

AN7002K, AN7002S

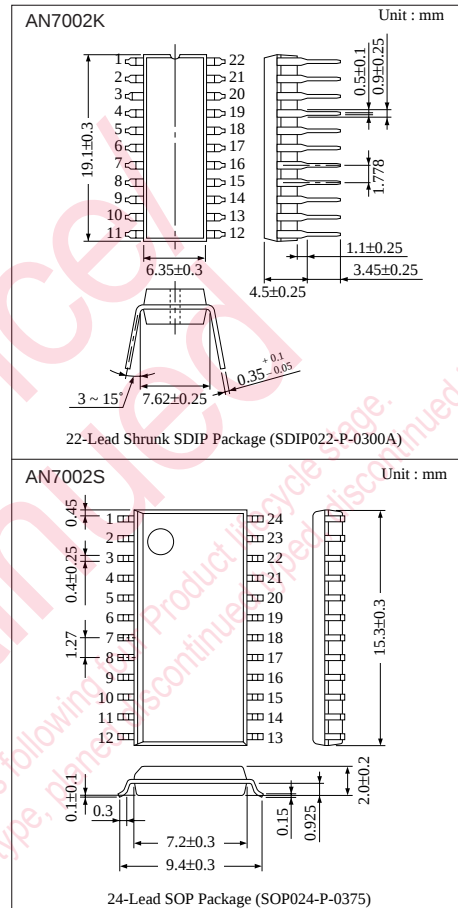
Single Chip ICs for AM Radio

Overview

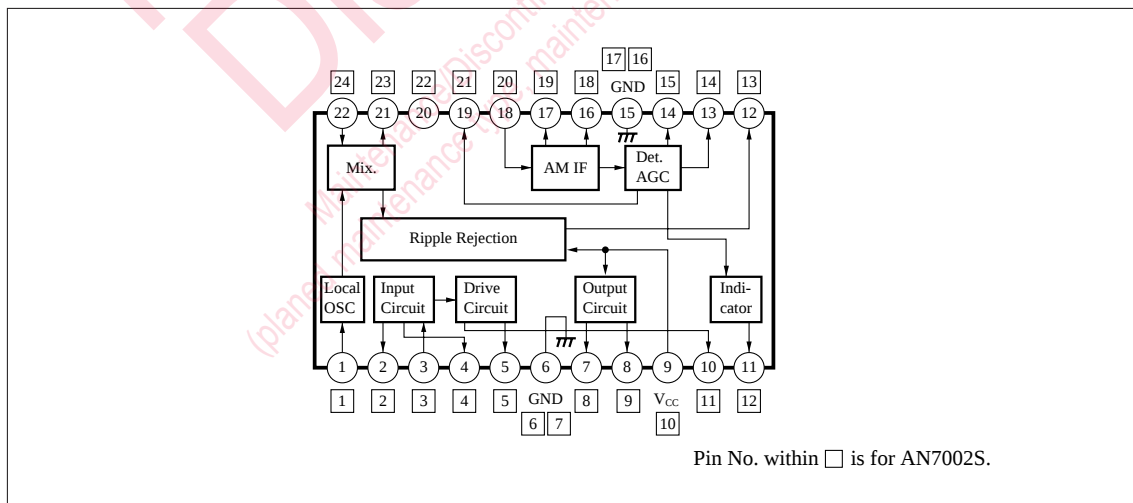
The AN7002K and the AN7002S are the single chip ICs incorporating AM tuner block to power amp. block for 3V radio and are suitable for low-end AM radio.

Features

- Single chip ICs incorporating AM tuner block to power amp. block
- Low power consumption : 17mA (at no signal)
- Built-in tuning indicator circuit
- Adjustment-free IF



Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage	AN7002K	V _{CC}	V
	AN7002S		
Supply Current	I _{CC}	300	mA
Power Dissipation	AN7002K	P _D	mW
	AN7002S		
Operating Ambient Temperature	T _{opr}	-20 ~ + 75	°C
Storage Temperature	AN7002K	T _{stg}	°C
	AN7002S		

■ Recommended Operating Range (Ta=25°C)

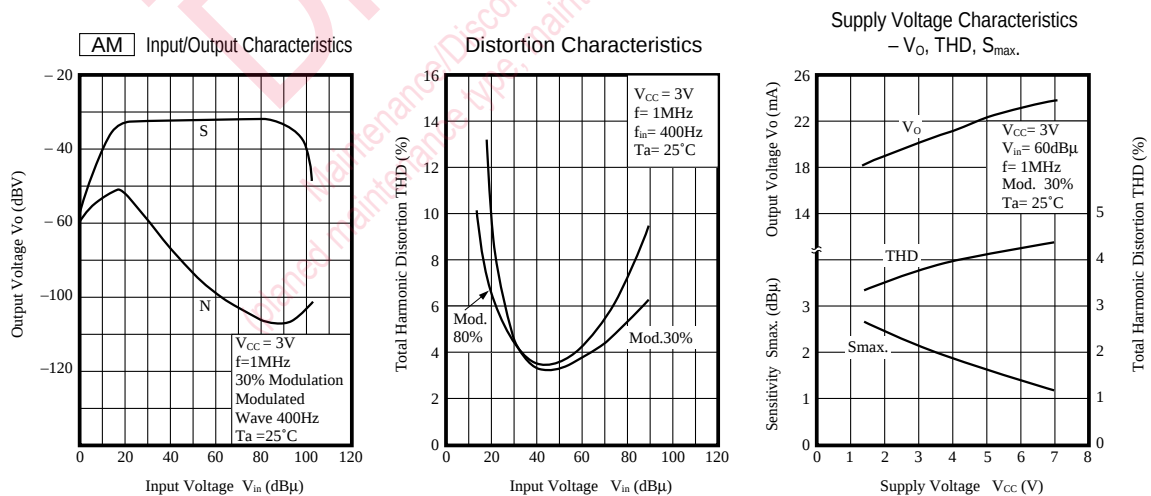
Parameter	Symbol	Range
Operating Supply Voltage Range	AN7002K	V _{CC}
	AN7002S	

■ Electrical Characteristics

(V_{CC} = 3V, [AM Section] R_L = 5kΩ, f = 1MHz, Mod. = 30%, f_M = 400Hz [Power Section] R_L = 8Ω, f = 1kHz, Ta = 25°C)

Parameter	Symbol	Condition	min.	typ.	max.	Unit
Total Circuit Current	I _{tot}	AM V _{in} = -20dBμ, Power V _{in} = 0mV	9	17	25	mA
AM Section (Power Section R _g = 10kΩ)						
Detection Output Voltage	V _O	V _{in} = 60dBμ	16	24	32	mV _{rms}
Sensitivity	S _{max.}	V _O = 5mV _{rms}	-4	4.5	13	dBμ
Indicator Sensitivity	V _{IND}	Pin11 = less than 1V	7	17	27	dBμ
Power Section (AM Section V _{in} = -20dBμ)						
Voltage Gain	G _V	V _O = 0.28mV _{rms}	41	44	47	dB
Output Noise Voltage	V _{NO}	R _g = 10kΩ, DIN/AUDIO	—	0.3	0.6	mV _{rms}
Total Harmonic Distortion	THD	V _O = 0.28mV _{rms}	—	2.5	5	%
Maximum Output	P _O	THD = 10%	100	120	—	mW

■ Characteristics Curve



Pin No. within is for AN7002S

Pin No.		Pin Name	Typ. Waveform	Description	Equivalent Circuit
AN7002K	AN7002S				
1	1	Local OSC		AMOSC pin Oscillation circuit is made up with differential amp.	
9	10	V _{CC}	DC 3V	Supply pin	
3	3	AF Input		Differential amp. base input	
4	4	Ripple Rejection		Ripple rejection pin	

■ Pin Descriptions (Cont.)

Pin No. within $\square$ is for AN7002S

Pin No.		Pin Name	Typ. Waveform	Description	Equivalent Circuit
AN7002K	AN7002S				
5	5	Phase Compensation	—	Phase compensation pin Connect phase compensation C, R between power output pin and this pin.	
6	6 7	GND	DC 0V	GND pin	—
7	8	PNP Power Base	—	PNP power transistor base connection pin	
8	9	Power Output		Power output pin	
2	2	Negative Feedback	—	Power amp. negative feedback pin	
10	11	Current Switching	—	Current switching pin Connect this pin with V_{CC} and increase supply current quantity.	
11	12	Indicator	—	Indicator pin LED drive becomes open collector output used AGC voltage. Drive capacitance is 2mA. So LED can't be driven directly.	
12	13	Ripple Rejection	—	Ripple rejection pin Make up of π type filter at C, R and increase ripple rejection efficiency.	
13	14	Detection		Detection pin Input 455kHz IF signal to two Tr in reverse phase, peak detect all-rectified waveform through constant-current supply and C, R charge and discharge.	
14	15	Detection Output		Detection output pin This pin is PNP emitter ground amp. output. Output impedance is 2.2kΩ.	

■ Pin Descriptions (Cont.)

Pin No. within □ is for AN7002S

Pin No.		Pin Name	Typ. Waveform	Description	Equivalent Circuit
AN7002K	AN7002S				
15	16 17	GND	DC 0V	GND pin	—
16	18	IF By-pass	455kHz IF Signal	IF by-pass capacitor connection pin	
17	19	IF By-pass	455kHz IF Signal	IF by-pass capacitor connection pin	
18	20	IF Input	455kHz IF Signal	IF input pin Differential amp. base input	
19	21	AGC	—	AGC pin Connect capacitor	
22	24	RF Input	AM Signal	RF input pin Differential amp. base input	
21	23	MIX Output	455kHz IF Signal	MIX output pin Connect ceramic filter	
20	22	NC	—	NC Pin	—

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