

AM/FM RADIO RECEIVER

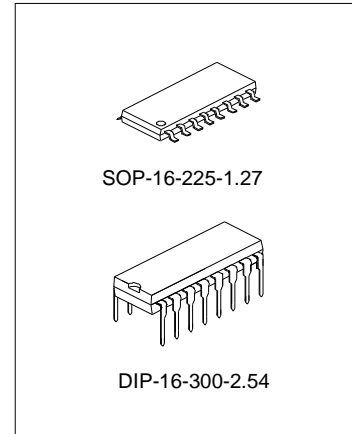
DESCRIPTION

SA2132C is AM/FM radio IC (FM F/E+AM/FM IF); it is designed for AM/FM radios.

FM local oscillation voltage is set up low relatively, for NEW FCC.

FEATURES

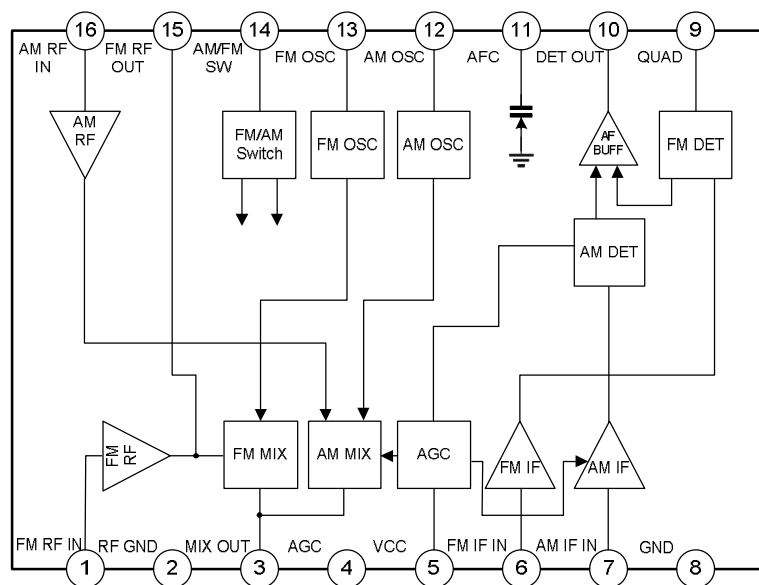
- * Operating supply voltage range: $V_{CC}=1.8\sim 7V$ ($T_{amb}=25^{\circ}C$)
- * For NEW FCC
- * AM detector coil without FM IFT, IF coupling condenser.
- * For adopting ceramic discriminator, it is not need to adjust the FM quad detector circuit.
- * Built in varactor diode for AFC
- * Low supply current: ($V_{CC}=3V$, $T_{amb}=25^{\circ}C$)
 ICC_q (FM)=7.3mA (typ.)
 ICC_q (AM)=3.6mA (typ.)



ORDERING INFORMATION

Device	Package
SA2132C	DIP-16-300-2.54
SA2132CS	SOP-16-225-1.27

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS ($T_{amb}=25^{\circ}C$)

Characteristics	Symbol	Value	Unit
Supply Voltage	V_{CC}	8	V
Power Dissipation	P_D (Note 1)	750	mW
Operating Temperature	T_{opr}	-25~75	$^{\circ}C$
Storage Temperature	T_{stg}	-55~150	$^{\circ}C$

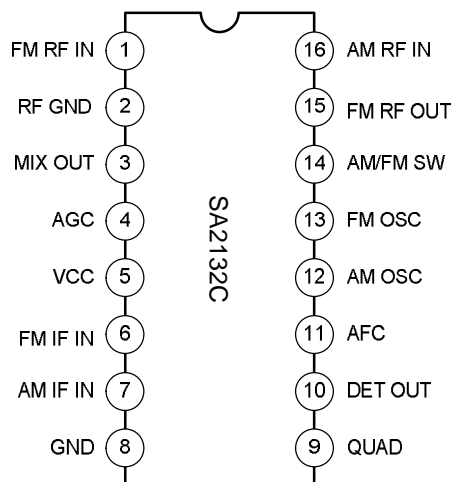
Note 1: Detected above $T_{amb} = 25^{\circ}C$ in the proportion of $6mW/^{\circ}C$ for SA2132C.

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $T_A=25^{\circ}\text{C}$, $V_{CC}=3\text{ V}$, F/E : $f=98\text{MHz}$, $f_m=1\text{ kHz}$ FM IF : $f=10.7\text{MHz}$, $\Delta f = \pm 75\text{ kHz}$, $f_m=1\text{ kHz}$ AM : $f=1\text{ MHz}$, $\text{MOD}=30\%$, $f_m=1\text{ kHz}$)

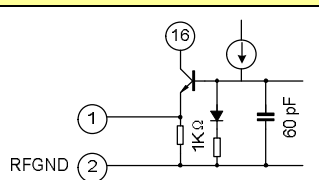
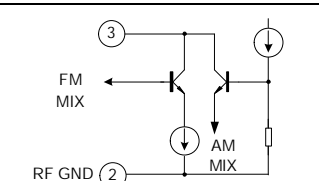
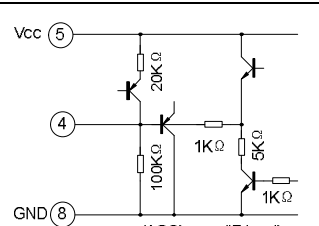
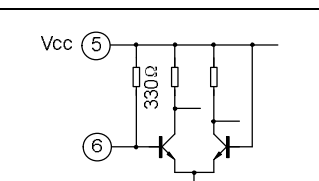
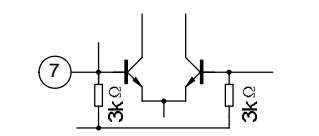
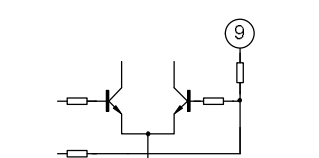
Characteristics		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply Current		I _{CC} (FM)	FM mode, $V_{in}=0$	--	7.3	11.0	mA
		I _{CC} (AM)	AM mode, $V_{in}=0$	--	3.6	7.0	
F/E	Input Limiting Voltage	$V_{in}(\text{lim})$	-3dB limiting point	--	10	--	dB μV EMF
	Quiescent Sensitivity	QS	S/N=40dB	--	15	--	dB μV EMF
	Local OSC Voltage	V _{osc} (note)	$f_{osc} = 108\text{ MHz}$	--	130	--	mV _{rms}
FM IF	Input Limiting Voltage	$V_{in}(\text{lim})$ IF	-3dB limiting point	38	43	48	dB μV EMF
	Recovered Output Voltage	V _{OD}	$V_{in} = 80\text{dB}\mu\text{V}$ EMF	180	240	300	mV _{rms}
FM IF	Signal to Noise Ratio	S/N	$V_{in} = 80\text{dB}\mu\text{V}$ EMF	--	72	--	dB
	Total Harmonic Distortion	THD	$V_{in} = 80\text{dB}\mu\text{V}$ EMF	--	0.5	--	%
	AM Rejection Ratio	AMR	$V_{in} = 80\text{dB}\mu\text{V}$ EMF	--	60	--	dB
AM	Voltage Gain	GV	$V_{in} = 28\text{dB}\mu\text{V}$ EMF	20	38	75	mV _{rms}
	Recovered Output Voltage	V _{OD}	$V_{in} = 60\text{dB}\mu\text{V}$ EMF	55	80	110	mV _{rms}
	Signal to Noise Ratio	S/N	$V_{in} = 60\text{dB}\mu\text{V}$ EMF	--	41	--	dB
	Total Harmonic Distortion	THD	$V_{in} = 60\text{dB}\mu\text{V}$ EMF	--	1.0	--	%

Note: This characteristics measure in test circuit 2, others measure in test circuit 1.

PIN CONFIGURATION

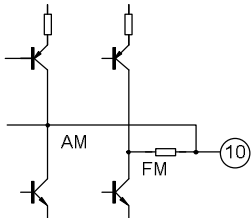
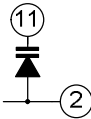
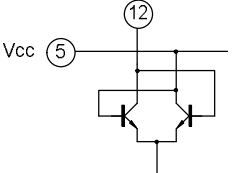
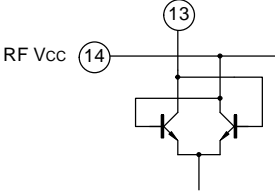
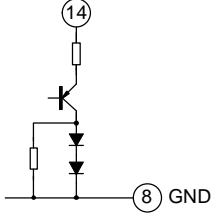
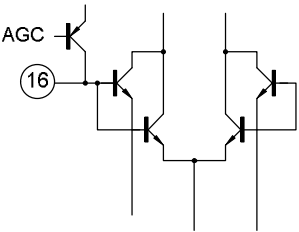


PIN DESCRIPTION

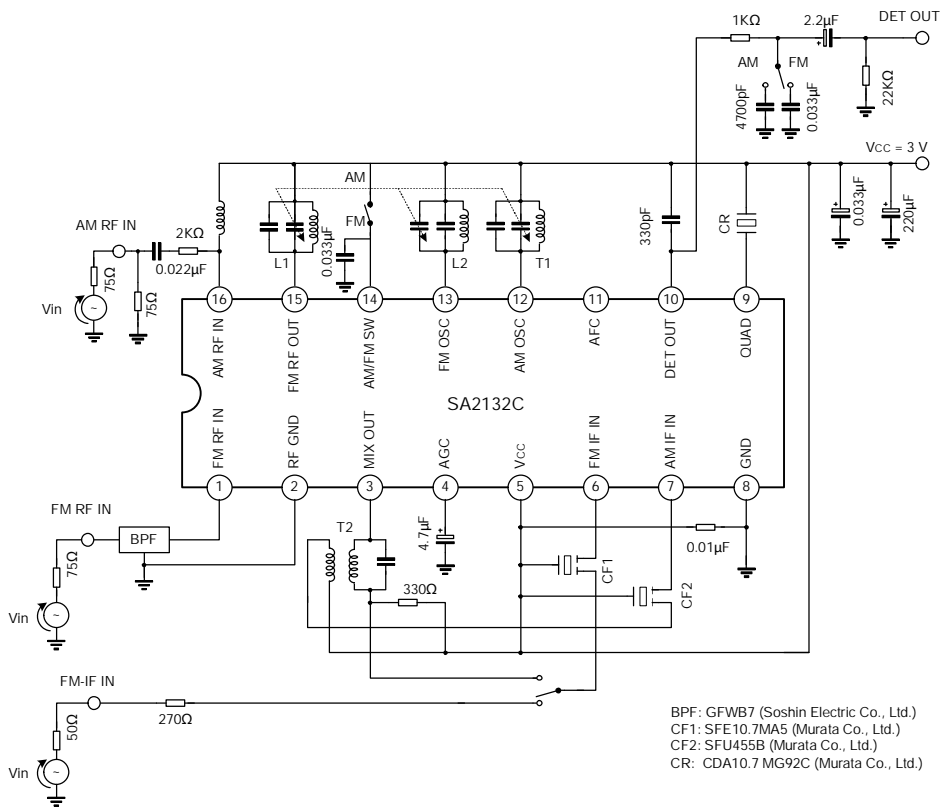
Pin No	Symbol	Internal Circuit	DC Voltage (V)	
			AM	FM
1	FM RF IN		0	0.8
2	RF GND (GND for FM RF, FM OSC stage)	-	0	0
3	MIX OUT		3.0	2.9
4	AGC (FM IF level output)		0	0
5	Vcc (Vcc for AM, FM IF stage)	-	3.0	3.0
6	FM IF IN		3.0	3.0
7	AM IF IN		2.3	2.6
8	GND (GND for AM, FM IF stage)	-	0	0
9	QUAD		2.5	2.2

(To be continued)

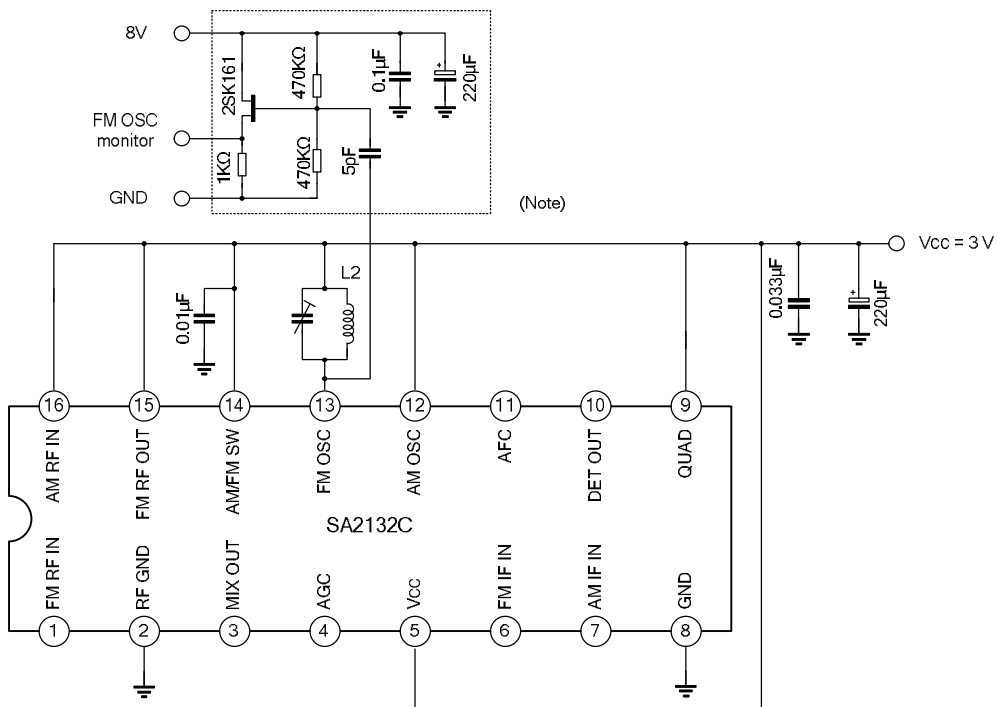
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Pin No	Symbol	Internal Circuit	DC Voltage (V)	
			AM	FM
10	DET OUT		1.0	0.9
11	AFC		--	--
12	AM OSC		3.0	3.0
13	FM OSC		3.0	3.0
14	AM/FM SW • SW condition V14=Vcc→FM V14=OPEN→AM • Vcc for FM RF, FM OSC stage		--	3.0
15	FM RF OUT	Cf -Pin 1	3.0	3.0
16	AM RF IN		3.0	3.0

TEST CIRCUIT (1)



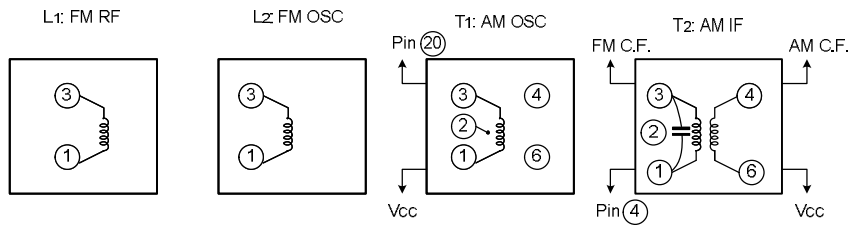
TEST CIRCUIT (2)



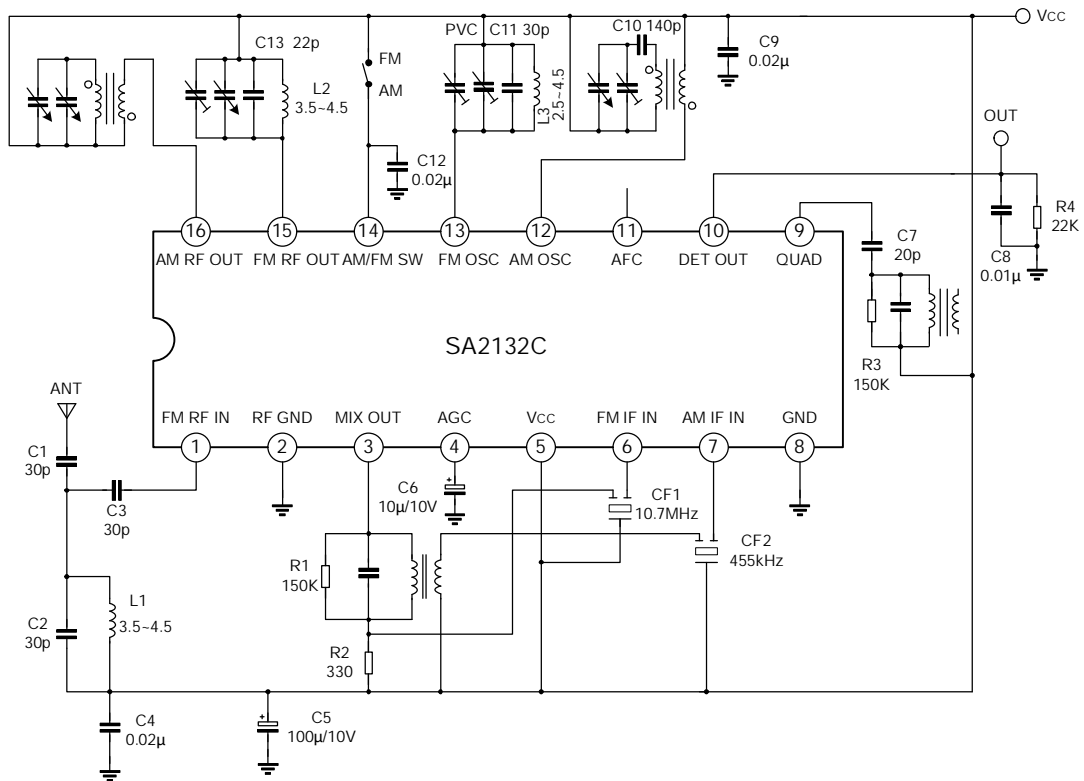
Note: FET buff voltage gain \cong 0dB

COIL DATA

Coil No.	Test Freq.	L (μH)	Co (pF)	Qo	Turns					Wire (mm)	Reference
					1-2	2-3	1-3	1-4	4-6		
L1 FM RF	100MHz	--	--	79	--	--	--	2 $\frac{1}{2}$	--	0.16UEW	Toko Co., Ltd. 666SNF-305NK
L2 FM OSC	100MHz	--	--	76	--	--	--	2	--	0.16UEW	Toko Co., Ltd. 666SNF-306NK
T1 AM OSC	796kHz	268	--	65	19	95	--	--	--	0.05UEW	Toko Co., Ltd. 5PNR-5146Y
T2 AM IFT	455kHz	--	470	60	--	--	109	--	7	0.05UEW	Toko Co., Ltd. 5PLG-5147X



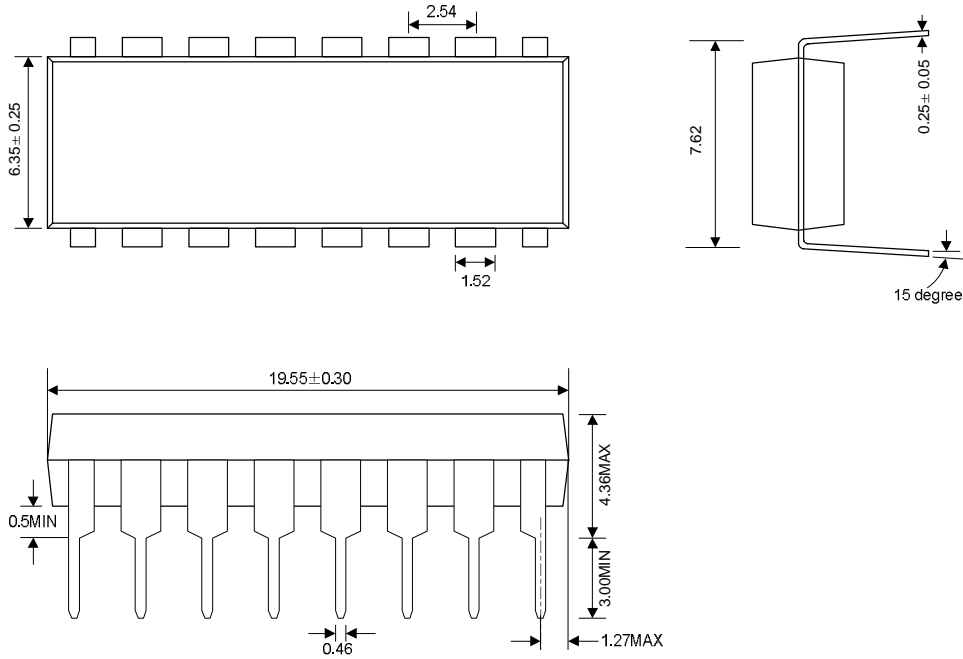
TYPICAL APPLICATION CIRCUIT



PACKAGE OUTLINE

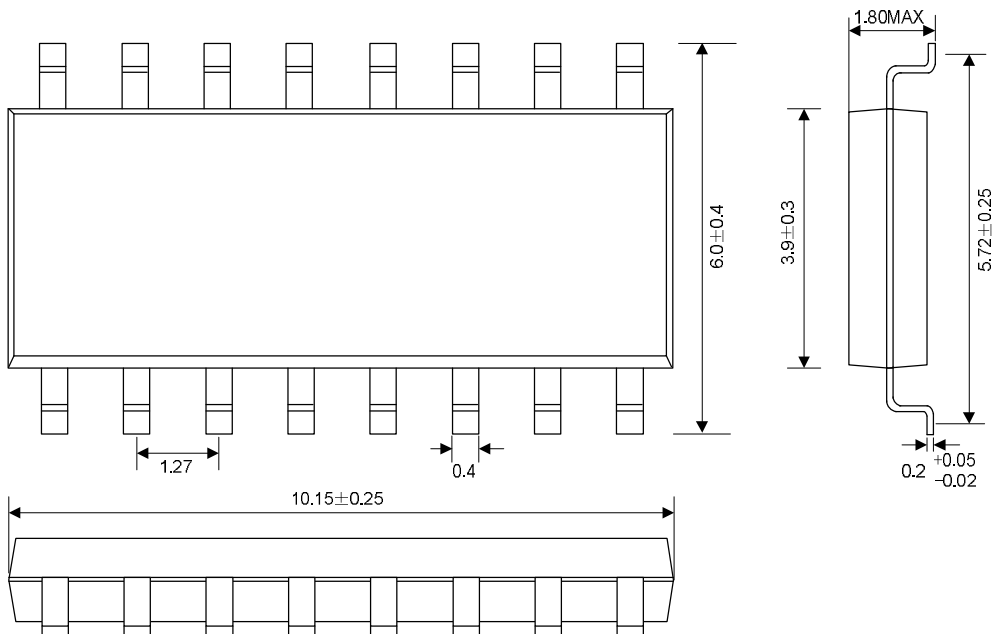
DIP-16-300-2.54

Unit: mm



SOP-16-225-1.27

UNIT: mm





ATTACH

Revision History

Data	REV	Description	Page
2005.09.28	1.0	Original	
2005.10.26	1.1	Rename; Add the package of "SOP-16-225-1.27"	