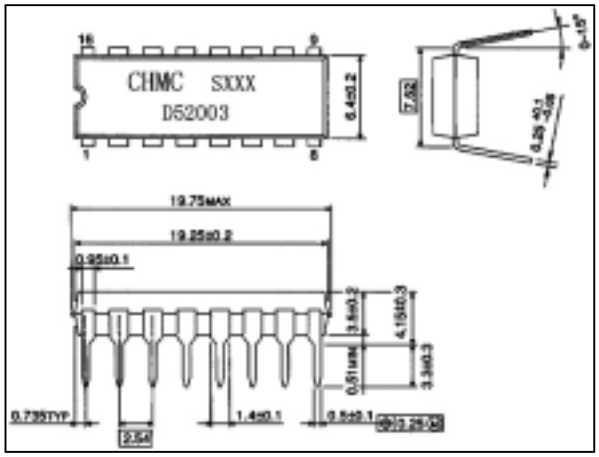
AM/FM RADIO IC D52003

GENERAL DESCRIPTION

The D52003 are AM/FM Radio IC (FM F/E+AM/FM IF)which are designed for AM/FM Radios. Combining with the D7368GS (Mono PW IC), a suitable AM/FM Radio System is able to be constituted.

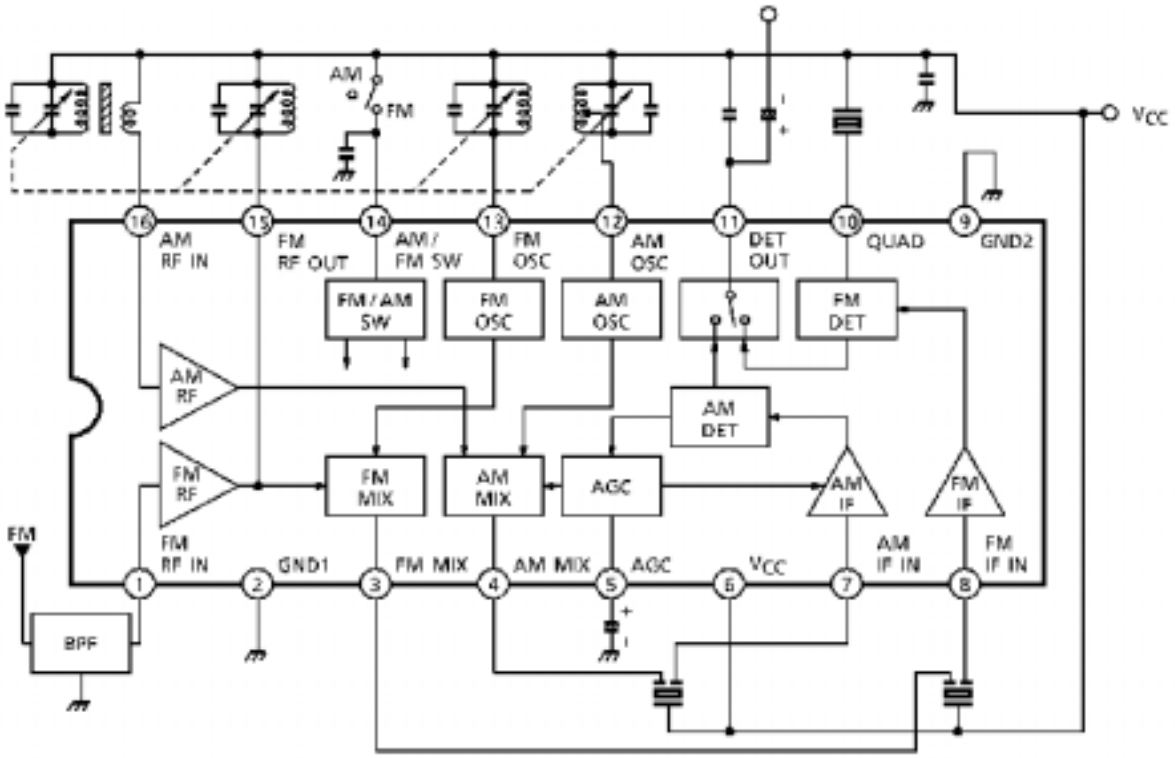
Outline drawing



FEATURES

- FM IFT, AM IFT and FM Detector coil are not needed
- Operating Supply Voltage Range : Vcc(opr)=1.8~7V (Ta=25°C)

BLOCK DIAGRAM



MAXIMUM RATINGS(Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		Vcc	8	V
Power Dissipation	DIP-16	PD(Note)	750	mW
	SSOP-16		350	
Operating Temperature		Topr	-25~75	°C
Storage Temperature		Tstg	-55~150	°C

(Note): Derated above Ta=25°C in the proportion of 6mW/°C for DIP16 and of 2.8mW/°C for SSOP16

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, Ta=25°C, Vcc=3V,

F/E : f=98MHz,fm=1KHz

FM IF : f=10.7MHz, Δ f=±22.5KHz, fm=1KHz

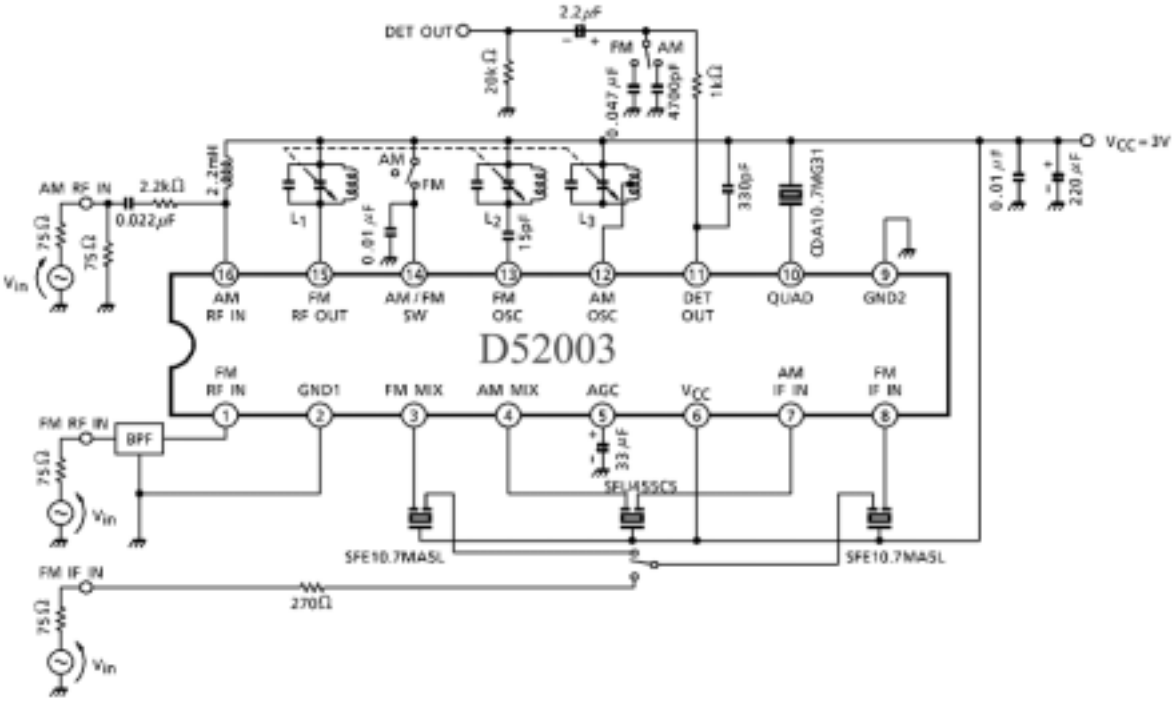
AM : f=1MHz ,MOD=30%,fm=1KHz)

CHARACTER		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP	MAX	UNIT
Supply Current		Icc(FM)	1	FM mode,Vin=0	-	10.5	16.5	mA
		Icc(AM)	1	AM mode, Vin=0	-	5.0	8.0	
F/E	Input Limiting Voltage	Vin(lim)	1	-3dB limiting point	-	12	-	dBμV EMF
	Quiescent Sensitivity	Qs	1	S/N=30dB	-	12	-	dBμV EMF
	Local OSC Voltage	Vosc	2	fosc=108MHz	160	240	320	mVrms
	Local OSC Stop Voltage	Vstop (FM)	2	Vin=0	-	1.2	-	V
FM IF	Input Limiting Voltage	Vin(lim) IF	1	-3dB limiting point	42	47	52	dBμV EMF
	Recovered Output Voltage	VOD	1	Vin=80dBμV EMF	50	70	90	mVrms
	Signal to Noise Ratio	S/N	1	Vin=80dBμV EMF	-	62	-	dB
	Total Harmonic Distortion	THD	1	Vin=80dBμV EMF	-	0.4	-	%
	AM Rejection Ratio	AMR	1	Vin=80dBμV EMF	-	33	-	dB

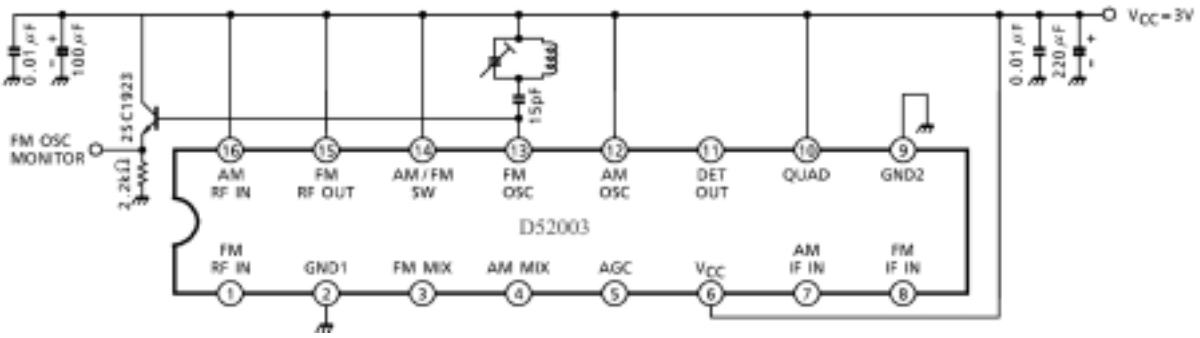
continue

CHARACTER		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP	MAX	UNIT
AM	Voltage Gain	Gv	1	Vin=27dBμV EMF	15	32	50	mVrms
	Recovered Output Voltage	VOD	1	Vin=60dBμV EMF	35	60	85	mVrms
	Signal to Noise Ratio	S/N	1	Vin=60dBμV EMF	-	43	-	dB
	Total Harmonic Distortion	THD	1	Vin=60dBμV EMF	-	1.0	-	%
	Local OSC Stop Voltage	Vstop (AM)	1	Vin=0	-	1.6	-	V

TEST CIRCUIT



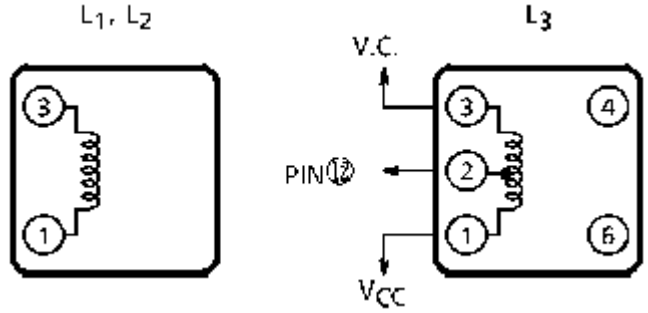
CIRCUIT 1



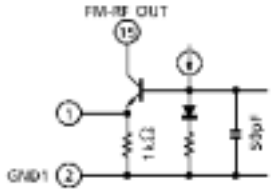
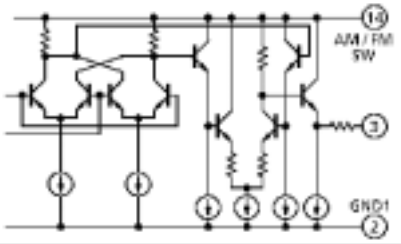
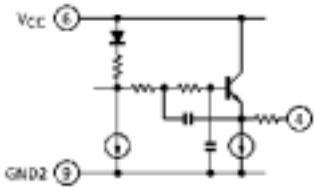
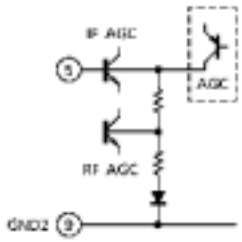
CIRCUIT 2

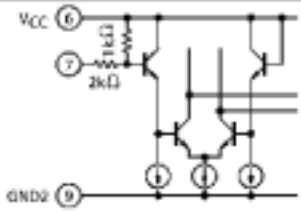
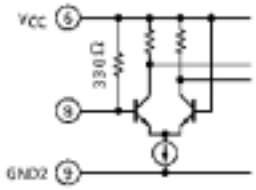
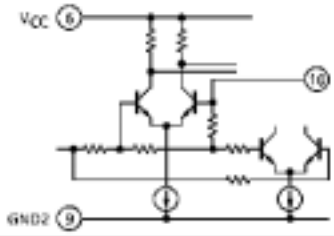
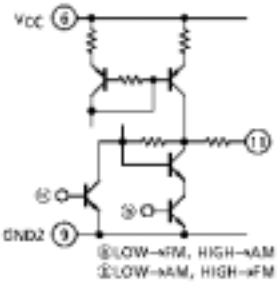
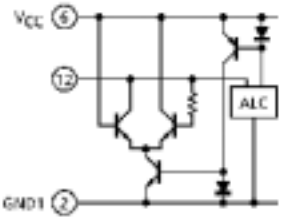
COIL DATA (Test circuit)

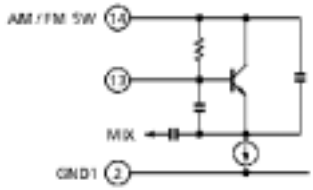
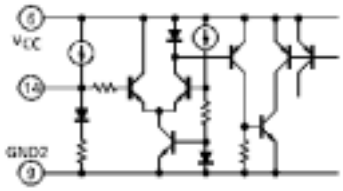
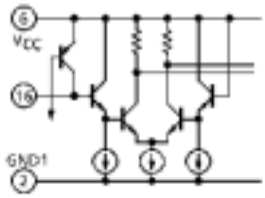
COIL No.	TEST FREQ. (Hz)	L (μH)	C_0 (pF)	Q_0	TURNS					WIRE (mmϕ)	REFERENCE
					1-2	2-3	1-3	1-4	4-6		
L_1 FM RF	100M	—	—	100	—	—	—	$2\frac{1}{4}$	—	0.5 UEW	Ⓢ0258-000-021
L_2 FM OSC	100M	—	—	100	—	—	$1\frac{3}{4}$	—	—	0.5 UEW	Ⓢ0258-000-020
L_3 AM OSC	796k	268	—	125	14	86	—	—	—	0.06 UEW	Ⓢ2157-2239-213A



EXPLANATION OF TERMINAL (TERMINAL VOLTAGE : Typical DC voltage at Ta=25°C, Vcc=3V and no signal with Test Circuit 1)

PIN No.	SYMBOL	CONTENTS	INTERNAL CIRCUIT	TERMINAL VOLTAGE (V)	
				AM	FM
1	FM RF IN	Input of FM RF Amplifier		0	0.7
2	GND1	GND for RF, OSC and MIX Stage	—	0	0
3	FM MIX	Output of FM MIX		0.4	1.7
4	AM MIX	Output of AM MIX		0.6	0
5	AGC	By-pass of AM AGC		0	0
6	V_{CC}	—	—	3.0	3.0

PIN No.	SYMBOL	CONTENTS	INTERNAL CIRCUIT	TERMINAL VOLTAGE (V)	
				AM	FM
7	AM IF IN	Input of AM IF Amplifier		3.0	3.0
8	FM IF IN	Input of FM IF Amplifier		3.0	3.0
9	GND2	GND for IF stage	—	0	0
10	QUAD	FM QUAD Detector Ceramic Discriminator is connected. Recommendation CDA10.7MG31 (MURATA MFG.CO., LTD)		2.5	2.2
11	DET OUT	Output of FM / AM Detector		1.4	1.1
12	AM OSC	AM Local Oscillator Terminal Oscillator Coil is connected.		3.0	3.0

PIN No.	SYMBOL	CONTENTS	INTERNAL CIRCUIT	TERMINAL VOLTAGE (V) AM	FM
13	FM OSC	FM Local Oscillator Terminal Oscillator Coil is connected.		0.9	3.0
14	AM / FM SW	AM / FM switch connected to Pin⑬ V_{CC}→FM mode Pin⑬ OPEN→AM mode		0.9	3.0
15	FM RF OUT	FM RF Coil is connected.	cf. PIN⑬	3.0	3.0
16	AM RF IN	Input of AM RF Amplifier		3.0	3.0

APPLICATION CIRCUIT