



# CD2003GP/GB

## FM/AM RADIO IC

### 1、 Overview

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

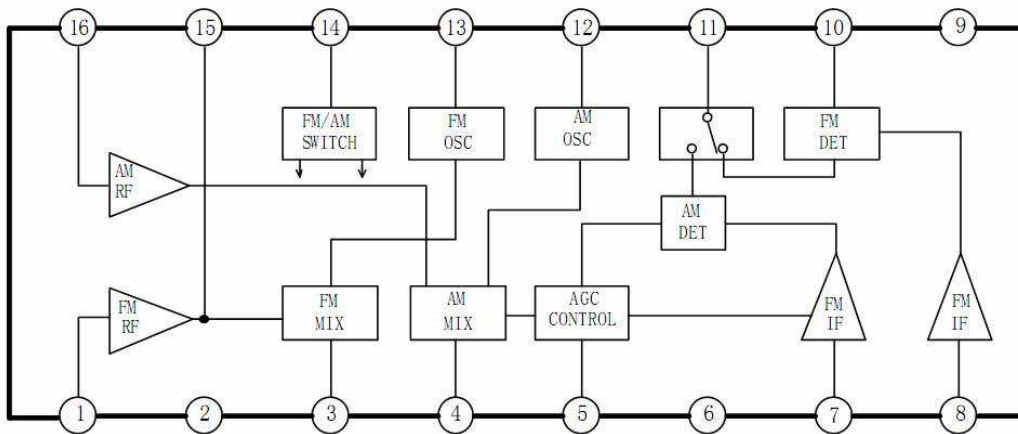
Combined with audio power amplifier IC, a suitable FM/AM radio can be constituted. Its

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

### 3. Electrical Characteristics

#### 3.1. Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Conditions	Value	Unit
Supply Voltage	V <sub>CC</sub>		8	V
Power Dissipation	P <sub>D</sub>	DIP16	750	mW
		SOP16	350	
Operating Temperature	T <sub>amb</sub>		- 25 ~ 75	°C
Storage Temperature	T <sub>stg</sub>		- 55 ~ 150	°C

NOTE: Derated above T<sub>amb</sub>=25°C in the proportion of 6mW/°C for CD2003GP and of 2.8mW/°C for CD2003GB.

#### 3.2. Electrical Characteristics

Unless otherwise specified, T<sub>amb</sub>=25°C, V<sub>CC</sub>=3V

F/E: f=98MHz, f<sub>m</sub>=1kHz

FM IF: f=10.7MHz, Δf=±22.5kHz, f<sub>m</sub>=1kHz

AM: f=1MHz, MOD=30%, f<sub>m</sub>=1kHz

Parameter	Symbol	Test Conditions	Value			Unit
			Min	Typ	Max	
Supply Current	I <sub>CCQ</sub>	FM mode, V <sub>in</sub> =0	5.0	10.5	16.5	mA
		AM mode, V <sub>in</sub> =0	3.5	5.0	8.0	
F / E						
Quiescent Sensitivity	Q <sub>s</sub>	S/N=30dB		2		uV
Input Limiting Sensitivity	V <sub>IN(LIM)</sub>	V <sub>O</sub> 为 -3 dB		2		uV
Local OSC Stop Voltage	V <sub>STOP(FM)</sub>	V <sub>in</sub> =0		1.2		V
Local OSC Voltage	V <sub>OSC</sub>	f <sub>OSC</sub> =108MHZ	160	240	320	mV
FM IF						
Input Limiting Sensitivity	V <sub>IN(LIM)</sub>	V <sub>O</sub> 为 -3dB	63	112	200	uV
Detector Output Voltage	V <sub>OD</sub>	V <sub>in</sub> =80dBu EMF	75		130	mV
Signal to Noise Ratio	S/N	V <sub>in</sub> =80dBu EMF		62		dB

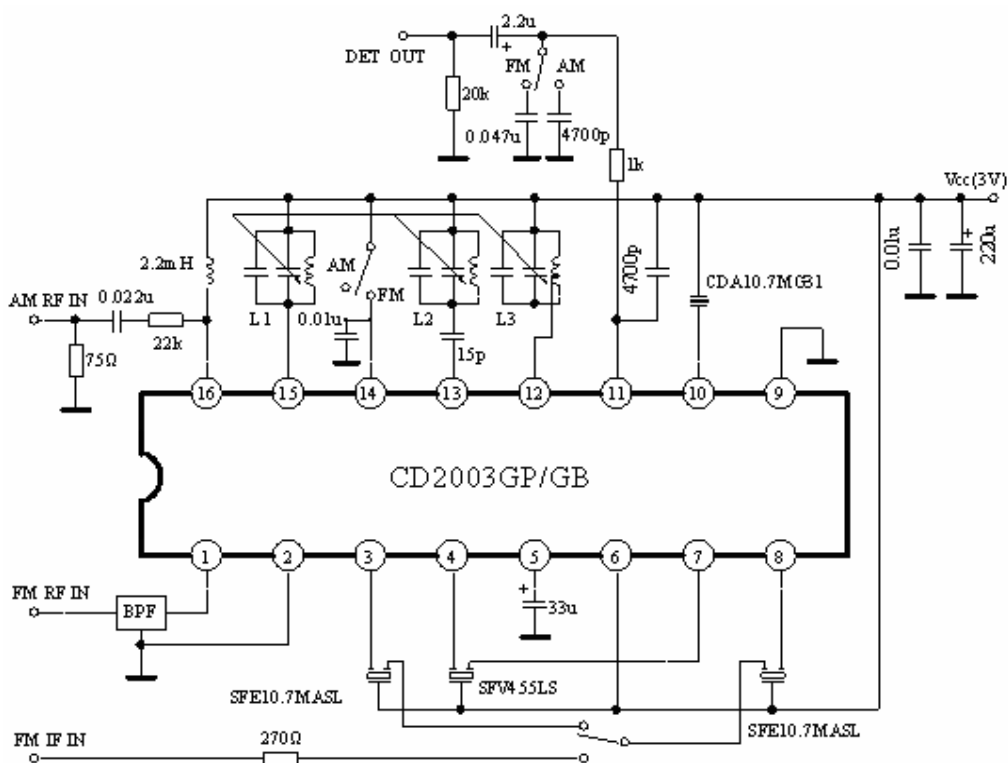
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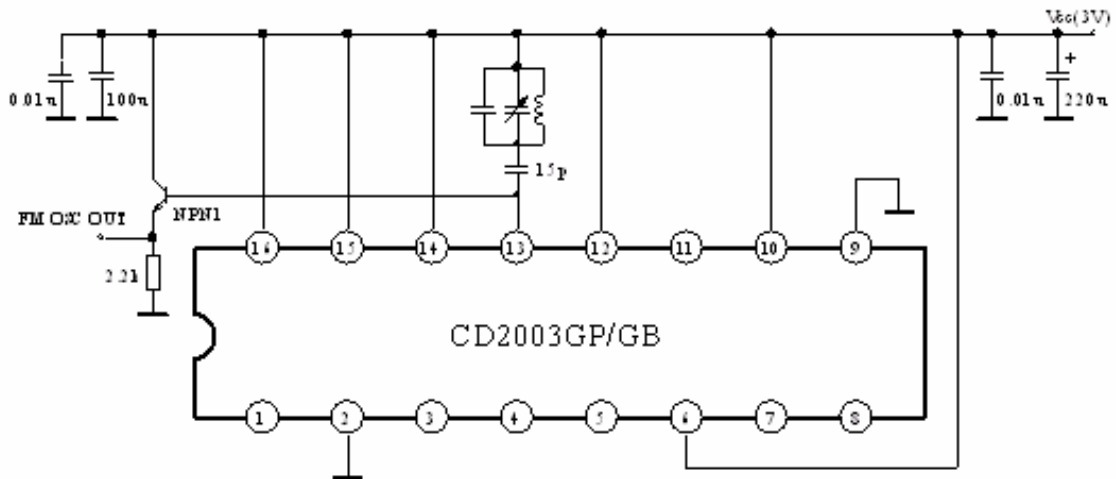
Parameter	Symbol	Test Conditions	Value			Unit
			Min	Typ	Max	
Total Harmonic Distortion	THD	$V_{in}=80\text{dBu}$ EMF		0.4		%
AM Rejection Ratio	AMR	$V_{in}=80\text{dBu}$ EMF		33		dB
AM						
Detector Output Voltage 1	$V_{OD1}$	$V_{in}=27\text{dBu}$ EMF	15		50	mV
Detector Output Voltage 2	$V_{OD2}$	$V_{in}=60\text{dBu}$ 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

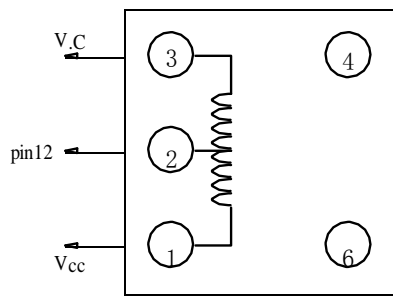


4.3. Note

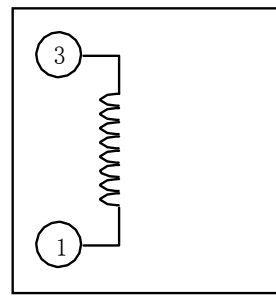
Coil Data (Test Circuit)

Coil No.	Test Frequency (HZ)	L (uH)	Q <sub>o</sub>	C <sub>o</sub> (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

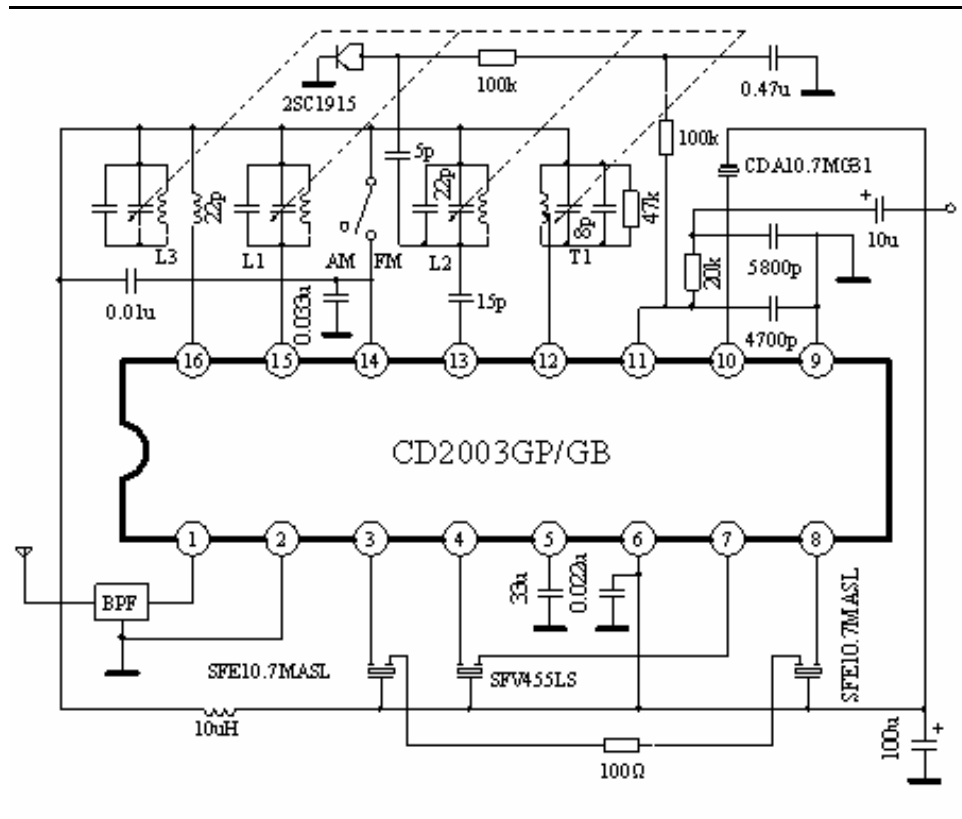


L3



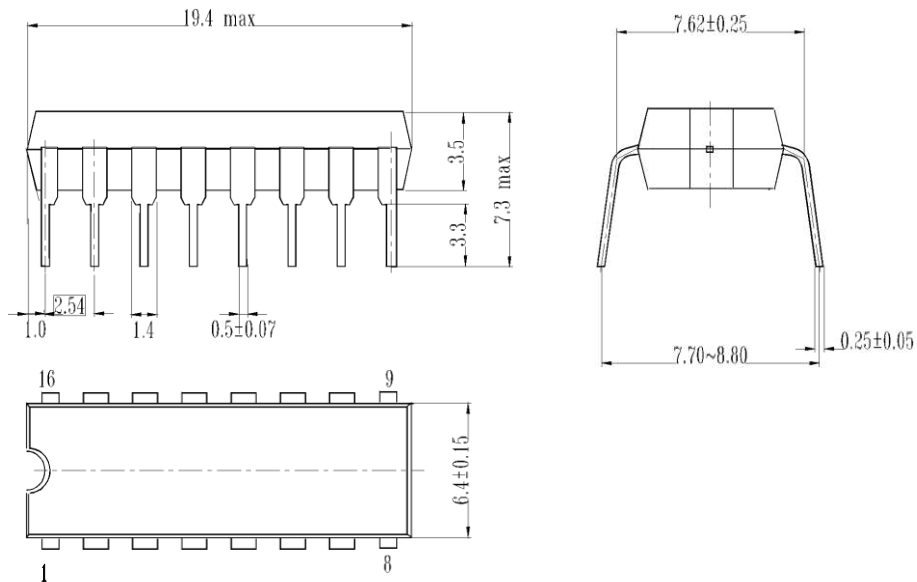
L1 L2

## 5. Application Circuit



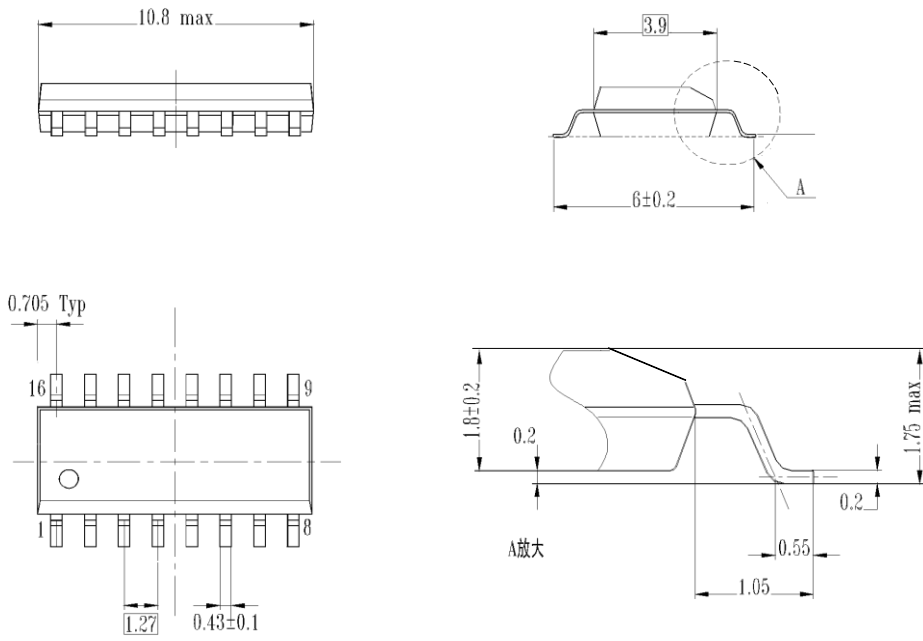
## 6. Package Outline

### 6.1. DIP16





### 6.2、SOP16



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