

AN7009S

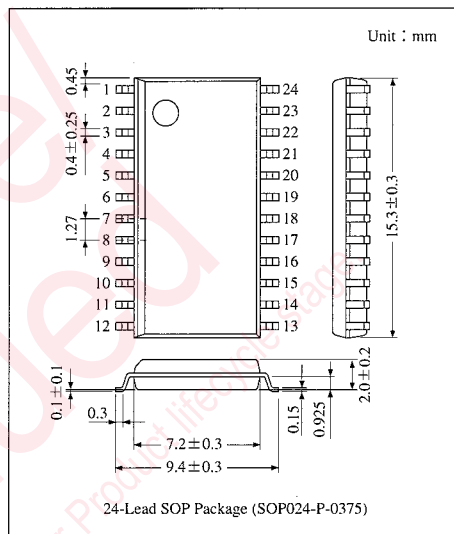
AM Tuner Power Single Chip IC for 3V Radio, Radio Cassette Recorder

Overview

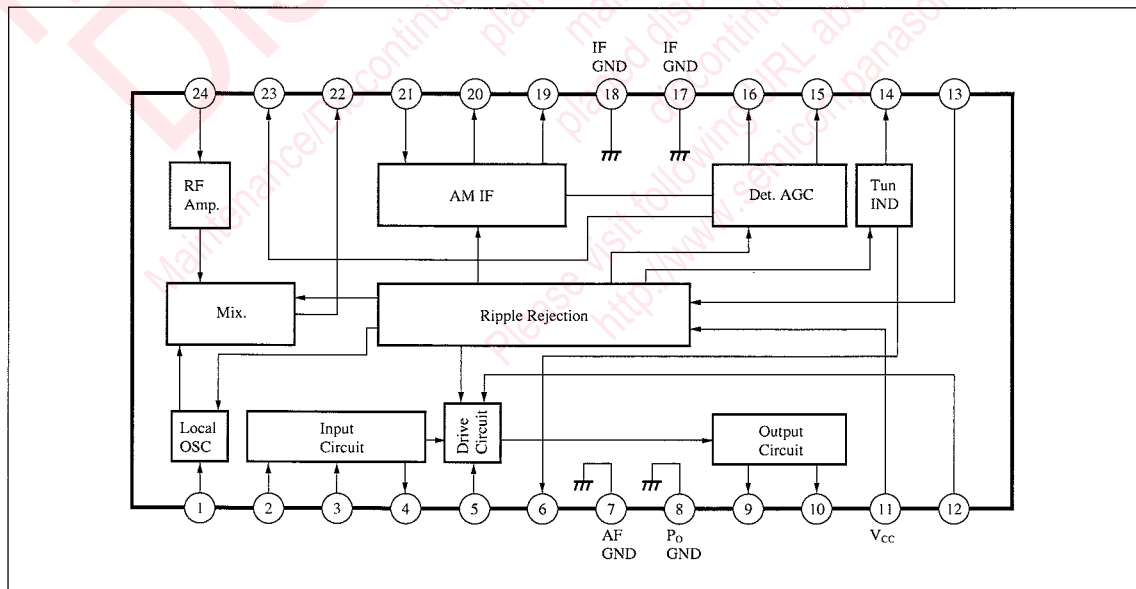
The AN7009S is an IC incorporating from AM tuner to power amp. on a single chip and is most suitable for low-end AM radio.

Features

- Incorporating from AM tuner to power amp. on a single chip
- Low power consumption : 12mA (at no signal)
- Built-in tuning indicator circuit
- Adjustment-free IF
- High sensitivity



Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	V _{CC}	6	V
Supply Current	I _{CC}	300	mA
Power Dissipation	P _D	520	mW
Operating Ambient Temperature	T _{opr}	-20 ~ +75	°C
Storage Temperature	T _{stg}	-55 ~ +125	°C

■ Recommended Operating Range (Ta=25°C)

Parameter	Symbol	Range
Operating Supply Voltage Range	V _{CC}	1.8V ~ 4.5V

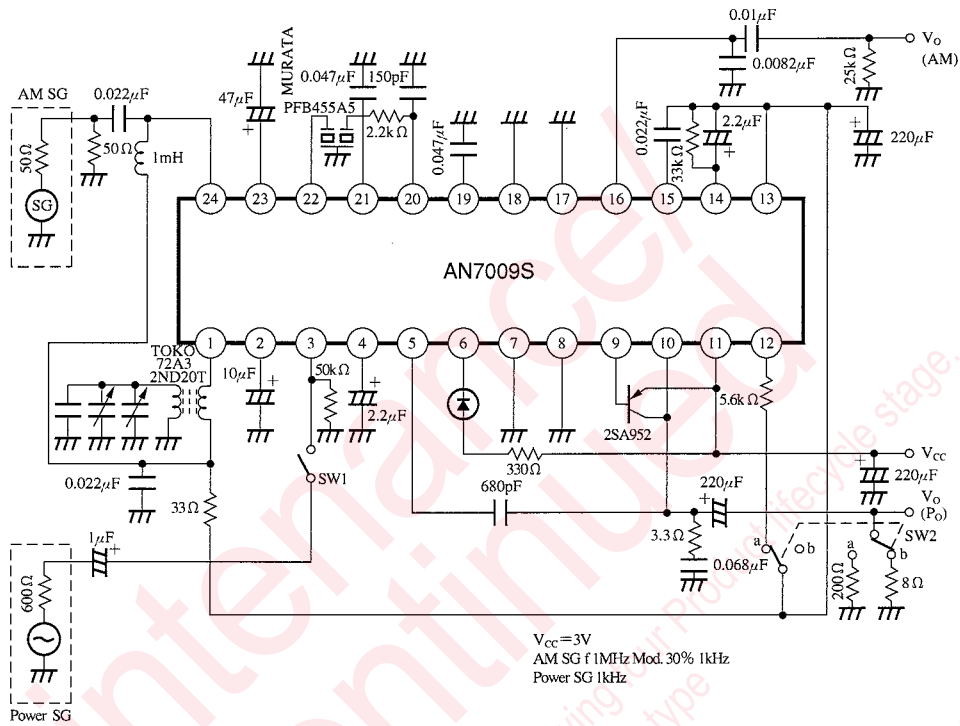
■ Electrical Characteristics

(V_{CC}=3V, [AM section] R_L=25kΩ, f=1MHz, Mod.: 30%, 1kHz [Power section] R_L=8Ω, f=1kHz, Ta=25°C)

Parameter	Symbol	Condition	min.	typ.	max.	Unit
Total Circuit Current 1	I _{tot1}	AM section V _{in} =-20dBμ, Power section V _{in} =0mV	5	11	22	mA
AM Section (Power Section R _g =50kΩ)						
Detection Output Voltage	V _O	V _{in} =60dBμ	13	19	27	mVrms
Maximum Sensitivity	S _{max.}	V _O =5mVrms	-1	4	9	dBμ
Indicator Sensitivity	V _{IND}	Pin⑥ is less than 1V.	6	14	22	dBμ
Power Section (AM Section V _{in} =-20dBμ)						
Voltage Gain	G _V	V _{in} =3mVrms	35	38	41	dB
Output Noise Voltage	V _{no}	R _g =50kΩ, DIN/AUDIO	—	0.3	0.6	mVrms
Total Harmonic Distortion	THD	V _{in} =3mVrms	—	3	6	%
Maximum Output	P _O	THD=10%	100	120	—	mW
Total Circuit Current 2	I _{tot2}	AM section V _{in} =-20dBμ, Power section V _{in} =0mV	—	3	—	mA

ICs for
Tuner

Application Circuit



Item	SW1	SW2	Conditions
1	OFF	a	AM IN = -20dB μ
2	OFF	a	AM IN = 60dB μ
3	OFF	a	Input at $V_O = 5mV$
4	OFF	a	Input at Pin⑥ = less than 1V
5,7	ON	a	$V_{in} = 3mV$
6	OFF	a	$R_g = 50k\Omega$
8	ON	a	Output at THD = 10%
9	OFF	b	AM IN = -20dB μ

Pin Descriptions

Pin No.	Pin Name	Pin Voltage	Description	Equivalent Circuit
1	Local OSC	3V	AM OSC pin Oscillation circuit is made up of differential amp.	
11	V _{CC}	3V	Supply voltage pin	—
3	AF Input	—	AF input pin Differential amp. base input	
4	Ripple Rejection	3V	Ripple rejection pin Connect capacitor.	
5	Phase Compensation	1.2V	Phase compensation pin Connect capacitor for phase compensation between power output pin and this pin.	
6	Tuning Indicator	—	Tuning indicator pin LED drive utilizes AGC voltage. Open collector output.	
14	By-pass	1.3V	By-pass pin	
7	GND	—	AF section GND pin	—
8	GND	—	Power section GND pin	—
2	Negative Feedback	0.7V	Power amp. negative feedback pin	
9	PNP Power Base	—	PNP power transistor base connection pin	
10	Power Output	—	Power output pin	

ICs for Tuner

■ Pin Descriptions (Cont.)

Pin No.	Pin Name	Pin Voltage	Description	Equivalent Circuit
12	Current Adjustment	—	Current adjusting pin Connect this pin with V_{CC} at output load 8Ω , increase the current to power amp. drive section.	
13	Ripple Rejection	3V	Ripple rejection pin Make up of π type filter at C.R and increase the ripple rejection efficiency.	
15	Detection	—	Detection pin Input 455kHz IF signal to two transistor in reverse phase, peak detect all-rectified waveform through constant-current supply and C.R charge and discharge.	
16	Detection Output	2V	Detection output pin This pin is PNP transistor emitter GND amp. output. Output impedance is $22k\Omega$.	
17	GND	0V	IF section GND pin	—
18	GND	0V	IF section GND pin	—
19 · 21	IF By-pass	2.5V	IF by-pass capacitor connection pin	
20	IF Input	0.75V	IF input pin	

■ Pin Descriptions (Cont.)

Pin No.	Pin Name	Pin Voltage	Description	Equivalent Circuit
22	Mix. Output	2.4V	Mix OUT pin Mixer uses double balance type.	
23	AGC	0.75V	AGC pin Connect capacitor.	
24	RF Input	—	RF input signal	

ICs for Tuner

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