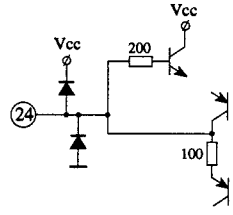
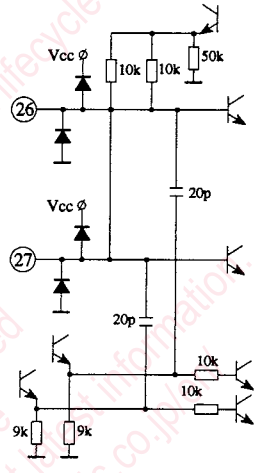
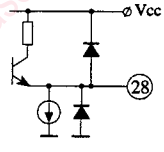
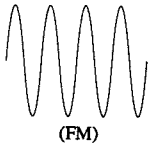
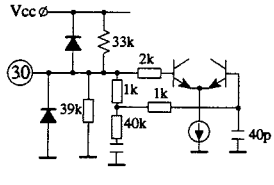
■ Pin Descriptions (Continue)

Pin No.	Pin Name	Typical Waveform	Description	I/O Impedance	Equivalent Circuit
9	NI IN		Input pin for noise inverter circuit		
10	FB		Negative feedback circuit for equalizer amplifier		
11	VOUT		Video signal output pin	20Ω	
12	AFC OUT		AFC voltage output pin		
13	AFC COIL		External pin for AFC coil		
14	AFC COIL				
15	RF AGC ADJ		RF AGC setting voltage adjusting pin		

■ Pin Descriptions (Continue)

Pin No.	Pin Name	Typical Waveform	Description	I/O Impedance	Equivalent Circuit
16	IF AGC		External pin for time constant of VIF AGC filter		
17	RF AGC OUT		RF AGC voltage output pin		
18	Vcc (AFC)		Power supply pin : 5V~12V (AFC output circuit)		
19	Vcc		Power supply pin : 5V (VIF system)		
20	IF IN	 Video carrier input pin	Video carrier input pin	1kΩ	
21	IF IN				
22	GND (VIF)		GND pin (VIF system)		
23	QIF IN	 (FM)	Input pin when an audio carrier is detected using the QSS method	1kΩ	

■ Pin Descriptions (Continue)

Pin No.	Pin Name	Typical Waveform	Description	I/O Impedance	Equivalent Circuit
24	QAGC		External pin for time constant of audio carrier AGC filter when the QSS method is used		
25	GND (SIF)		GND pin (SIF system)		
26	SIF COIL		External pin for SIF detecting coil	3.5kΩ	
27	SIF COIL				
28	SOUT		Audio signal output pin	200Ω	
29	Vcc (SIF)		Power supply pin : 5V (SIF system)		
30	SIF IN	 (FM)	SIF signal input pin		

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