MKA-381 MICROPHONE PART

The wireless microphone is use the frequency modulation. The voice signal is through the microphone and microphone amplifier (Q1) apply to the modulator, the oscillation frequency is vary in accordance with the characteristics of the voice signal.
Base the characteristics of this VARACTOR DIODE MODULATOR, the oscillation frequency will be shift 20kHz from the frequency of crystal.
The LC B.P.F. (L2, C9) is capturing the 10 order harmonic of the oscillation frequency. This signal is apply to the 1^{st} , 2^{nd} RF amplifier and the output stage to transmitting.

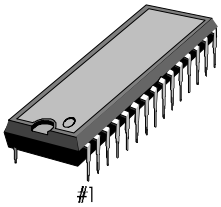
MKA-381 RECEIVER PART

The receiver is use the super heterodyne technology. The receiving frequency 171.045MHz and the local oscillation frequency 160.3449MHz (using crystal 53.4486MHz x 3) generate a large number of new frequency. In this circuit is use the 10.7MHz ceramic filter to select the intermediate frequency (IF). The IF signal is pass to the IF amplifier and the detector to recover to audio signal. The audio signal is amplified by the AF amplifier and output to the Power amplifier.

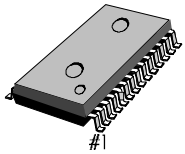
INTROCUCTION

The S1A0426C02 is a monolithic integrated circuit designed for radio cassette tape recorders, clock radios and headphone radios.

30–SDIP–400



28–SOP–375



FUNCTIONS

- AM/FM RF AMP
- AM AGO Control
- Audio Power AMP
- DC Volume
- FM Quadrature DET
- AUDIO MUTE
- Local OSC
- FM AFO Control
- Tuning Indicator
- AM/FM IF AMP
- AM DET

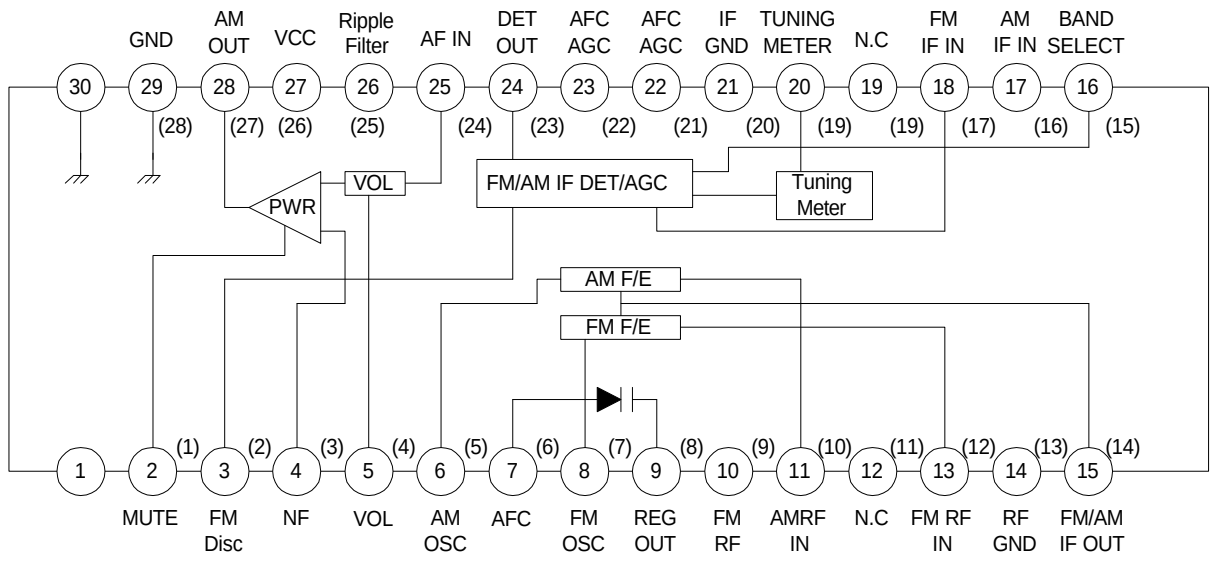
FEATURES

- Built-in AM/FM Switching Circuit
- Wide operating supply voltage: V_{CC} = 2V – 8.5V
- Low current consumption (V_{CC} = 3V)
  - — FM: I_{CCQ} = 5.3 mA (Typ)
  - — AM: I_{CCQ} = 3.4 mA (Typ)
- High Power Audio Amplifier: 0.5W (typ) at V_{CC} = 6V,
- RL = 8Ω, THD = 10%

ORDERING INFORMATION

Device	Package	Operating Temperature
S1A0426C02-A0B0	30–SDIP–400	–20°C – +70°C
S1A0426C02-S0B0	28–SOP–375	–20°C – +70°C

BLOCK DIAGRAM



NOTE: ( ) 28-SOP Package

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	9	V
Power Dissipation	P_D	1000	mW
Operating Temperature	T_{OPR}	–20 – +70	°C
Storage Temperature	T_{STG}	–40 – +125	°C

ELECTRICAL CHARACTERISTICS

(V_{CC} = 6 V, Ta = 25 °C, FM; Δf = 22.5 kHz, fm = 1 kHz, AM; 30% Mod, unless otherwise specified)

	Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
FM	Quiescent Circuit Current	$I_{CCQ}(1)$	V_I = 0	–	7.0	14.0	mA
	F/E Voltage Gain	$G_V(1)$	$V_I(1)$ = 40dBμ, fc = 100MHz, Δf = 0	32	39	46	dBμ
	Detect Output Gain	$V_O(1)$	$V_I(3)$ = 90dBμ, fi = 10.7MHz	–26	–20	–14	dBm
	IF-3 dB Sensitivity	$V_{I\ (LIM)}$	Vo(VI3) = 90dBμ, –3dB, fi = 10.7MHz	–	24	32	dB
	Total Harmonic Distortion	THD_1	$V_I(3)$ = 90dBμ, fi = 10.7MHz (Δf = 75kHz)	–	0.3	2.0	%
	Meter Drive Current	$I_M(1)$	$V_I(3)$ = 60dBμ , fi = 10.7MHz	1.8	3.5	7.0	mA
AM	Quiescent Circuit Current	$I_{CCQ}(2)$	V_I = 0	–	3.5	10.0	mA
	F/E Voltage Gain	$G_V(2)$	$V_I(2)$ = 60dBμ, fc = 1660kHz, m = 0%	15	22	29	dB
	IF Voltage Gain	$G_V(3)$	Vo(3) = –34dBm, fi = 455kHz	14	20	27	dBμ
	AM Detect Output Voltage	$V_O(2)$	$V_I(3)$ = 85dBμ, fi = 455kHz	–26	–20	–14	dBm
	Total Harmonic Distortion	THD_2	$V_I(2)$ = 95dBμ, fc = 1660kHz, Vcc = 7.8V	–	0.6	2.0	%
	Meter Drive Current	$I_M(2)$	$V_I(3)$ = 85dBμ, fi = 455kHz	1.3	3.0	7.0	mA
AF	Closed Loop Voltage Gain	$G_V(4)$	Vo(4) = 0dBm, f = 1kHz	27	31.5	36	dB
	Total Harmonic Distortion	THD_3	Po = 50mW, f = 1kHz	–	0.3	2.5	%
	Output Power	P_O	R_L = 8Ω, THD = 10%, f = 1kHz	0.4	0.5	–	W
	Mute Level	M_L	Po = mW, Vi(4) = 30dBm 1kHz, V1(3) = FF	8	15	22	dB

APPLICATION CIRCUIT