

AM/FM RADIO RECEIVER

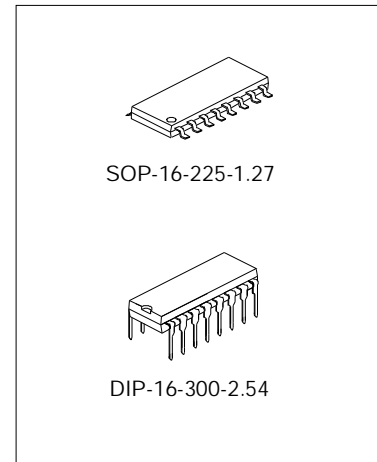
DESCRIPTION

SA2132 is AM/FM radio IC (FM F/E+AM/FM IF) which is designed for AM/FM radios.

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

FEATURES

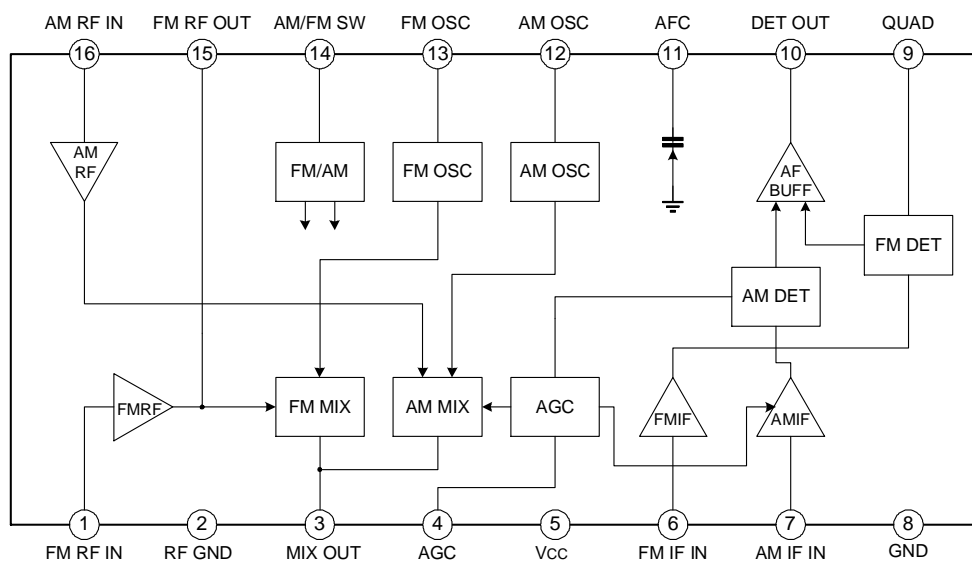
- * For NEW FCC
- * AM detector coil, FM IFT, IF coupling condenser are not needed.
- * For adopting ceramic discriminator, it is not necessary to adjust the FM quad detector circuit.
- * Built in varactor diode for AFC
- * Low supply current: (VCC=3V, TA=25°C)
 I_{CCq} (FM)=7.3mA (typ.)
 I_{CCq} (AM)=3.6mA (typ.)
- * Operating supply voltage range: VCC=1.8~7V (TA=25°C)



ORDERING INFORMATION

Device	Package
SA2132	DIP-16-300-2.54
SA2132S	SOP-16-225-1.27

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (TA=25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	Vcc	8	V
Power Dissipation	PD (Note 1)	750	mW
Operating Temperature	T _{opr}	-25~75	°C
Storage Temperature	T _{stg}	-55~150	°C

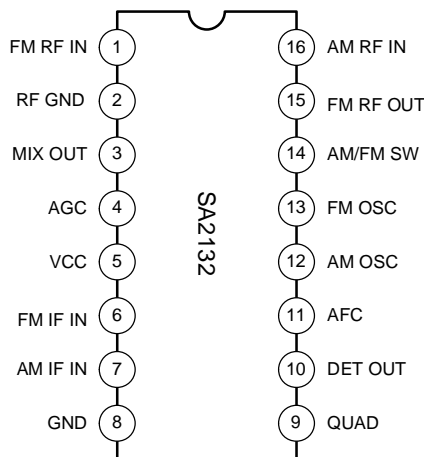
Note 1: Detected above TA= 25°C in the proportion of 6mW/°C for SA2132.

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 : $f=1\text{ MHz}$, $\text{MOD}=30\%$, $f_m=1\text{ kHz}$)

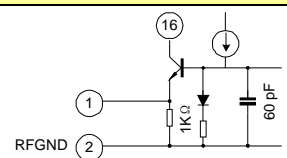
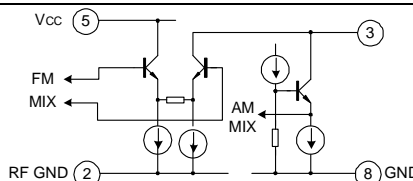
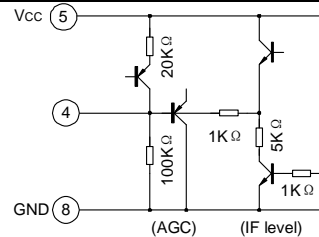
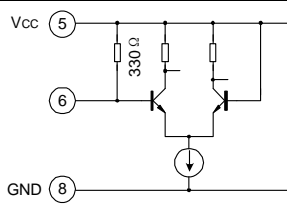
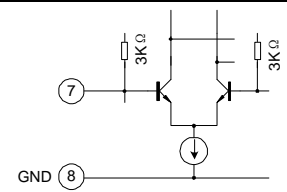
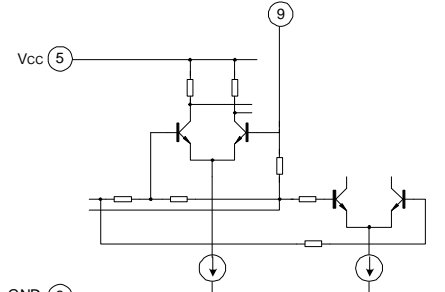
Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Supply Current		$I_{CC}(\text{FM})$	FM mode, $V_{in}=0$	--	7.3	11.0	mA
		$I_{CC}(\text{AM})$	AM mode, $V_{in}=0$	--	3.6	7.0	
F/E	Input Limiting Voltage	$V_{in}(\text{lim})$	-3dB limiting point	--	10	--	$\text{dB}\mu\text{V}$ EMF
	Quiescent Sensitivity	QS	S/N=40dB	--	15	--	$\text{dB}\mu\text{V}$ EMF
	Local OSC Voltage	V_{osc}^{note}	$f_{osc} = 108\text{ MHz}$	--	130	--	mV_{rms}
FM IF	Input Limiting Voltage	$V_{in}(\text{lim})\text{ IF}$	-3dB limiting point	38	43	48	$\text{dB}\mu\text{V}$ 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

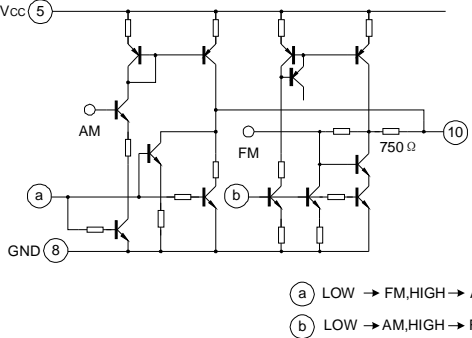

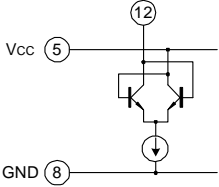
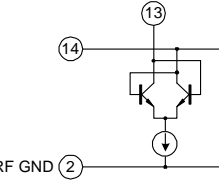
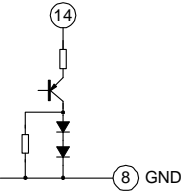
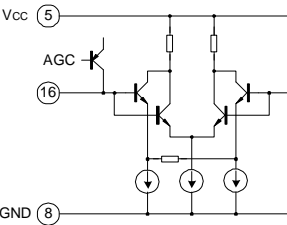


PIN DESCRIPTION

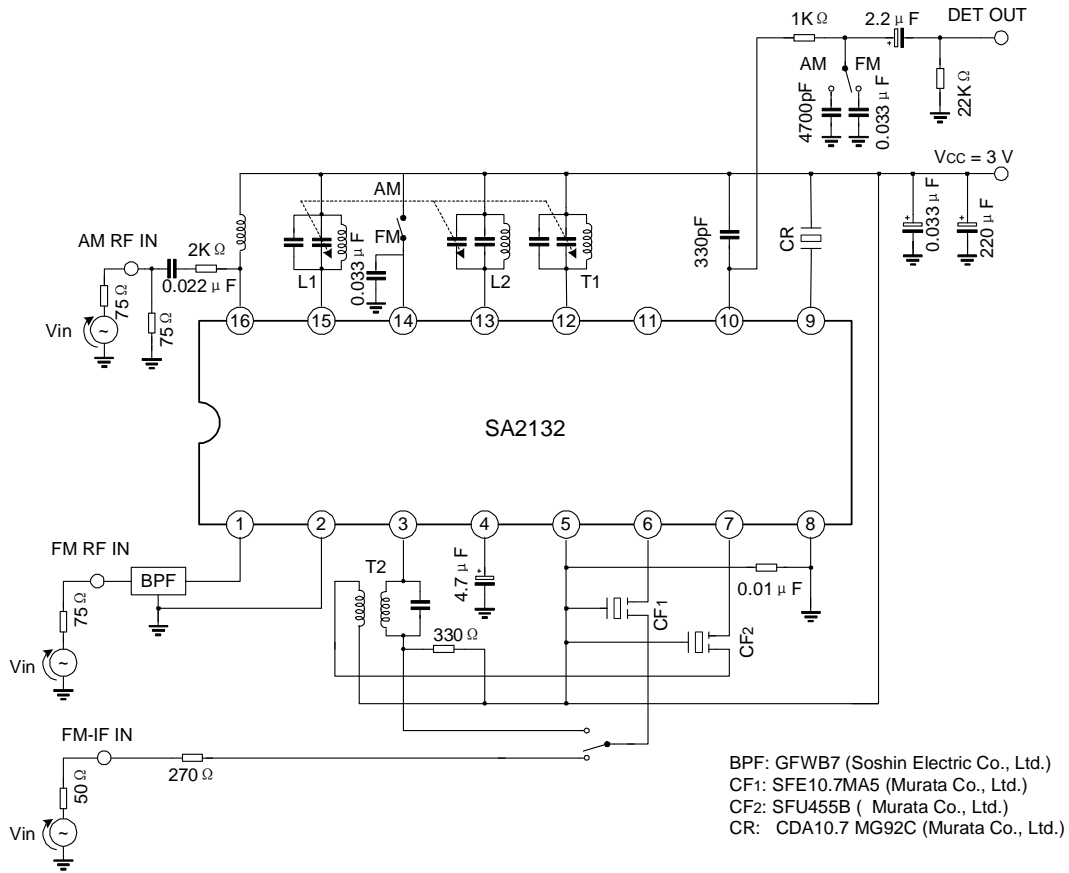
Pin No	Symbol	Internal Circuit	DC Voltage (V)	
			AM	FM
1	FM RF IN		0	0.8
2	RF GND (GND for FM RF, FM OSC stage)	-	0	0
3	MIX OUT		3.0	2.9
4	AGC (FM IF level output)		0	0
5	VCC (VCC for AM, FM IF stage)	-	3.0	3.0
6	FM IF IN		3.0	3.0
7	AM IF IN		2.3	2.6
8	GND (GND for AM, FM IF stage)	-	0	0
9	QUAD		2.5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

(To be continued)

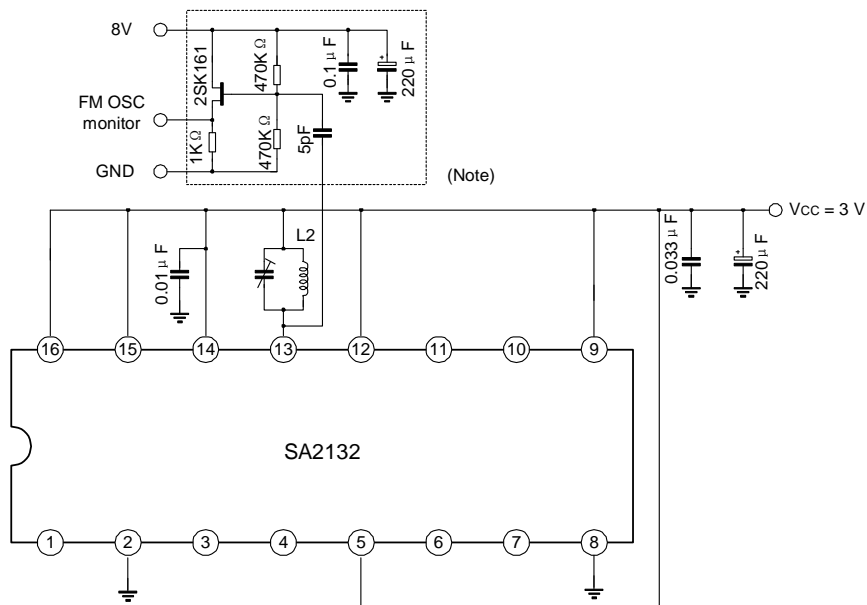
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Pin No	Symbol	Internal Circuit	DC Voltage (V)	
			AM	FM
10	DET OUT		1.0	0.9
11	AFC		--	--
12	AM OSC		3.0	3.0
13	FM OSC		3.0	3.0
14	AM/FM SW • SW condition V14=VCC→FM V14=OPEN→AM • VCC for FM RF, FM OSC stage		--	3.0
15	FM RF OUT	Cf -Pin 1	3.0	3.0
16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

TEST CIRCUIT(1)



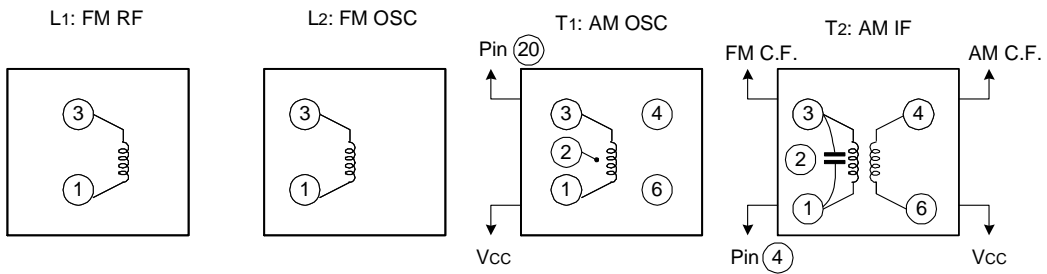
TEST CIRCUIT (2)



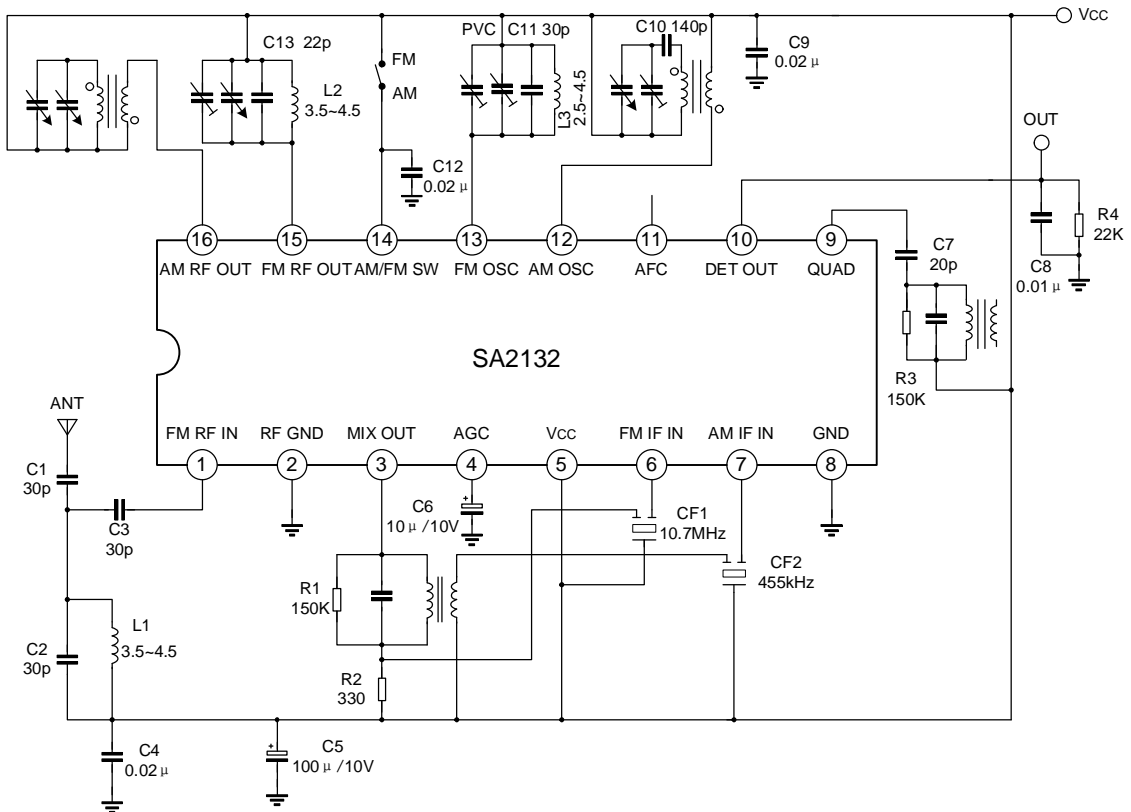
Note : FET buff voltage gain \cong 0dB

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



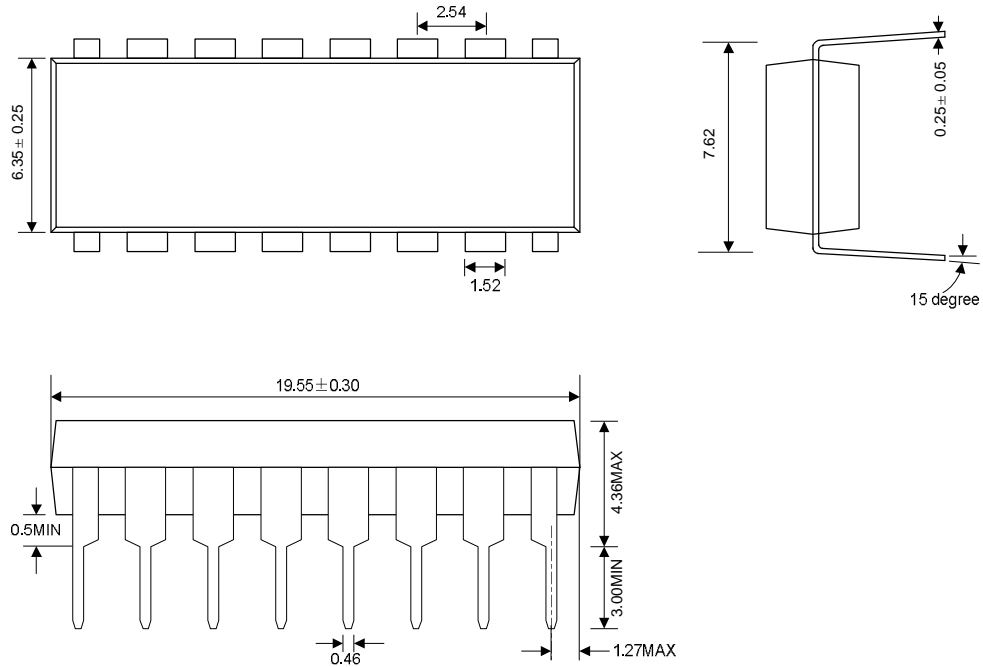
TYPICAL APPLICATION CIRCUIT



PACKAGE OUTLINE

DIP-16-300-2.54

UNIT: mm



SOP-16-225-1.27

UNIT: mm

