

KA2298B

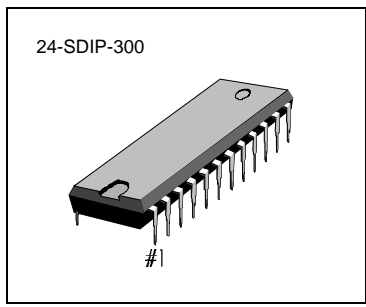
AM/FM TUNER + MPX

INTRODUCTION

The KA2298B is a monolithic integrated circuit which consists of FM IF AMP, FM QUAD DET, AM IF AMP, AM DET, MPX block and Counter output pin for DTS (Digital Tuning System) set. Designed for use in portable radio cassette.

FEATURES

- AM/FM IF, 1 Chip for DTS
- Wide Operating Voltage : $V_{CC} = 1.8V \sim 7V$
- Not adjustable to FM Quadrature Detector.
- Not adjustable to MPX VCO



ORDERING INFORMATION

Device	Package	Operating Temperature
KA2298B	24-SDIP-300	-20 ~ +75°C

BLOCK DIAGRAM

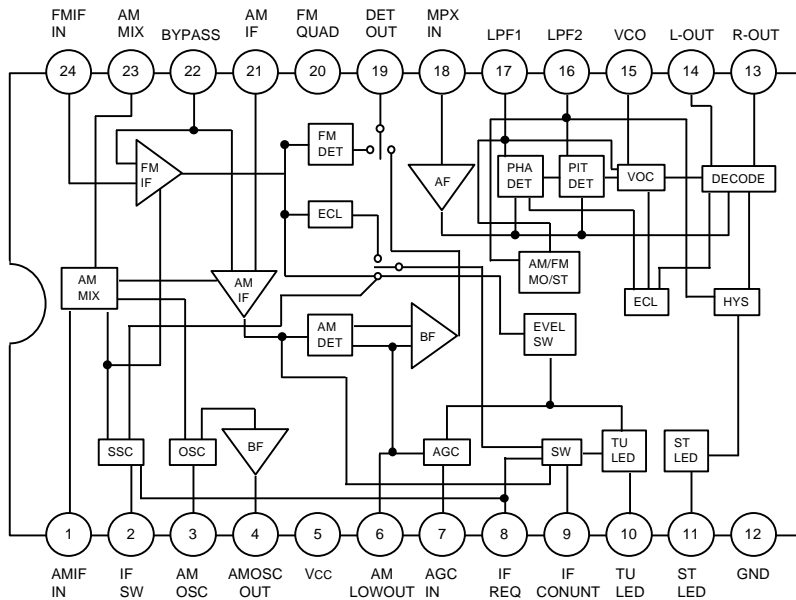
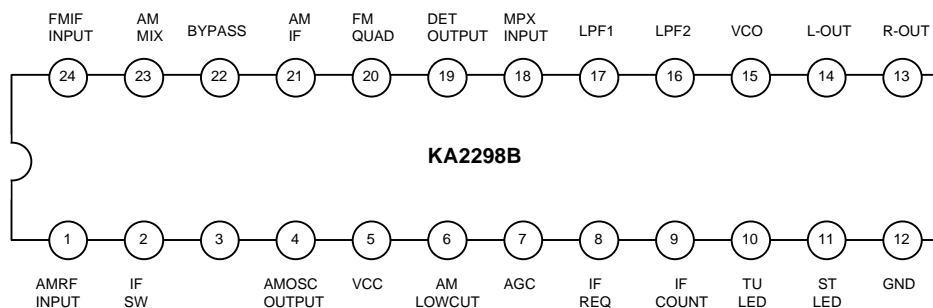


Fig. 1

KA2298B

AM/FM TUNER + MPX

PIN CONFIGURATION



PIN FUNCTION

PIN NO	AM Sy ^{OSC}	I/O	Function
1	AM RF	I	AM RF Input Pin
2	IF SW	I	IF GAIN Control Pin
3	AM OSC	O	AM Oscillator Pin
4	AM OSC BF	O	AM Oscillator Buffer Pin
5	V _{CC}		V _{CC} Pin
6	AM LOW CUT	O	AM LOW Cut Pin
7	AGC	O	AGC Pin
8	IF REQ	O	IF Count Control Pin
9	IF COUNT	O	IF Count Pin
10	TU LED	O	Tuning LED Output Pin
11	ST LED	O	Stereo LED Output Pin
12	GND		Ground Pin
13	R-OUT	O	R-OUT Output Pin
14	L-OUT	O	VCO Output Pin
15	VCO	O	VCO Output Pin
16	LPF2	O	Low Pass Filter 2 Pin
17	LPF1	O	Low Pass Filter1 Pin
18	MPX	I	MPX Input Pin
19	DET	O	AM/FM Detector Output Pin
20	QUAD	O	Quadrature Detector Pin
21	AM IF	I	AM IF Input Pin
22	BYPASS		AM/FM Bypass Pin
23	AM MIX	O	AM Mixer Pin
24	FM IF	I	FM IF Input Pin

ABSOLUTE MAXIMUM RATING (Ta = 25)

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{CC}	8	V
Power Dissipation	P _D	1200	mW
Operating Temperature	T _{OPR}	-20 ~ +75	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

ELECTRICAL CHARACTERISTICS

(Ta = 25°C, VCC = 3V, unless otherwise specified)

FM : f_c = 10.7MHz, f_m = 1KHz, Δf = 22.5KHz, SW1 = 10KΩAM : f_c = 1KHz, f_m = 1KHz, MOD = 30%, SW1 = 10KΩMPX : f_m = 1MHz, L + R = 90%, Pilot = 10%, V_i = 150mV

Characteristic		Symbol	Test Condition	Min	Typ	Max	Unit
Quiescent Circuit current		I _{CCQ1}	FM, V _i = 0	6.5	9.5	13.5	mA
		I _{CCQ2}	AM, V _i = 0	7	10	14	mA
FM	-3dB Limiting Sensitivity	V _{I(SEN)}	V _O = -3dB	41	46	51	dBu
	Detector Output Voltage	V _O	V _i = 80dBu	50	75	100	mV
	Signal to Noise Ratio	S/N	V _i = 80dBu	55	65		dB
	AM Rejection Ratio	AMR	V _i = 80dBu		38		dB
	Total Harmonic Distortion	THD	V _i = 80dBu		0.2	1.0	%
	Lamp On Level	V _{L(on)}	V _i = variable	44	49	54	dBu
	IF Countout Frequency 1	Fif1	V _i = 20dBu		10.7		MHz
	IF Countout Frequency 2	F1/8if2	V _i = 80dBu	1,3374	1,3375	1,3376	MHz
	IF Countout Voltage 1	Vif1	V _i = 61dBu	350	500		mVpp
	IF Countout Voltage 2	V1/8if2	V _i = 61dBu	350	500		mVpp
	IF Count Sensitivity 1	Sif1	SW1 = 0, SW2 = GND	69	76	83	dBu
	IF Count Sensitivity 2	Sif2	SW1 = 0.51K, SW2 = GND	61	68	75	dBu
	IF Count Sensitivity 3	Sif3	SW1 = 0, SW2 = V _{CC}	70	77	83	dBu
	IF Count Sensitivity 4	Sif4	SW1 = 0.51K, SW2 = V _{CC}	62	69	76	dBu
AM	Detector Output Voltage 1	V _O	V _i = 26dBu	10	57	85	mV
	Detector Output Voltage 2	V _O	V _i = 60dBu	50	75	100	mV
	Total Harmonic Distortion	THD	V _i = 60dBu		1	2	%
	Signal to Noise Ratio	S/N	V _i = 60dBu	31	41		dB
	Lamp ON Level	V _{L(on)}	V _i = variable	21	26	31	dBu
	Oscillation Voltage	VOOSC	V _i = 0	300	500		mV
	IF Count Voltage	Vif	V _i = 39dBu	350	500		mV
	IF Count Sensitivity 5	Sif5	SW1 = 0, SW2 = GND	42	49	56	dBu
IF Count Sensitivity 6	Sif6	SW1 = 0.51K, SW2 = GND	35	42	49	dBu	
IF Count Sensitivity 7	Sif7	SW1 = 0, SW2 = V _{CC}	42	49	56	dBu	
IF Count Sensitivity 8	Sif8	SW1 = 0.51K, SW2 = V _{CC}	35	42	49	dBu	

(Continued)

	Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
MPX	Channel Separation 1	CS1	Stereo, fm = 100KHz	35	42		dB
	Channel Separation 2	CS2	Stereo, fm = 1KHz	35	42		dB
	Channel Separation 3	CS3	Stereo, fm = 10KHz	35	42		dB
	Total Harmonic Distortion	THD	Stereo		0.2	1.0	%
	Total Harmonic Distortion	THD	Mono		0.2	1.0	%
	Maximum Input Voltage	V _{I(MAX)}	Stereo, THD = 3%	250	350		mW
	Voltage Gain	G _V	Mono	-5	-3	-1	dB
	Channel Balance	CB	Mono	-1	0	+1	dB
	Signal to Noise Ratio	S/N	Mono	68	78	-	dB
	Lamp On Level	V _{L(on)}	Pilot	-	8	15	mV
	Lamp Hysteresis	HY	Pilot	1	2	5	mV
	Capture Range	CR(H)	Pilot	0	1.3	3.15	%
	Capture Range	CR(L)	Pilot	-3.5	-1.3	0	%

KA2298B

AM/FM TUNER + MPX

TEST CIRCUIT

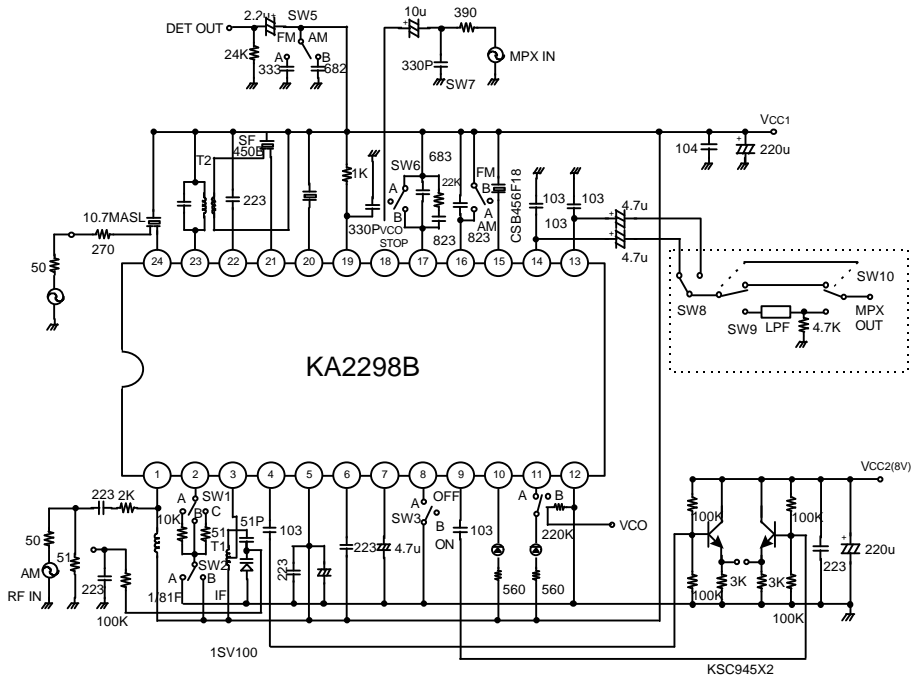


Fig. 3

APPLICATION INFORMATION**1) IF COUNT OUTPUT**

IF Count Output is determined by the Pin8 voltage Tuning LED swiching Count output occurs at pin9.
The output impedance is 1.5K Ω .
V8 ; High (TU - LED ON) : output
Low (TU-LED OFF) : No output

2) IF Switch

IF sensitivity is determined by the resistors of SW1 (Ω , 0.51K Ω , 10 K Ω) regulating the AM mixer and FM IF gain.
When SW2 is V_{CC}, the count output frequency is 10.7Mhz.
In terms of ground, it is a eighth of 10.7MHz to 1,33375MHz.

3) AM Low Cut

The one of the signals passed through DET AMP, is provided to AF AMP and the other is converted to AC before its feedback to AGC voltage and simultaneously it is used as high frequency bypass.

4) AM OSC BUFFER

Output Impedance is 6.1K Ω SIGNAL WAVE FROM is the rectangle wave, the voltage scale of the OSC buffer
OUTPUT is 500mVp-p.

5) MPX

INPUT IMPEDANCE : 25K Ω
OUTPUT IMPEDANCE : 5K Ω

KA2298B

AM/FM TUNER + MPX

APPLICATION CIRCUIT

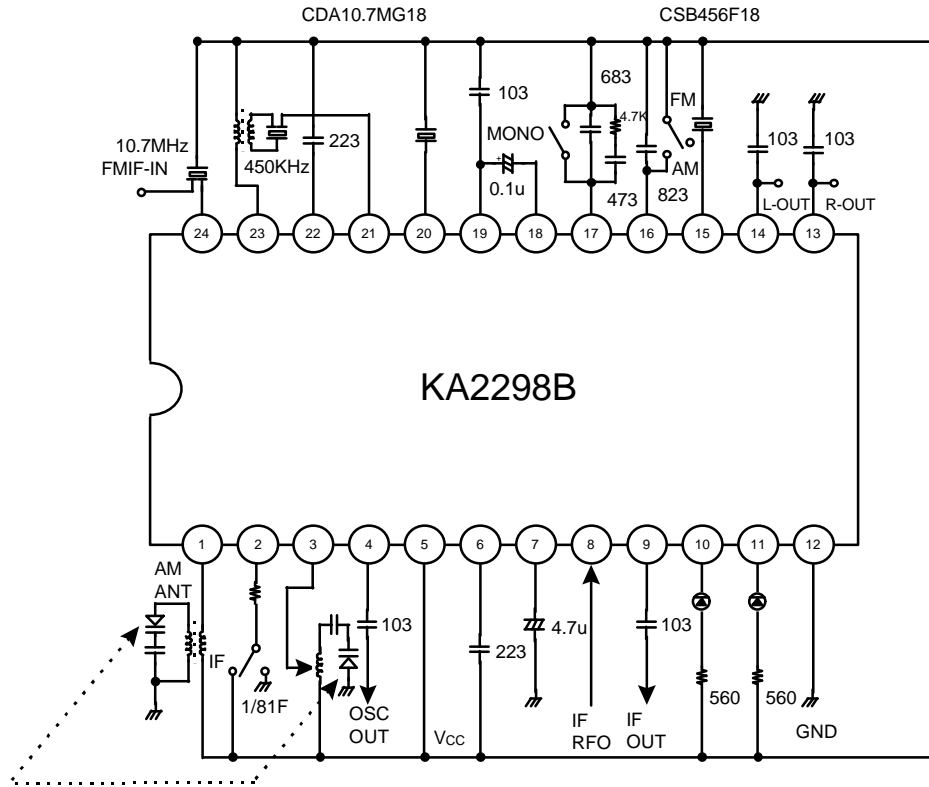
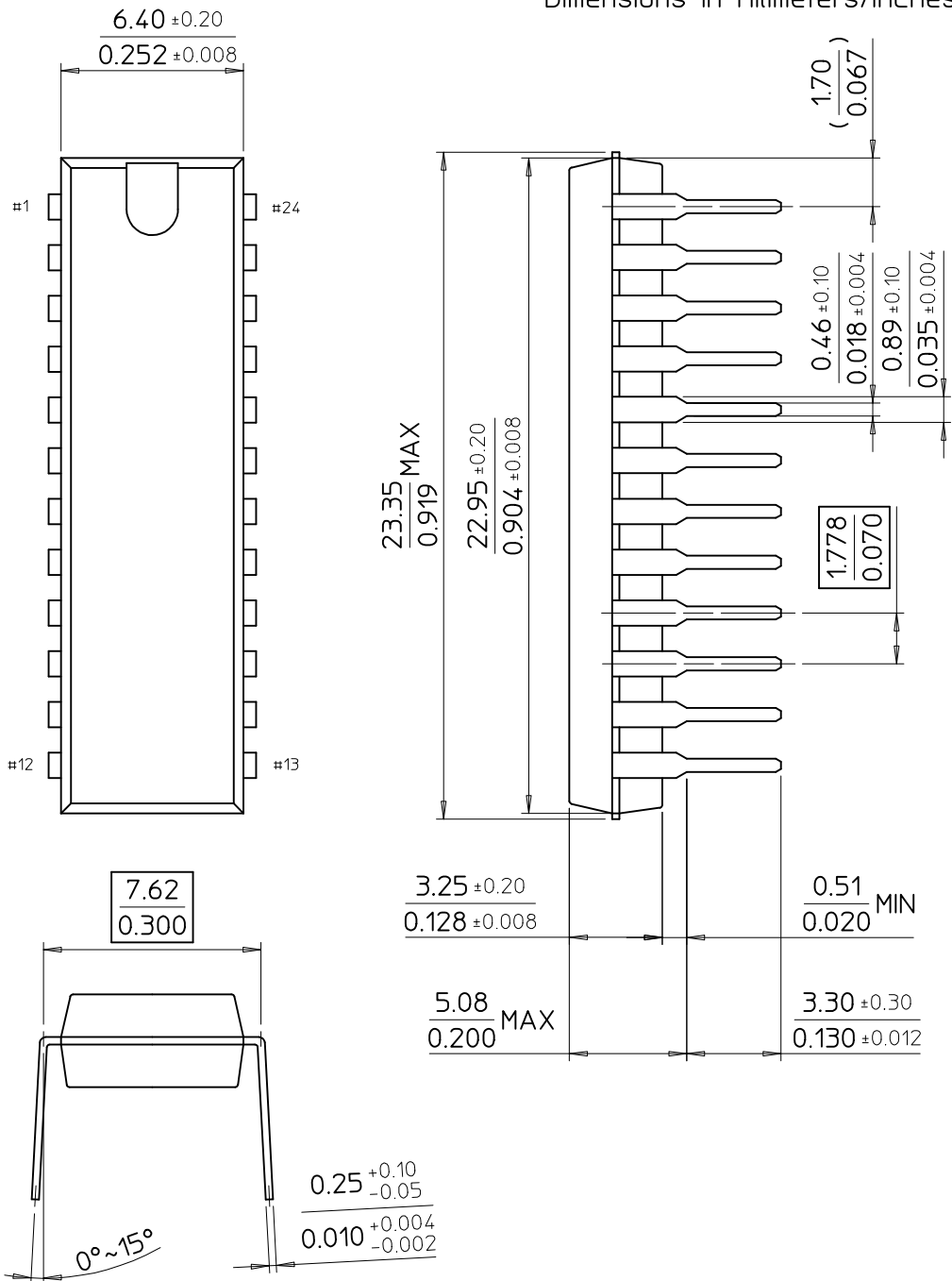


Fig. 5

24-SDIP-300

Dimensions in Millimeters/inches



SAMSUNG ELECTRONICS CO.,LTD.