



TA2003

Preliminary

LINEAR INTEGRATED CIRCUIT

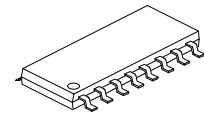
AM/FM RADIO IC

DESCRIPTION

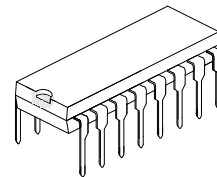
The UTC **TA2003** is AM/FM Radio IC (FM F/E + AM/FM IF) which is designed for AM/FM Radios.

FEATURES

- * FM IFT, AM IFT and FM Detector Coil are unnecessary.
- * Operating Supply Voltage Range
- * $V_{CC(oper)} = 1.8 \sim 7V$ ($T_a=25^{\circ}C$)



SOP-16

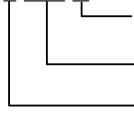


DIP-16

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
TA2003L-S16-R	TA2003G-S16-R	SOP-16	Tape Reel
TA2003L-D16-T	TA2003G-D16-T	DIP-16	Tube

TA2003L-S16-R



- (1)Packing Type
- (2)Package Type
- (3)Lead Free

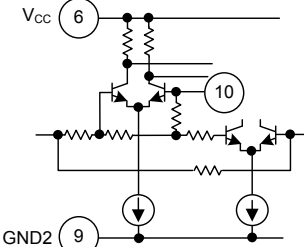
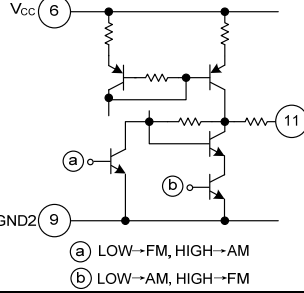
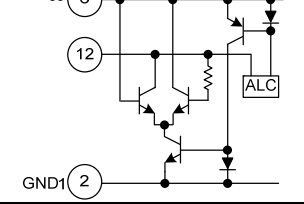
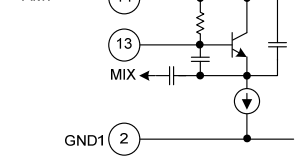
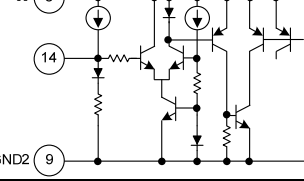
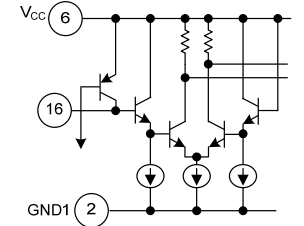
- (1) R: Tape Reel, T: Tube
- (2) S16: SOP-16, D16: DIP-16
- (3) G: Halogen Free, L: Lead Free

■ EXPLANATION OF TERMINAL

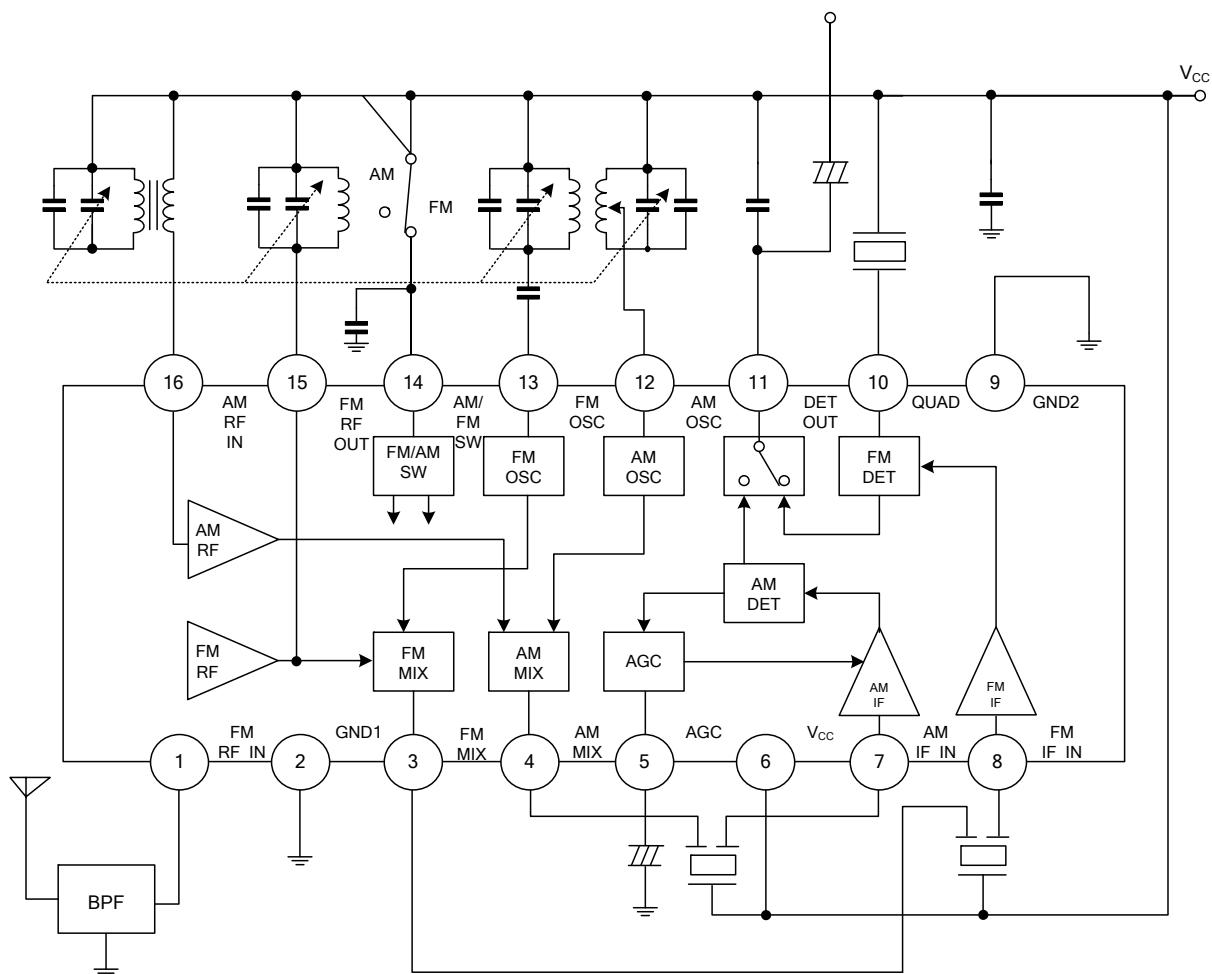
Terminal Voltage: Typical DC voltage at Ta=25°C, V_{CC}=3V and no signal with Test Circuit

PIN NO.	PIN NAME	DESCRIPTION	INTERNAL CIRCUIT	TERMINAL VOLTAGE	
1	FM AF IN	Input of FM RF Amplifier		0	0.7
2	GND1	GND for RF, DSC 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
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

■ EXPLANATION OF TERMINAL

PIN NO.	PIN NAME	DESCRIPTION	INTERNAL CIRCUIT	TERMINAL VOLTAGE	
9	GND2	GND for IF stage		0	0
10	QUAD	FM QUAD Detector Ceramic Discriminator is connected. Recommendation CDA 10.7MG31 (MURATA MFG. CO., LTD)		2.5	2.2
11	DET OUT	Output of FM/AM Detector	 (a) LOW→FM, HIGH→AM (b) LOW→AM, HIGH→FM	1.4	1.1
12	AM OSC	AM local Oscillator Terminal Oscillator Coil is connected.		3.0	3.0
13	FM OSC	FM local Oscillator Terminal Oscillator Coil is connected		0.9	3.0
14	AM/FM SW	AM/FM switch connected to Pin14 Vcc→FM mode Pin14 OPEN→AM mode		0.9	3.0
15	FM RF OUT	FM RF Coil is connected	cf. PIN 1	3.0	3.0
16	AM RF IN	Input of AM RF Amplifier		3.0	3.0

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (Ta=25°C)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	8	V
Power Dissipation	DIP-16	P_D	750	mW
	SOP-16		350	
Operating Temperature		T_{OPR}	-25 ~ 75	°C
Storage Temperature		T_{STG}	-55 ~ 150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS

Unless otherwise specified, Ta=25°C, V_{CC} =3V, FE: f = 98MHz, f_m = 1KHz,

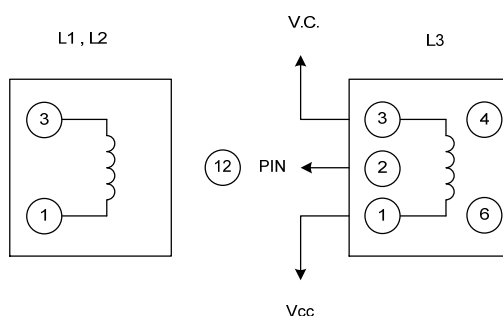
FM IF: f = 10.7MHz, Δf =±22.5kHz, f_m = 1KHz

AM: f = 1MHz, MOD = 30%, f_m = 1 KHz

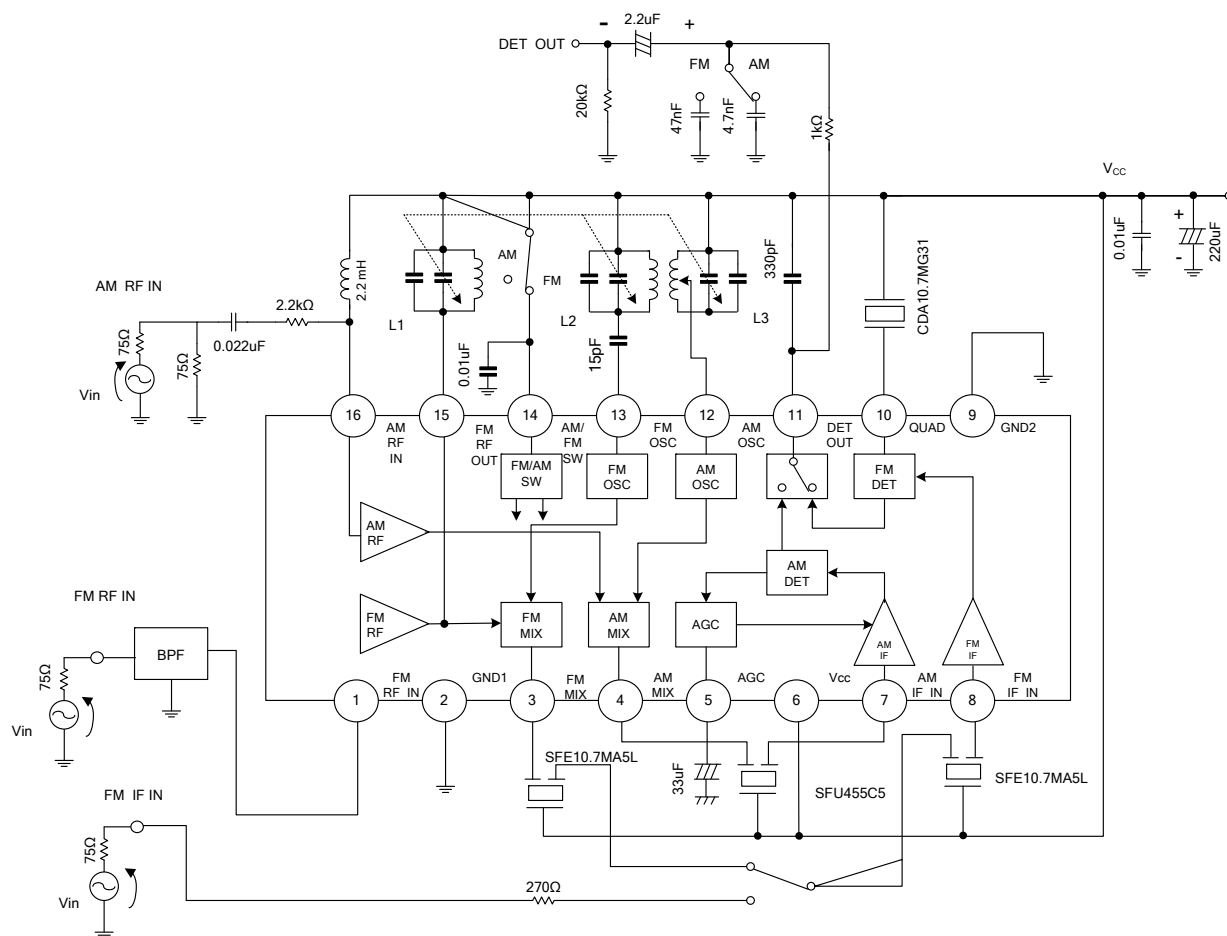
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	TEST CIRCUIT
Supply Current		I_{CC} (FM)	FM Mode, V_{in} =0		10.5	16.5	mA	1
		I_{CC} (AM)	AM Mode, V_{in} =0		5.0	8.0		1
F/E	Input Limiting Voltage	V_{in} (lim)	-3dB limiting point		12		dB μ V EMF	1
	Quiescent Sensitivity	Q_S	S/N=30dB		12		dB μ V EMF	1
	Local OSC Voltage	V_{OSC}	f_{OSC} =108MHz	160	240	320	mVrms	2
	Local OSC Stop Voltage	V_{stop} (FM)	V_{in} =0		1.2		V	2
FM IF	Input Limiting Voltage	V_{in} (lim)IF	-3dB limiting point	42	47	52	dB μ V EMF	1
	Recovered Output Voltage	V_{OD}	V_{in} =80dB μ V EMF	50	70	90	mVrms	1
	Signal To Noise Ratio	S/N	V_{in} =80dB μ V EMF		62		dB	1
	Total Harmonic Distortion	THD	V_{in} =80dB μ V EMF		0.4		%	1
	AM Rejection Ratio	AMR	V_{in} =80dB μ V EMF		33		dB	1
AM	Voltage Gain	G_V	V_{in} =27dB μ V EMF	15	32	50	mVrms	1
	Recovered Output Voltage	V_{OD}	V_{in} =60dB μ V EMF	35	60	85	mVrms	1
	Signal To Noise Ratio	S/N	V_{in} =60dB μ V EMF		43		dB	1
	Total Harmonic Distortion	THD	V_{in} =60dB μ V EMF		1.0		%	1
	Local OSC Stop Voltage	V_{stop} (AM)	V_{in} =0		1.6		V	1

■ COIL DATA (TEST CIRCUIT)

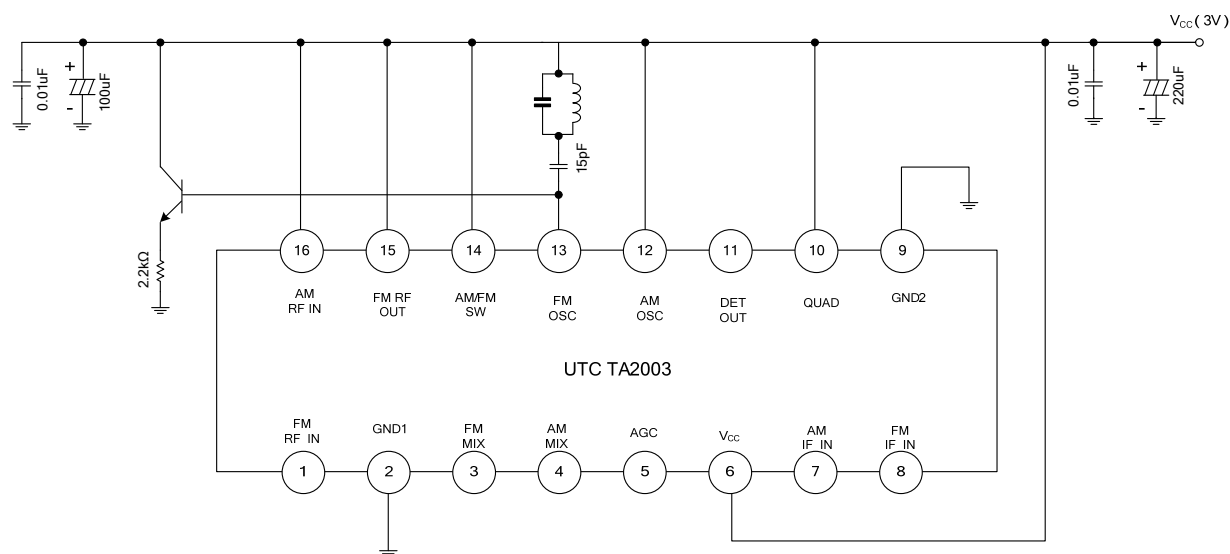
COIL NO.	TEST FREQ (Hz)	L (μ H)	C_O (pF)	Q_O	TURNS					WIRE (mm ϕ)
					1-2	2-3	1-3	1-4	4-6	
L1 FM RF	100M			100				2.25		0.5 UEW
L2 FM OSC	100M			100			1.75			0.5 UEW
L3 AM OSC	796K	268		125	14	86				0.06 UEW



■ TEST CIRCUIT1



■ TEST CIRCUIT2



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