

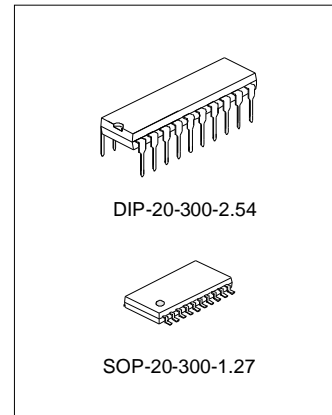
AM RADIO IC FOR DIGITAL TUNING SYSTEM

DESCRIPTION

The SA1135 is a high-performance AM electronic tuner IC. It is especially suited for use in car radio and home stereo applications.

FEATURES

- * Excellent cross modulation characteristics: Meets the requirements for preventing not only adjacent-channel interference but also interference caused by all channels within broadcast band.
- * Narrow-band signal meter output: Usable as auto search stop signal.
- * Local oscillation buffer output: Facilitates designing of electronic tuner system, etc.
- * Good characteristics at high input: 130 dBμ input fm = 400 Hz 80% mod THD = 0.4% typ.
- * Low noise: Good S/N at medium input (56 dB typ.)
- * Usable sensitivity



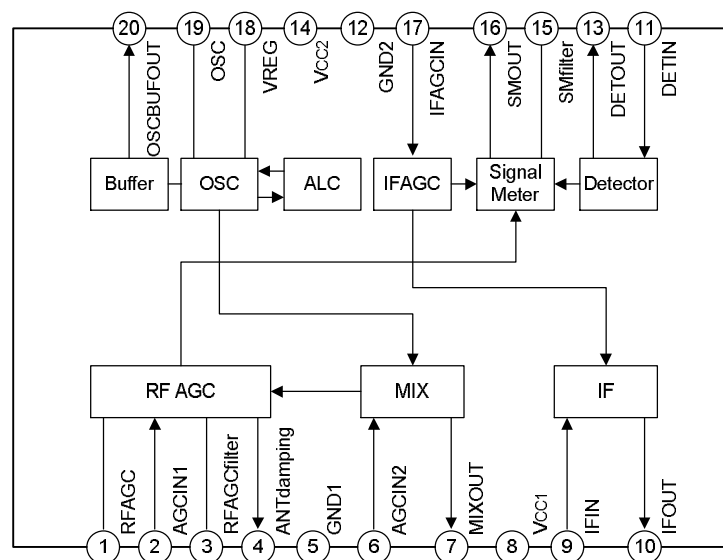
ORDERING INFORMATION

Device	Package
SA1135	DIP-20-300-2.54
SA1135S	SOP-20-300-1.27

APPLICATIONS

- * Car radio , home stereo, etc

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATING (T_{amb}=25°C)

Characteristics	Symbol	Rating	Unit
Maximum Supply Voltage	VCC max	16	V
Output Voltage	Vo	24	V
Input Voltage	VIN	5.6	V

(To be continued)

(Continued)

Characteristics	Symbol	Rating	Unit
Current Drain	I _{CC}	41	mA
Flow-Out Current	I ₁₈	2	mA
Flow-Out Current	I ₂₀	2	mA
Allowable Power Dissipation	P _{d max}	730	mW
Operating Temperature	T _{opr}	-20 to +70	°C
Storage Temperature	T _{stg}	-40 to +125	°C

ELECTRICAL CHARACTERISTICS (V_{CC}=8V, f_r=1MHz, f_m=400Hz, T_{amb}=25°C)

Characteristics	Symbol	Test condition	Min.	Typ.	Max.	Unit
Recommended Supply Voltage	V _{CC}			8		V
Operating Supply Voltage Range	V _{CCop}		7.5		12	V
Current Drain	I _{CC1}	Quiescent	13.5	22.5	32.5	mA
	I _{CC2}	130dB μ input	20.0	30.0	41.0	mA
Detection Output	VO1	16dB μ input, 30% mod	-29.0	-25.0	-21.0	dBm
	VO2	74dB μ input, 30% mod	-15.0	-12.0	-9.0	dBm
Signal-To-Noise Ratio	S/N	74dB μ input, 30% mod	51.0	56.0		dB
Total Harmonic Distortion	THD1	74dB μ input, 30% mod		0.3	1.0	%
	THD2	74dB μ input, 80% mod		0.3	1.0	%
	THD3	130dB μ input, 80% mod		0.4	2.0	%
Signal Meter Output	VSM1	Quiescent		0	0.3	V
	VSM2	130dB μ input	3.5	5.0	7.5	V
Input At Signal Meter Output 1V	V _{IN1}	VSM=1V	18.0	24.0	30.0	dB μ
Local Oscillation Buffer Output	V _{OscBUF}		320	380		mVrms

REFERENCE CHARACTERISTICS

Characteristics	Symbol	Test condition	Min.	Typ.	Max.	Unit
Usable Sensitivity	Q.S.	Input at S/N = 20 dB (2SK315 IDDS = 11 mA)		25.0		dB μ
Wide-Band AGC ON-State Input		Reception 1.0 MHz quiescent Interference 1.4 MHz non-mod at input for AMT.D. ON		82.0		dB μ
Detection Output Variation	Δ VO	Input 74 dB μ →130 dB μ		0.2		dB
Local Oscillation Variation Within Broadcast Band	Δ VOSC	VOSCL – VOSCH		15		mVrms
Signal Meter Band *	VSM-BW1	74 dB μ input, frequency at which output is reduced to 1/2		\pm 1.5		kHz
	VSM-BW2	74 dB μ input, frequency at which output is reduced to 1/10		-4.5/+7		kHz
Selectivity		30 % mod \pm 10 kHz *		43		dB
IF Interference	IF. R.	f _r = 600 kHz *		77.5		dB
Image Frequency Interference	IM. R.	f _r = 1400 kHz *		52.0		dB

Note: *: Wide-band AGC OFF

PIN CONFIGURATIONS

PIN DESCRIPTIONS

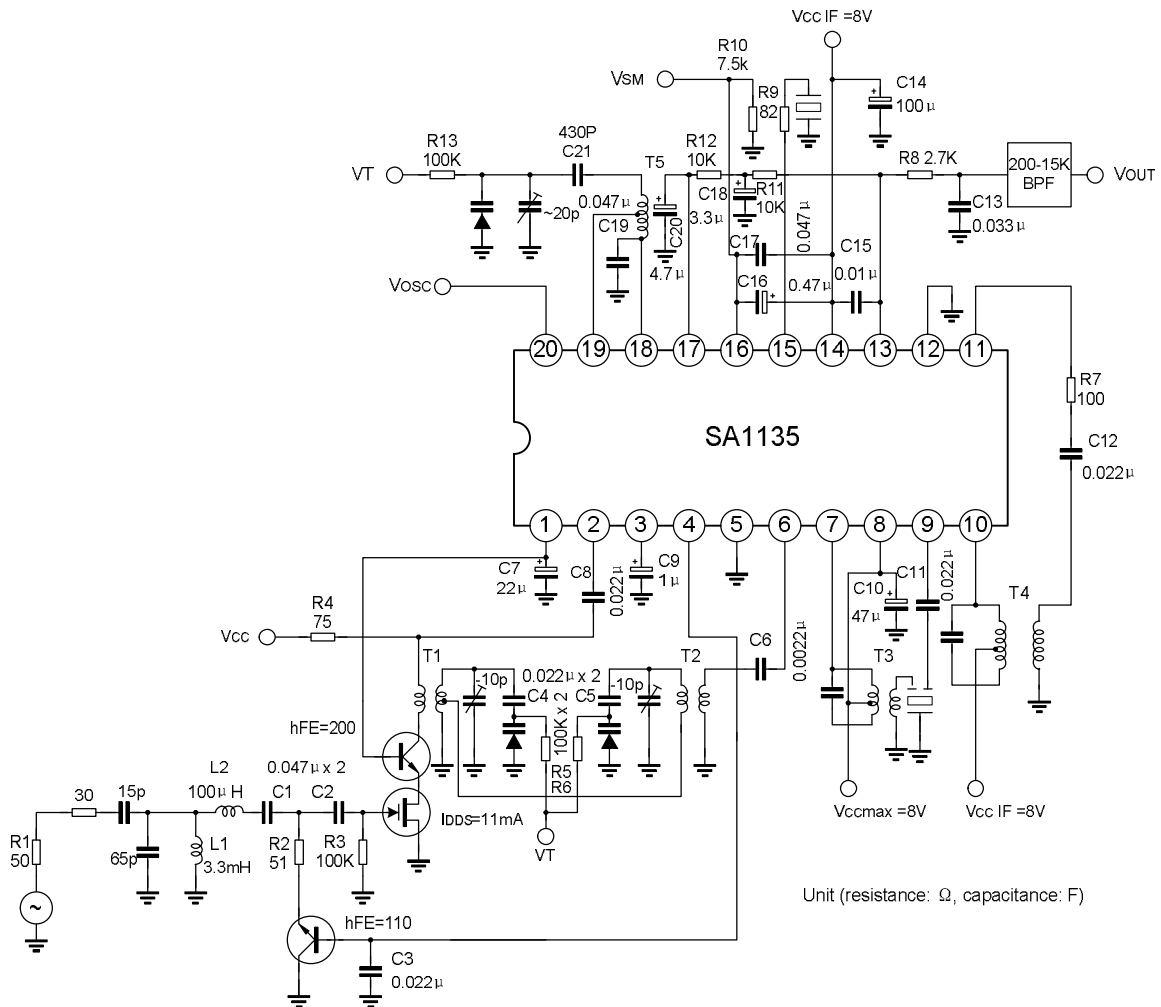
Pin no.	Pin name	Description
1	RFAGC	RFAGC
2	AGCIN1	Detecting an undesired signal outside the RF band
3	RFAGCfilter	Connected to capacitor
4	ANTdamping	ANTdamping
5	GND1	Gnd of RFAGC, OSC, MIX
6	AGCIN2	Detecting an undesired signal within the RF band
7	MIXOUT	Out of mixer
8	VCC1	Vcc of RFAGC, OSC, MIX
9	IFIN	In of IF amp
10	IFOUT	Out of IF amp
11	DETIN	In of detector
12	GND2	Gnd of IF, DET, SM
13	DETOUT	Out of detector
14	VCC2	Vcc of IF ,DET ,SM
15	SMfilter	Connected to resistor and capacitor
16	SMOUT	Out of s-meter
17	IFAGCIN	In of IF AGC
18	VREG	Regulator voltage
19	OSC	Osc
20	OSCBUFOUT	Out of osc buffer

FUNCTION DESCRIPTION

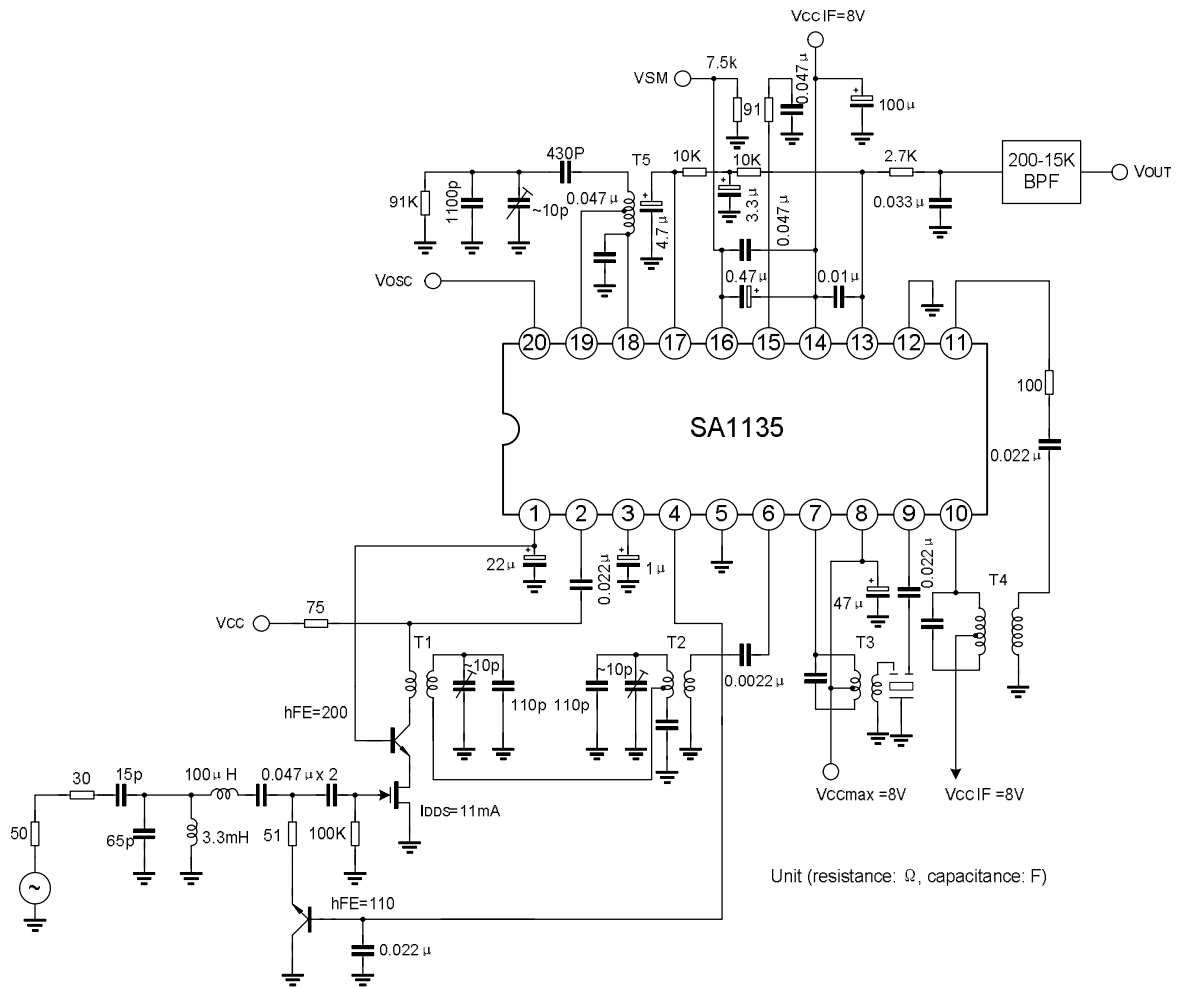
1. Double –balanced differential MIX can prevent spurious interference and IF interference.
2. Oscillation with ALC output is stabilized at a low level (380mVrms) for varactor diode.
3. IF amplifier and IF AGC

4. RF wide-band AGC
5. SM output is able to be used as auto search stop signal
6. Local OSC buffer output facilitates designing of electronic tuner system

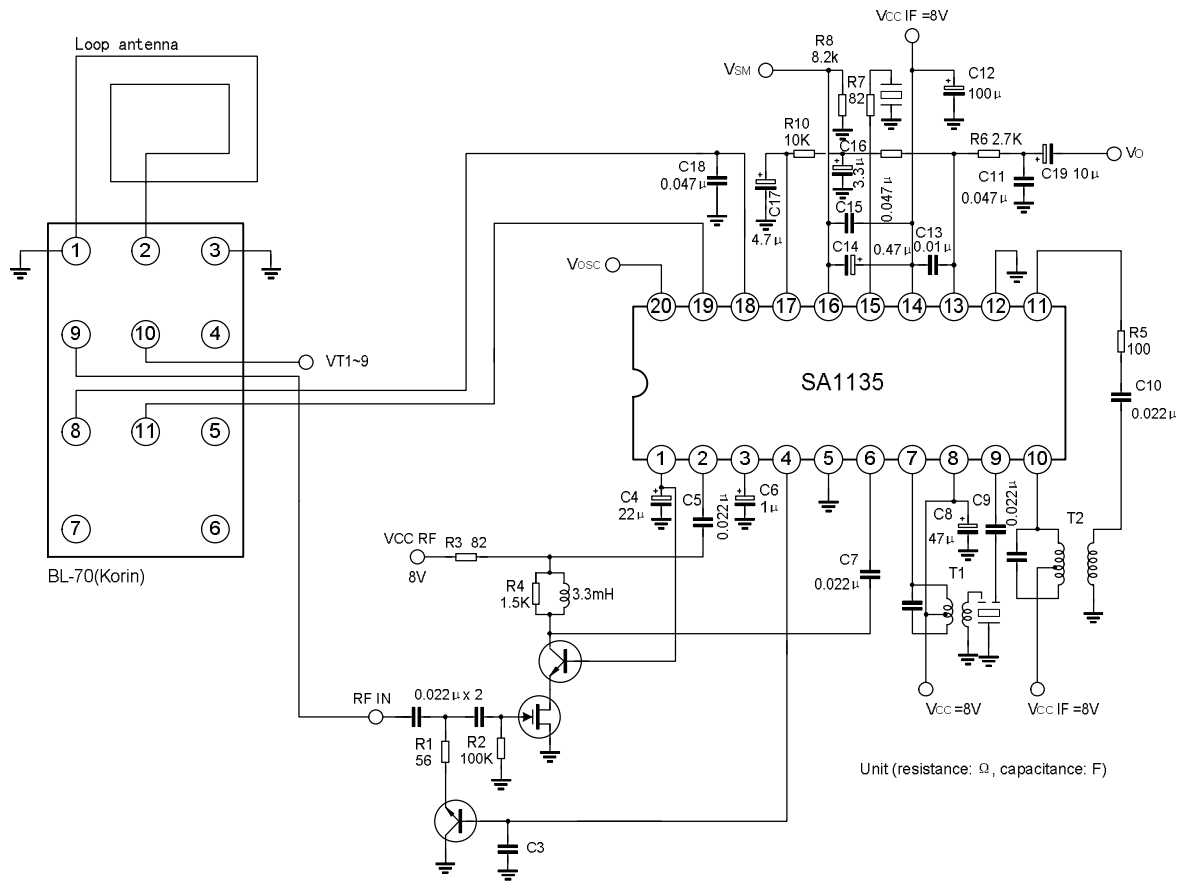
TEST CIRCUIT 1 ($V_{CC}=8V$, $f_r=1MHz$, $f_m=400Hz$ Unit (resistance: Ω , capacitance: F))



TEST CIRCUIT 2 ($V_{CC}=8V$, $f_r=1MHz$, $f_m=400Hz$)



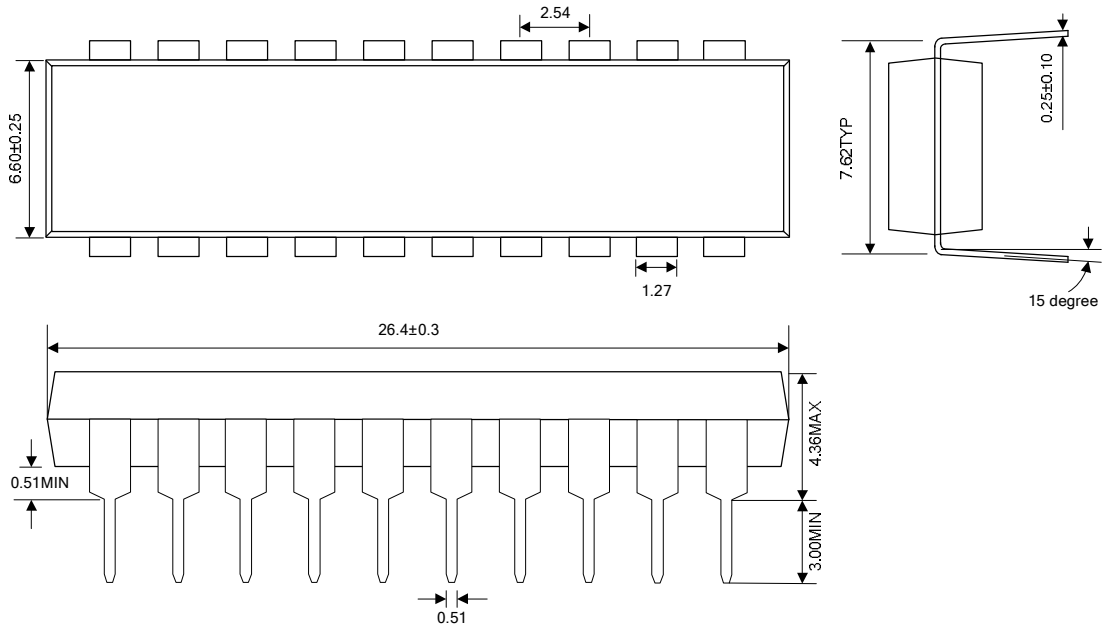
TYPICAL APPLICATION CIRCUIT



PACKAGE OUTLINE

DIP-20-300-2.54

UNIT: mm



SOP-20-300-1.27

UNIT: mm

