



CD2003GP/GB

FM/AM RADIO IC

1、 Overview

The CD2003GP/GB is a monolithic IC designed for use as a FM/AM radio system.

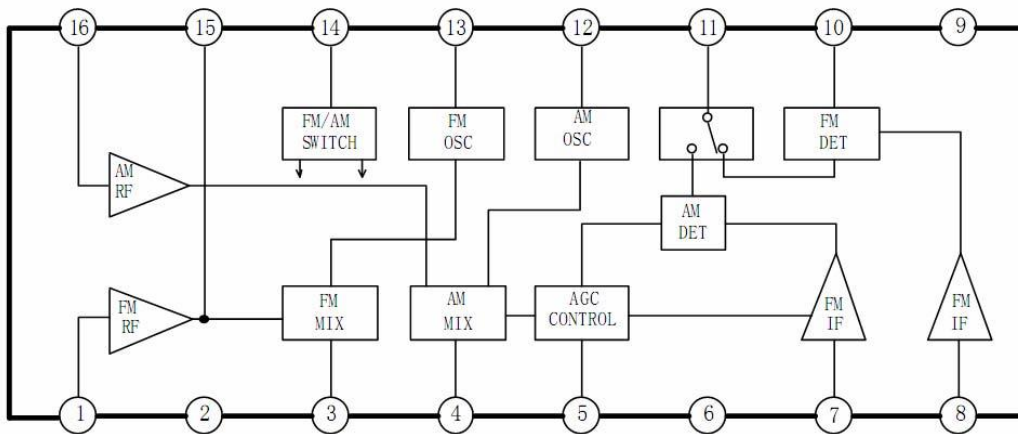
Combined with audio power amplifier IC, a suitable FM/AM radio can be constituted. Its

features are:

- No need for FM IFT, AM IFT, and FM detector coil
- Adjustment free for FM detector circuit
- Wide operating supply voltage range: $V_{CC}=1.8\sim 7V$ ($T_{amb}=25^{\circ}C$)
- Package: DIP16/SOP16

2、 Block Diagram And Pin Descriptions

2. 1. Block Diagram



2. 2. Pin Descriptions

PIN	Symbol	Function	PIN	Symbol	Function
1	IN _{FMR}	FM RF Input	9	GND _{OUT}	Output Ground
2	GND _{IN}	Input Ground	10	QUAD	QUAD
3	OUT _{FMM}	FM Mixer Output	11	OUT _{DET}	Detector Output
4	OUT _{AMM}	AM Mixer Output	12	OSC _{AM}	AM Oscillation
5	AGC	AGC Control	13	OSC _{FM}	FM Oscillation
6	V _{CC}	Supply Voltage	14	SW	AM/FM Switch
7	IN _{AMI}	AM IF Input	15	TUN _{FM}	FM Tuner
8	IN _{FMI}	FM IF Input	16	IN _{AMR}	AM RF Input

3. Electrical Characteristics

3.1. Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

Parameter	Symbol	Conditions	Value	Unit
Supply Voltage	V_{CC}		8	V
Power Dissipation	P_D	DIP16	750	mW
		SOP16	350	
Operating Temperature	T_{amb}		- 25 ~ 75	$^\circ\text{C}$
Storage Temperature	T_{stg}		- 55 ~ 150	$^\circ\text{C}$

NOTE: Derated above $T_{amb}=25^\circ\text{C}$ in the proportion of $6\text{mW}/^\circ\text{C}$ for CD2003GP and of $2.8\text{mW}/^\circ\text{C}$ for CD2003GB.

3.2. Electrical Characteristics

Unless otherwise specified, $T_{amb}=25^\circ\text{C}$, $V_{CC}=3\text{V}$

F/E: $f=98\text{MHz}$, $f_m=1\text{kHz}$

FM IF: $f=10.7\text{MHz}$, $\Delta f=\pm 22.5\text{kHz}$, $f_m=1\text{kHz}$

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

Parameter	Symbol	Test Conditions	Value			Unit
			Min	Typ	Max	
Supply Current	I_{CCQ}	FM mode, $V_{in}=0$	5.0	10.5	16.5	mA
		AM mode, $V_{in}=0$	3.5	5.0	8.0	
F / E						
Quiescent Sensitivity	Q_s	S/N=30dB		2		μV
Input Limiting Sensitivity	$V_{IN(LIM)}$	V_O 为 -3 dB		2		μV
Local OSC Stop Voltage	$V_{STOP(FM)}$	$V_{in}=0$		1.2		V
Local OSC Voltage	V_{OSC}	$f_{OSC}=108\text{MHZ}$	160	240	320	mV
FM IF						
Input Limiting Sensitivity	$V_{IN(LIM)}$	V_O 为 -3dB	63	112	200	μV
Detector Output Voltage	V_{OD}	$V_{in}=80\text{dBu}$ EMF	75		130	mV
Signal to Noise Ratio	S/N	$V_{in}=80\text{dBu}$ EMF		62		dB

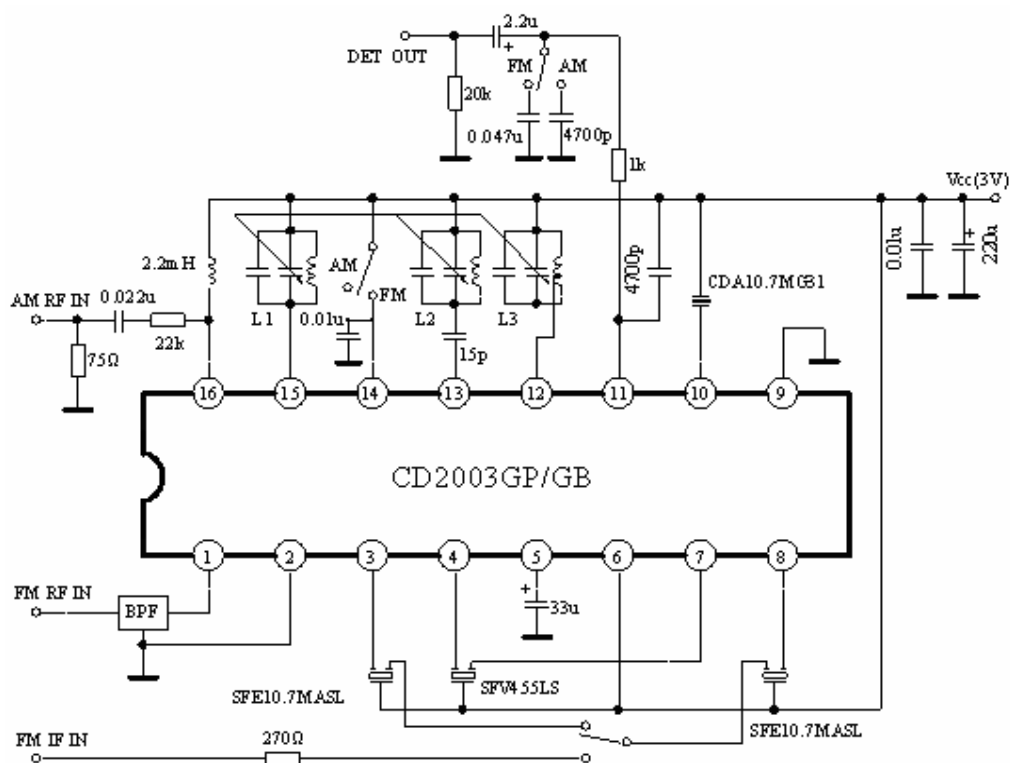
To be continued

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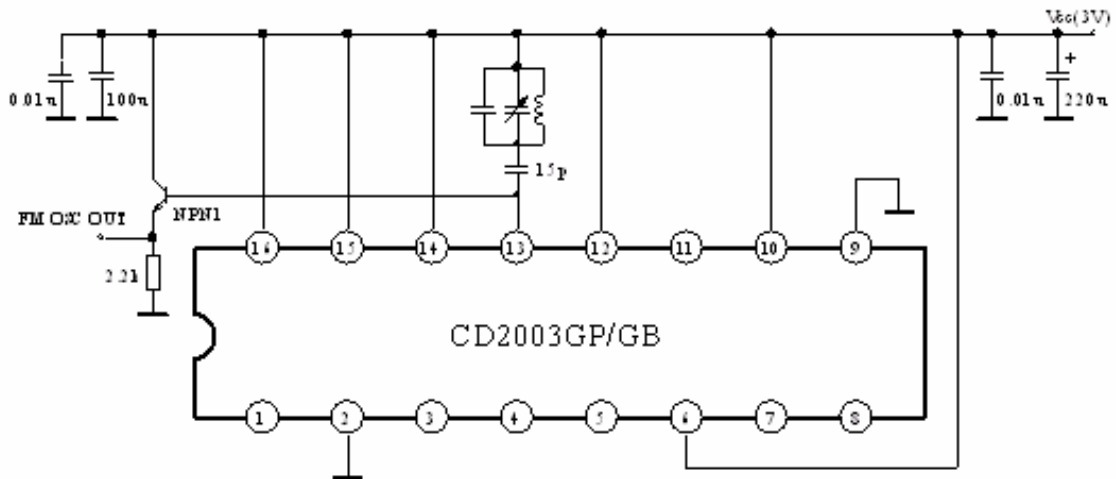
Parameter	Symbol	Test Conditions	Value			Unit
			Min	Typ	Max	
Total Harmonic Distortion	THD	$V_{in}=80\text{dBu}$ EMF		0.4		%
AM Rejection Ratio	AMR	$V_{in}=80\text{dBu}$ EMF		33		dB
AM						
Detector Output Voltage 1	V_{OD1}	$V_{in}=27\text{dBu}$ EMF	15		50	mV
Detector Output Voltage 2	V_{OD2}	$V_{in}=60\text{dBu}$ EMF	40	60	100	mV
Signal to Noise Ratio	S/N	$V_{in}=60\text{dBu}$ EMF		43		dB
Total Harmonic Distortion	THD	$V_{in}=60\text{dBu}$ EMF		1		%
Local OSC Stop Voltage	$V_{STO(AM)}$	$V_{in}=0$		1.6		V

4、 Test Circuit

4.1. Test Circuit 1



4.2. Test Circuit 2

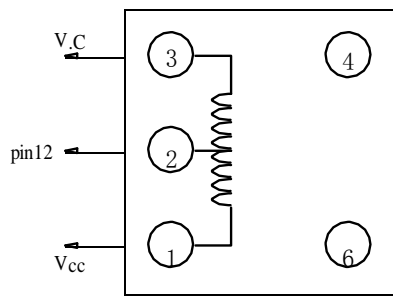


4.3. Note

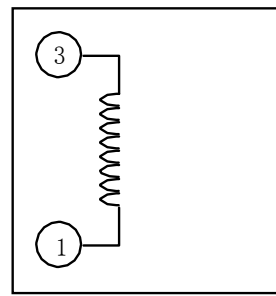
Coil Data (Test Circuit)

Coil No.	Test Frequency (HZ)	L (uH)	Q _o	C _o (pF)	Turns					Wire (mm)	Reference
					1-2	2-3	1-3	1-4	4-6		
L1: FM RF	100M		100					2.25		0.5	0258-0000-021 (注)
L2: FM OSC	100M		100				1.75			0.5	0258-000-020 (注)
L3: AM OSC	796K	268	125		14	86				0.06	2157-2239-213A (注)

NOTE: SUMIDA ELECTRIC CO., LTD

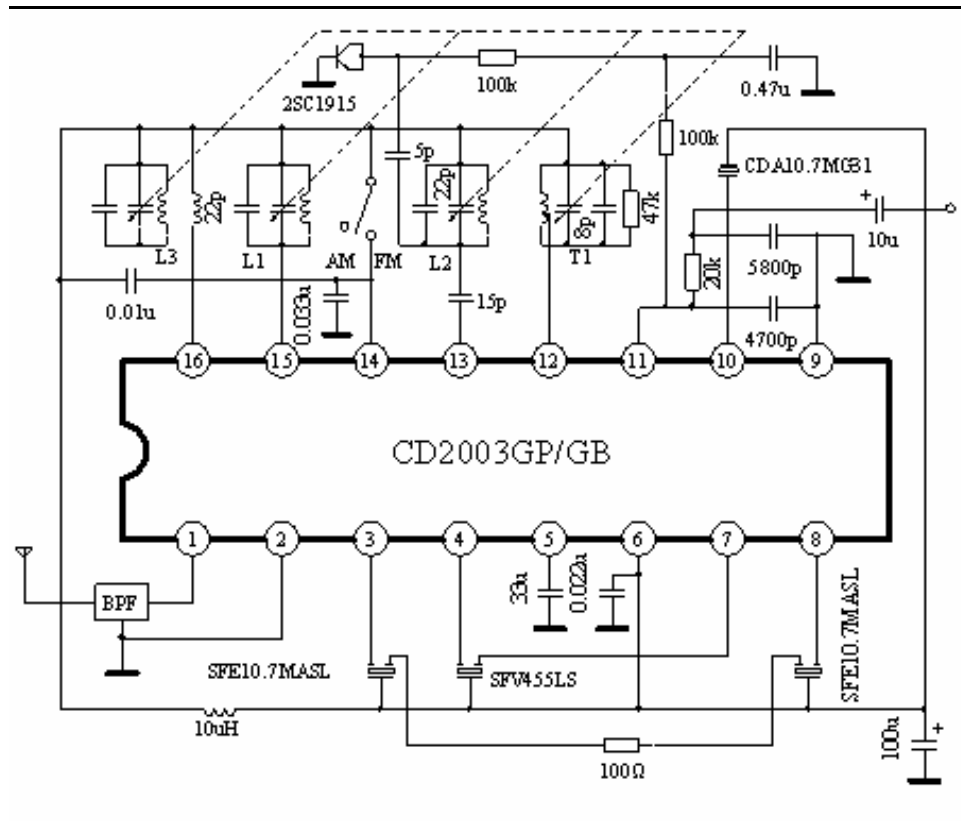


L3



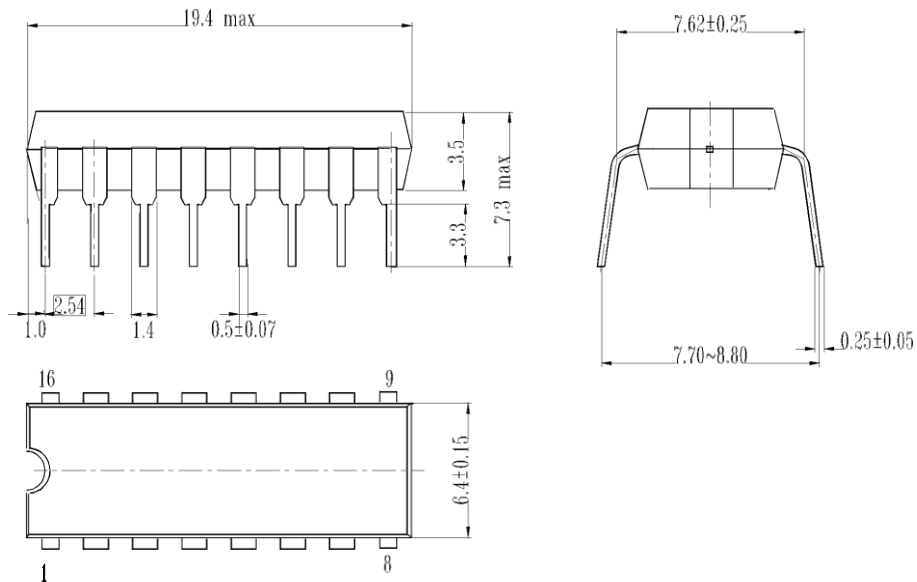
L1 L2

5. Application Circuit



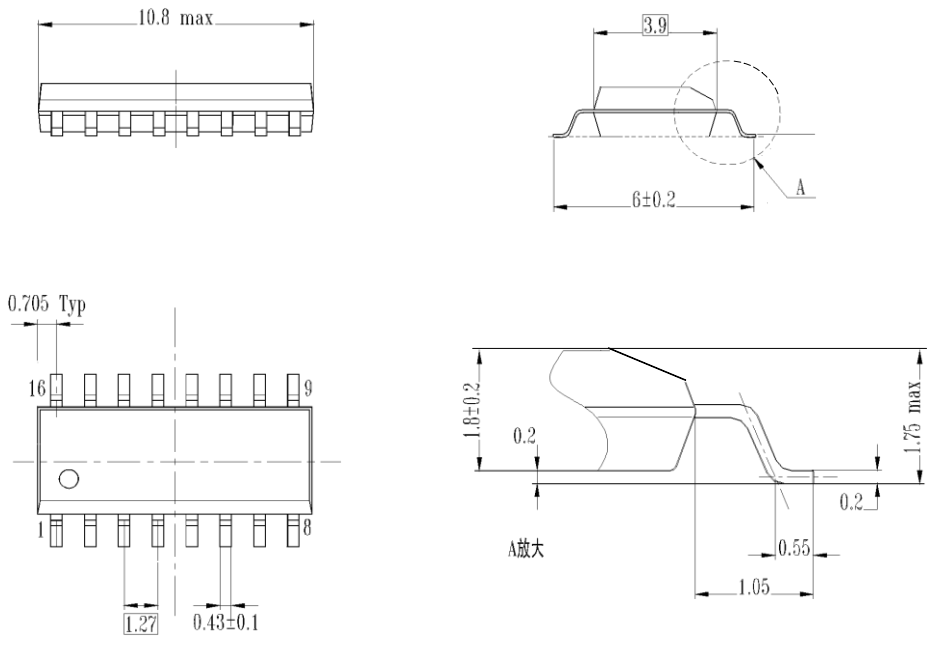
6. Package Outline

6.1. DIP16





6.2、SOP16



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