

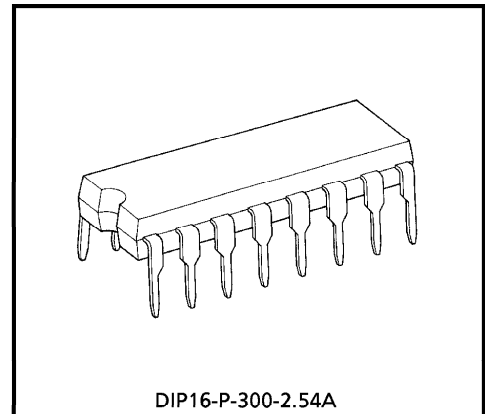
# TA8164P

## 3V MONAURAL RADIO IC

The TA8164P is AM/FM Tuner (FM F/E + AM/FM IF) IC, which is designed for AM/FM monaural radio. Combining with the TA7368P (Mono PW IC), a suitable monaural AM/FM radio system is able to be constituted.

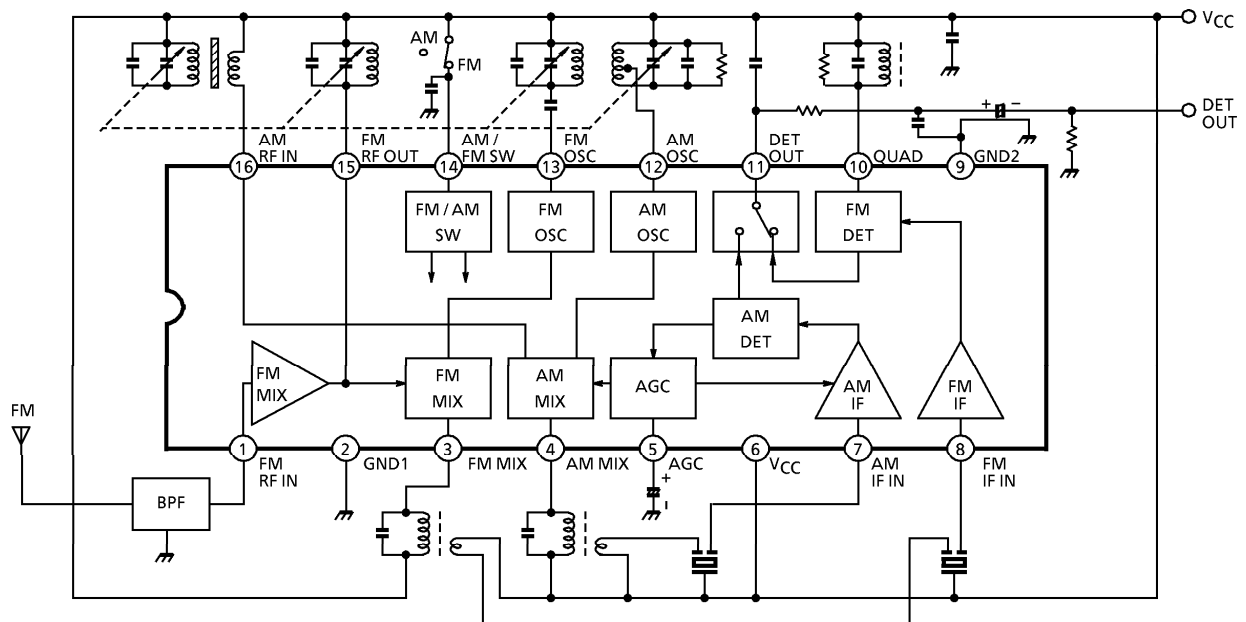
### FEATURES

- Common output for AM/FM
- Switch over between AM/FM mode is possible with one-wake switch.
- Operating supply voltage range  
:  $V_{CC} (opr) = 1.8 \sim 7V$  ( $T_a = 25^\circ C$ )



Weight : 1.00g (Typ.)

### BLOCK DIAGRAM



961001EBA2

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**EXPLANATION OF TERMINAL**

PIN No.	SYMBOL	INTERNAL CIRCUIT	DC VOLTAGE (V) (AT NO SIGNAL)	
			AM	FM
1	FM-RF IN		0	0.7
2	GND1 (GND for AM RF, OSC, MIX, FM RF, OSC, MIX)	—	0	0
3	FM MIX		3.0	3.0
4	AM MIX		3.0	3.0
5	AGC (AM AGC)		0	0
6	VCC	—	3.0	3.0
7	AM IF IN		3.0	3.0
8	FM IF IN		3.0	3.0

PIN No.	SYMBOL	INTERNAL CIRCUIT	DC VOLTAGE (V) (AT NO SIGNAL)	
			AM	FM
9	GND2 (GND for AM IF and FM IF)	—	0	0
10	QUAD (FM QUAD, Detector)		3.0	3.0
11	DET OUT	<p>                     (a) LOW→FM, HIGH→AM                      (b) LOW→AM, HIGH→FM                 </p>	1.4	1.4
12	AM OSC		3.0	3.0
13	FM OSC		3.0	3.0
14	AM / FM SW PIN⑭ VCC →FM PIN⑭ OPEN →AM		—	3.0
15	FM RF OUT	cf. pin①	3.0	3.0
16	AM RF IN		3.0	3.0

## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	8	V
Power Dissipation	P <sub>D</sub> (Note)	750	mW
Operating Temperature	T <sub>opr</sub>	-25~75	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C

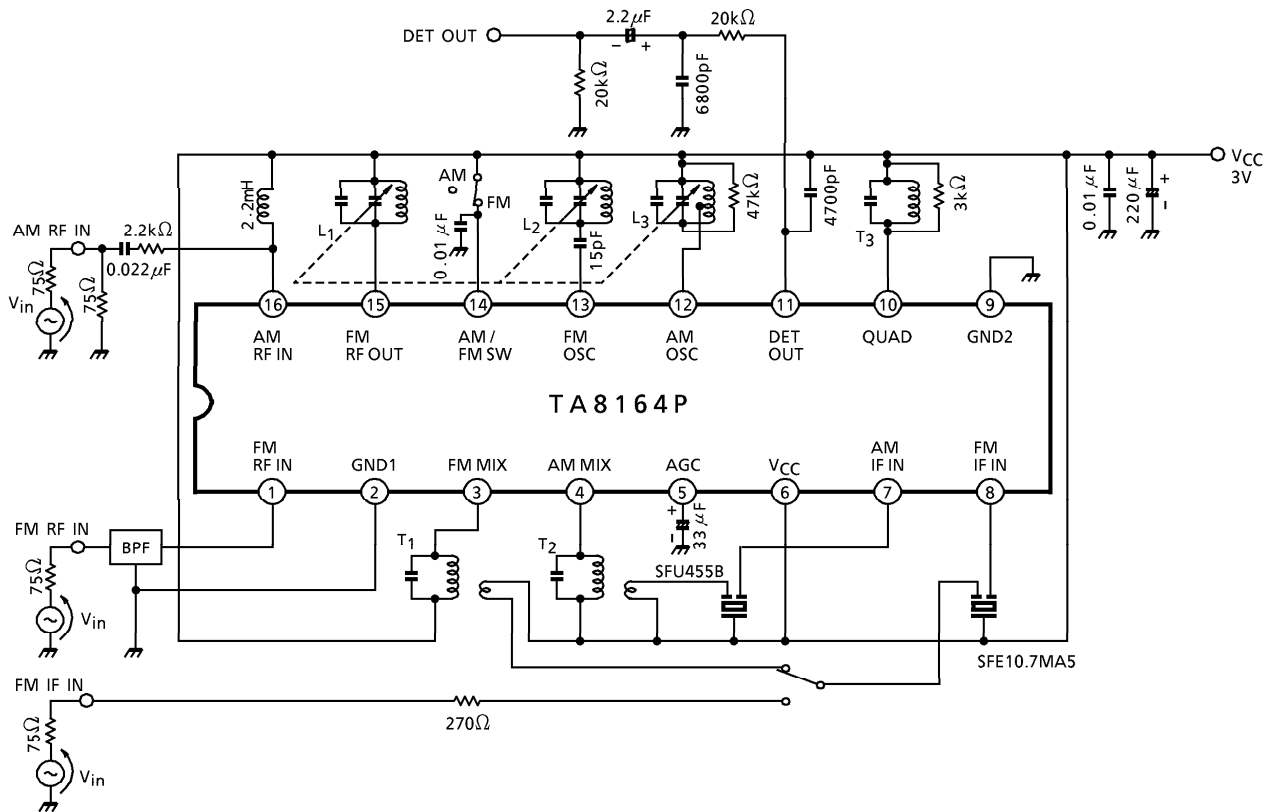
(Note) Derated above Ta = 25°C in the proportion of 6mW/°C.

## ELECTRICAL CHARACTERISTICS

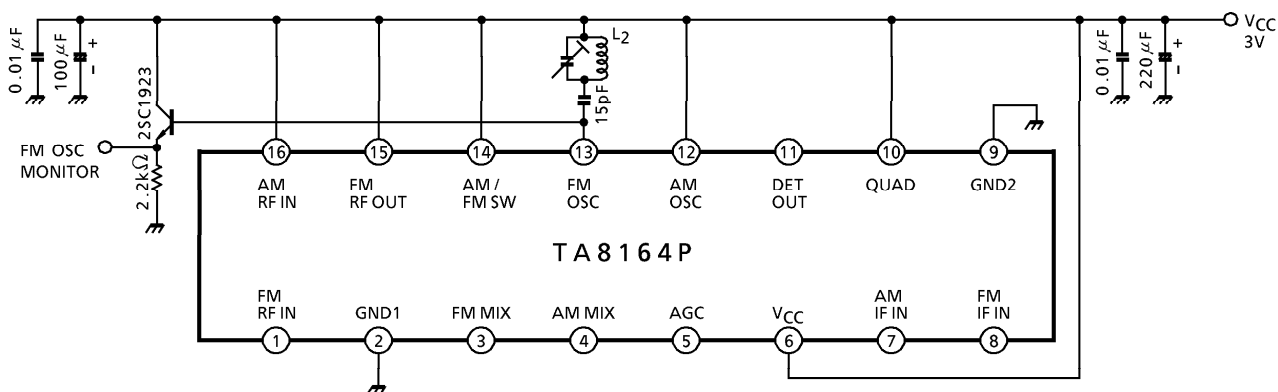
Unless otherwise specified, Ta = 25°C, V<sub>CC</sub> = 3V, F/E : f = 98MHz, f<sub>m</sub> = 1kHz  
 FM IF : f = 10.7MHz, Δf = ±22.5kHz, f<sub>m</sub> = 1kHz  
 AM : f = 1MHz, MOD = 30%, f<sub>m</sub> = 1kHz

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I <sub>CC</sub> (FM)	1	FM Mode V <sub>in</sub> = 0	—	10.5	15.5	mA
		I <sub>CC</sub> (AM)	1	AM Mode V <sub>in</sub> = 0	—	4.5	7.0	
FM F/E	Input Limiting Voltage	V <sub>in</sub> (lim)	1	-3dB limiting point	—	12	—	dB <sub>μV</sub> EMF
	Quiescent Sensitivity	Q <sub>S</sub>	1	S/N = 30dB	—	12	—	dB <sub>μV</sub> EMF
	Local OSC Voltage	V <sub>OSC</sub>	2	f <sub>OSC</sub> = 108MHz	150	205	280	mV <sub>rms</sub>
	Local OSC Stop Supply Voltage	V <sub>stop</sub> (FM)	2	V <sub>in</sub> = 0	—	1.2	—	V
FM IF	Input Limiting Voltage	V <sub>in</sub> (lim) IF	1	-3dB limiting point	44	50	56	dB <sub>μV</sub> EMF
	Recovered Output Voltage	V <sub>OD</sub>	1	V <sub>in</sub> = 80dB <sub>μV</sub> EMF	20	35	55	mV <sub>rms</sub>
	Signal To Noise Ratio	S/N	1	V <sub>in</sub> = 80dB <sub>μV</sub> EMF	—	62	—	dB
	Total Harmonic Distortion	THD	1	V <sub>in</sub> = 80dB <sub>μV</sub> EMF	—	0.4	—	%
	AM Rejection Ratio	AMR	1	V <sub>in</sub> = 80dB <sub>μV</sub> EMF	—	33	—	dB
AM	Gain	G <sub>V</sub>	1	V <sub>in</sub> = 30dB <sub>μV</sub> EMF	15	30	45	mV <sub>rms</sub>
	Recovered Output Voltage	V <sub>OD</sub>	1	V <sub>in</sub> = 60dB <sub>μV</sub> EMF	20	35	55	mV <sub>rms</sub>
	Signal To Noise Ratio	S/N	1	V <sub>in</sub> = 60dB <sub>μV</sub> EMF	—	43	—	dB
	Total Harmonic Distortion	THD	1	V <sub>in</sub> = 60dB <sub>μV</sub> EMF	—	1.0	—	%
	Local OSC Stop Supply Voltage	V <sub>stop</sub> (AM)	1	V <sub>in</sub> = 0	—	1.6	—	V

TEST CIRCUIT 1



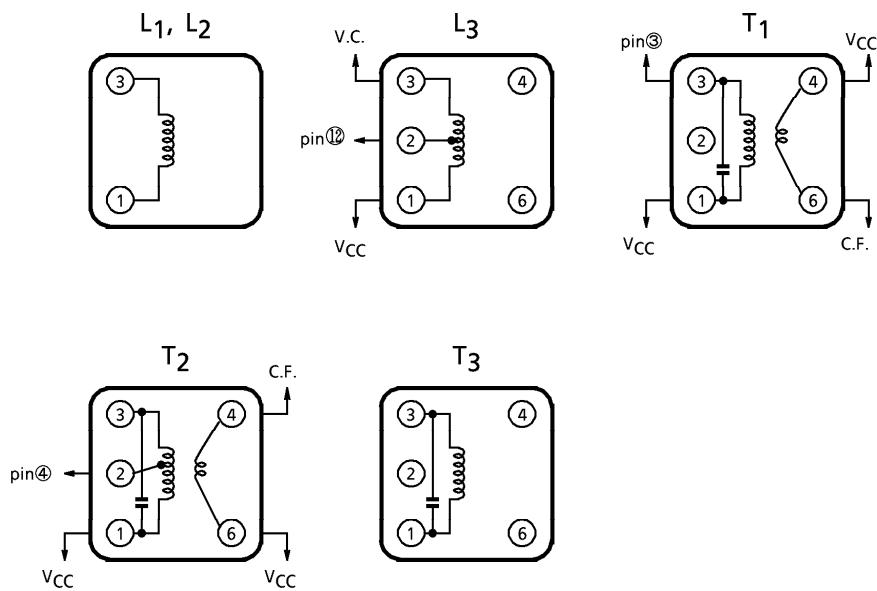
TEST CIRCUIT 2

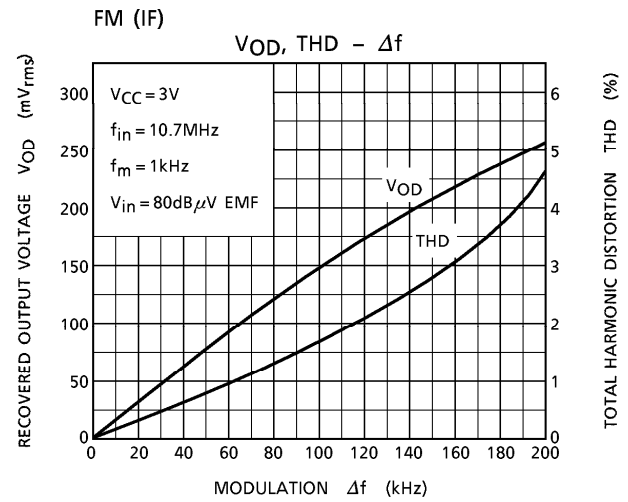
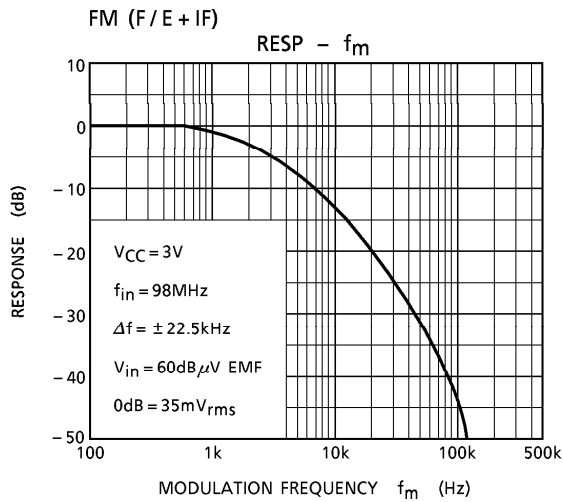
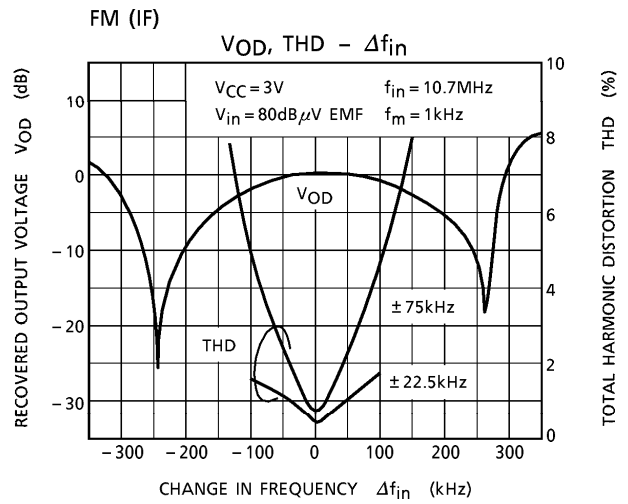
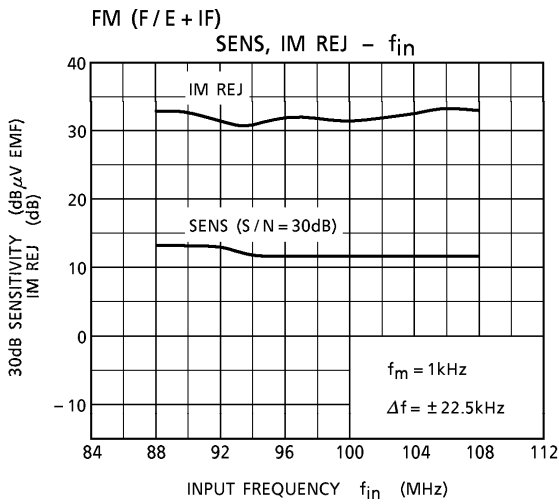
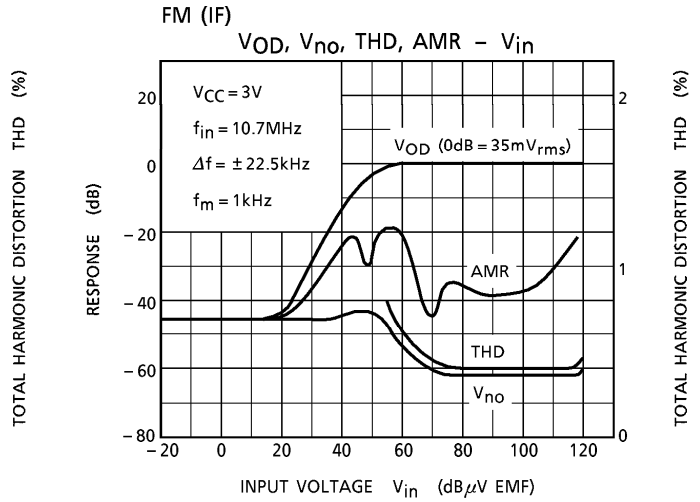
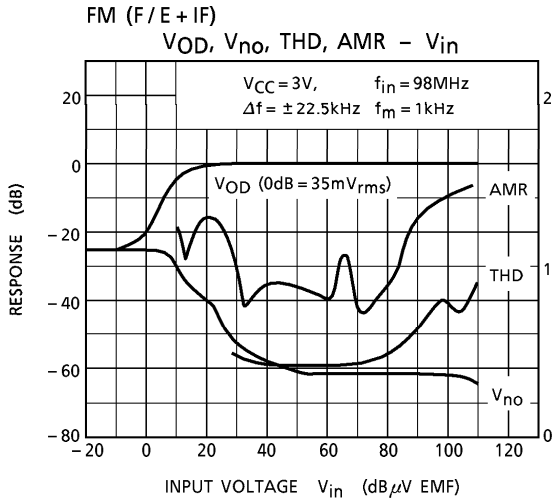


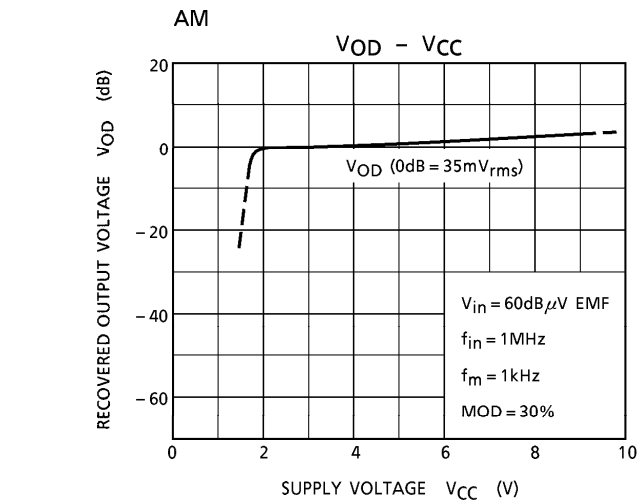
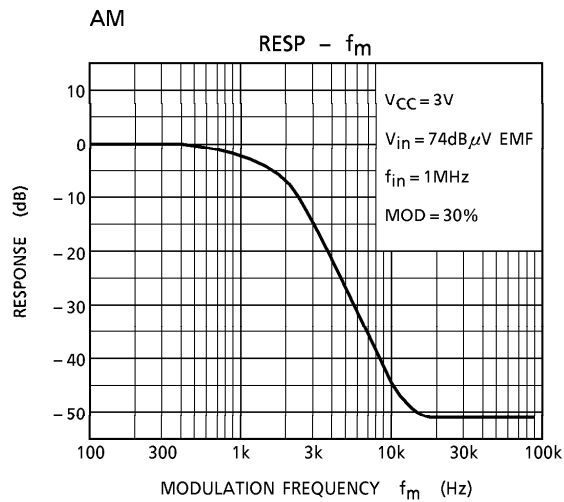
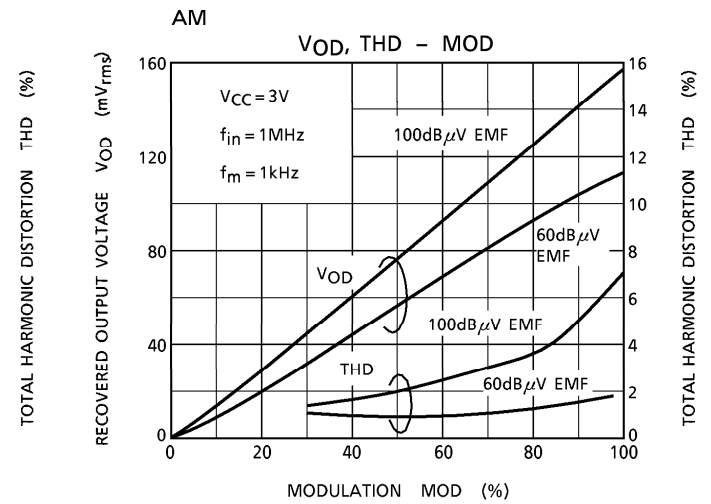
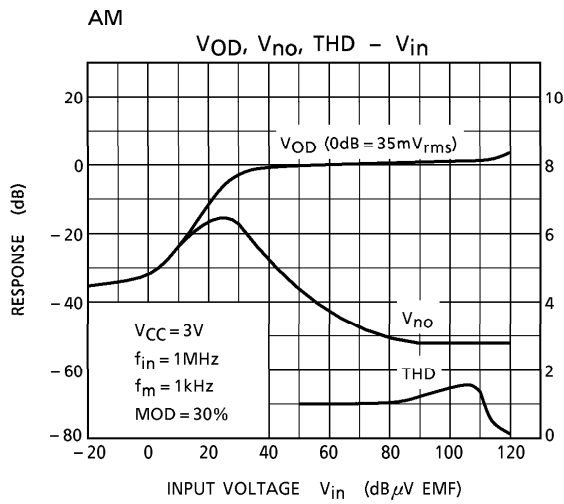
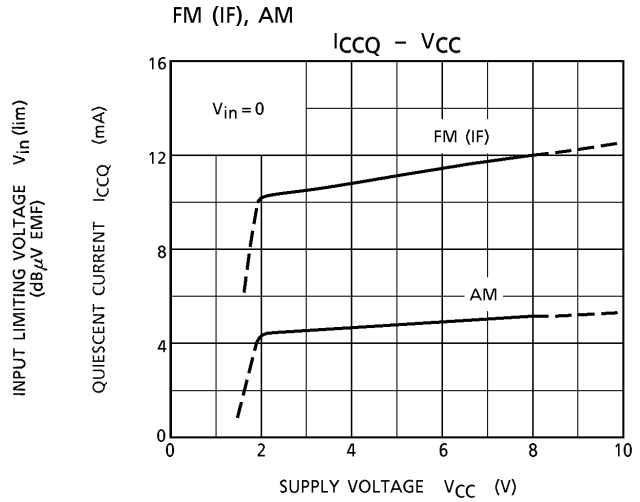
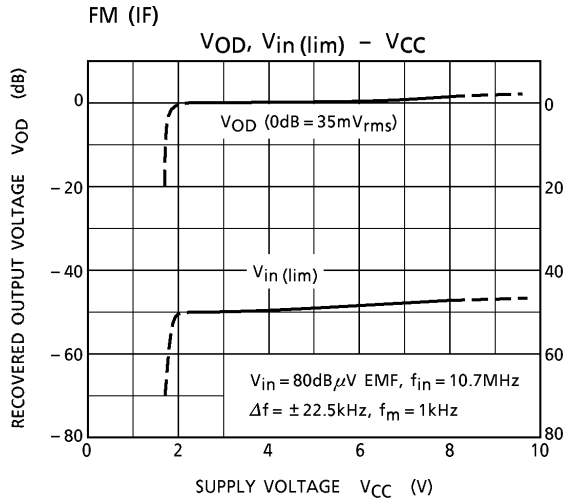
**COIL DATA**

COIL No.	f (Hz)	L (μH)	C <sub>o</sub> (pF)	Q <sub>o</sub>	TURNS					WIRE (mm φ)	REF.
					1-2	2-3	1-3	1-4	4-6		
L <sub>1</sub> FM RF	100M	—	—	100	—	—	—	2 $\frac{1}{4}$	—	0.5UEW	Ⓢ 0258-000-021
L <sub>2</sub> FM OSC	100M	—	—	100	—	—	1 $\frac{3}{4}$	—	—	0.5UEW	Ⓢ 0258-000-020
L <sub>3</sub> AM OSC	796k	268	—	125	14	86	—	—	—	0.06UEW	Ⓢ 2157-2239-213A
T <sub>1</sub> FM MIX	10.7M	—	75	100	—	—	13	—	2	0.1UEW	Ⓢ 2153-414-041A
T <sub>2</sub> AM MIX	455k	—	330	100	65	45	110	—	6	0.08UEW	Ⓢ 4140-1289-311
T <sub>3</sub> FM DET	10.7M	—	100	95	—	—	12	—	—	0.12UEW	Ⓢ 2153-4095-189

Ⓢ : SUMIDA ELECTRIC Co., Ltd.



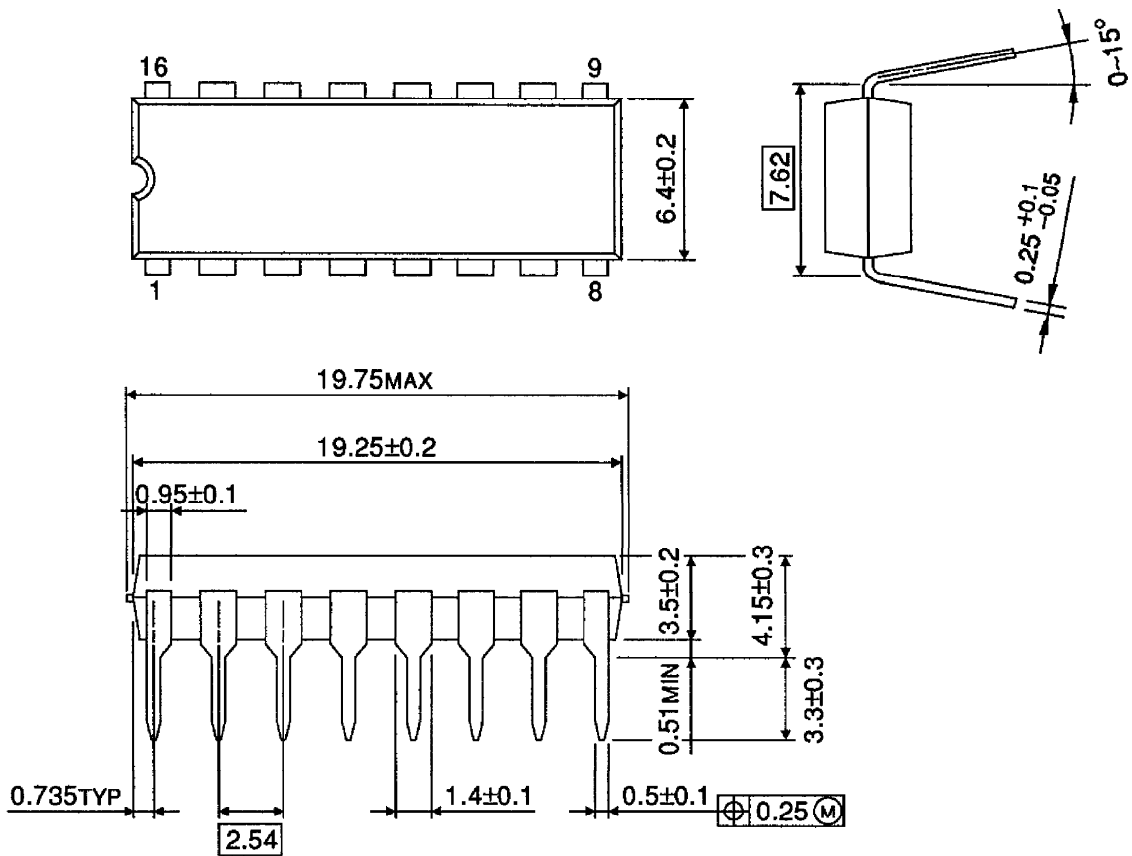






**OUTLINE DRAWING**  
DIP16-P-300-2.54A

Unit : mm



Weight : 1.0g (Typ.)