

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

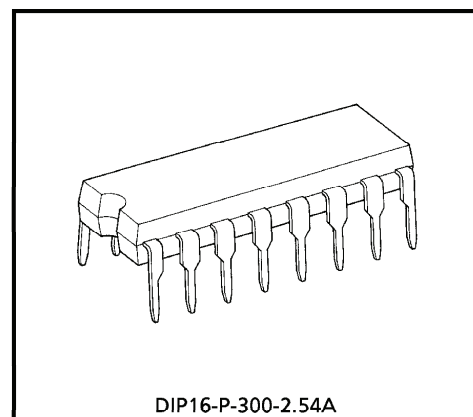
TA8164P

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.

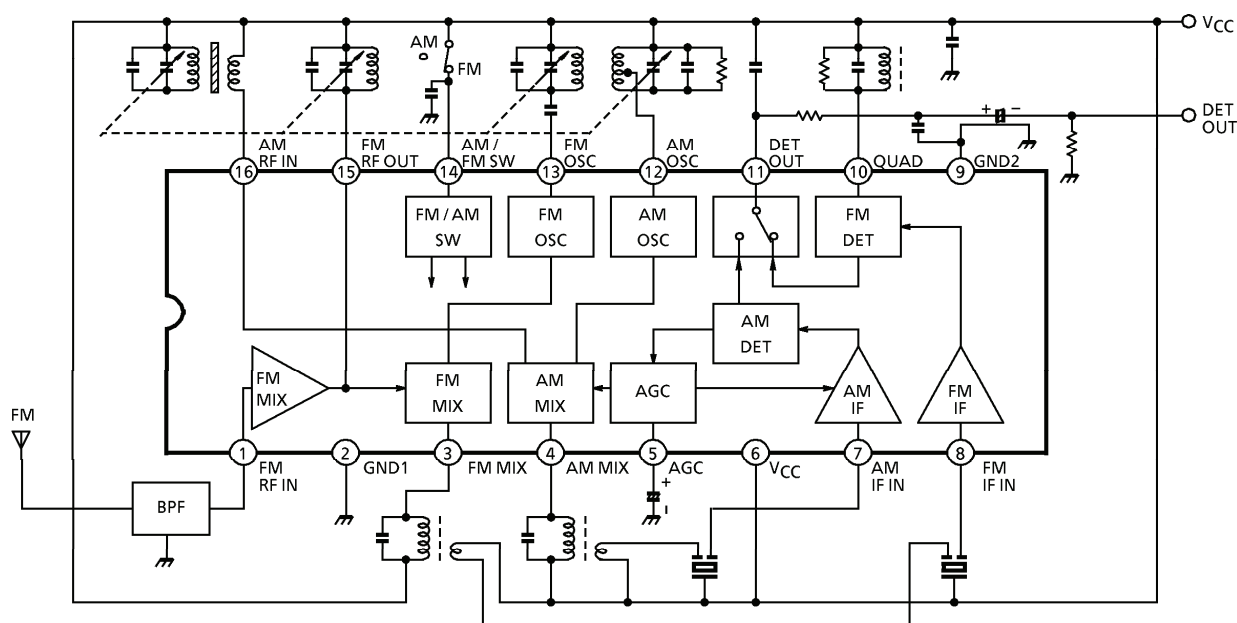
FEATURES

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



Weight : 1.00g (Typ.)

BLOCK DIAGRAM

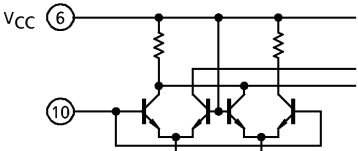
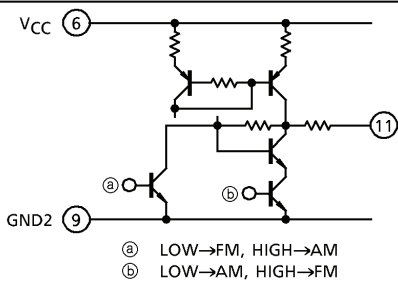
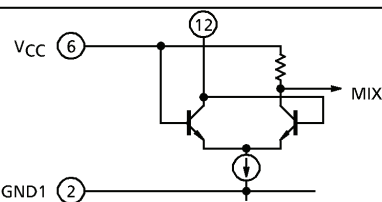
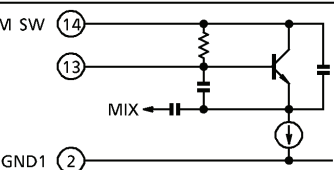
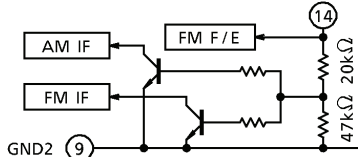
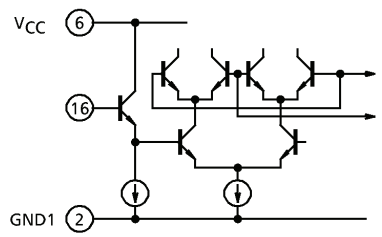


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EXPLANATION OF TERMINAL

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	V _{CC}	—	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		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 _{CC}	8	V
Power Dissipation	P _D (Note)	750	mW
Operating Temperature	T _{opr}	- 25~75	°C
Storage Temperature	T _{stg}	- 55~150	°C

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

ELECTRICAL CHARACTERISTICS

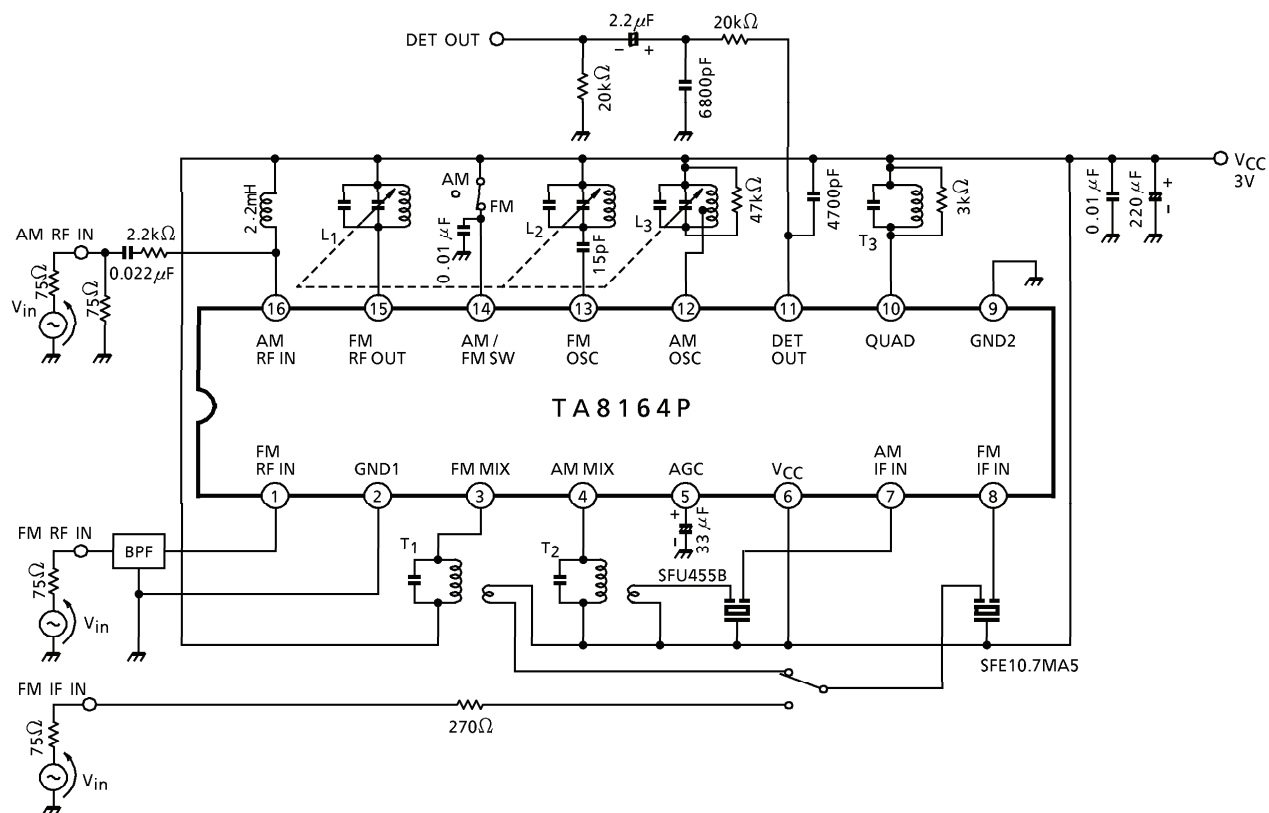
Unless otherwise specified, Ta = 25°C, V_{CC} = 3V, F/E : f = 98MHz, f_m = 1kHz

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

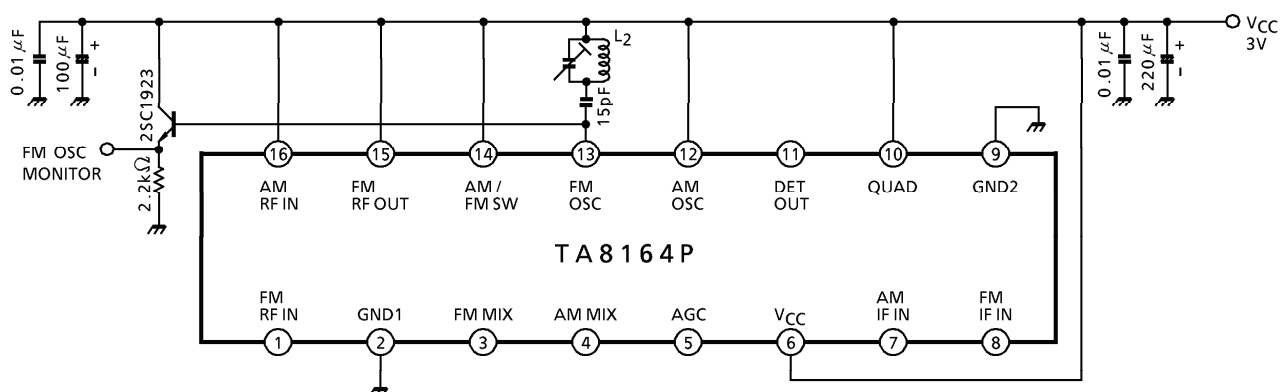
AM : f = 1MHz, MOD = 30%, f_m = 1kHz

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

TEST CIRCUIT 1



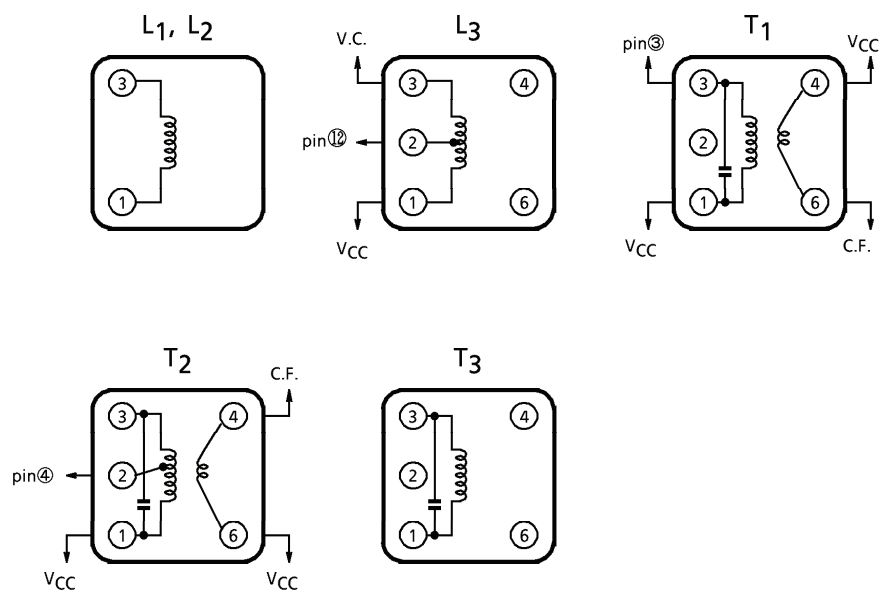
TEST CIRCUIT 2

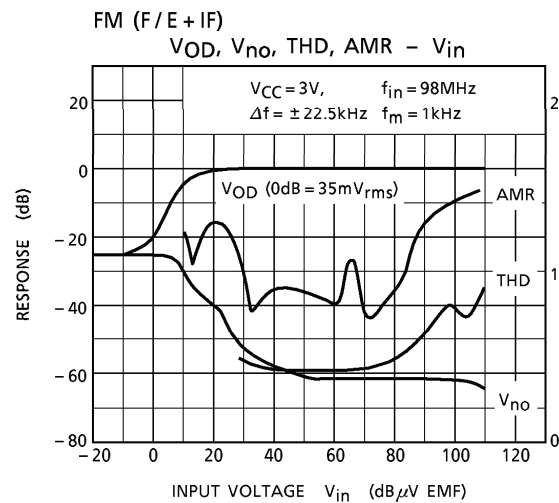


COIL DATA

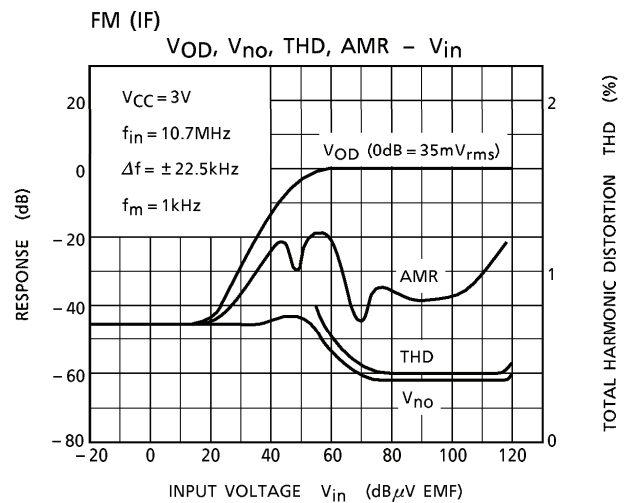
COIL No.	f (Hz)	L (μ H)	C _o (pF)	Q _o	TURNS					WIRE (mm ϕ)	REF.
					1-2	2-3	1-3	1-4	4-6		
L ₁ FM RF	100M	—	—	100	—	—	—	$2\frac{1}{4}$	—	0.5UEW	⑤ 0258-000-021
L ₂ FM OSC	100M	—	—	100	—	—	$1\frac{3}{4}$	—	—	0.5UEW	⑤ 0258-000-020
L ₃ AM OSC	796k	268	—	125	14	86	—	—	—	0.06UEW	⑤ 2157-2239-213A
T ₁ FM MIX	10.7M	—	75	100	—	—	13	—	2	0.1UEW	⑤ 2153-414-041A
T ₂ AM MIX	455k	—	330	100	65	45	110	—	6	0.08UEW	⑤ 4140-1289-311
T ₃ FM DET	10.7M	—	100	95	—	—	12	—	—	0.12UEW	⑤ 2153-4095-189

⑤ : SUMIDA ELECTRIC Co., Ltd.

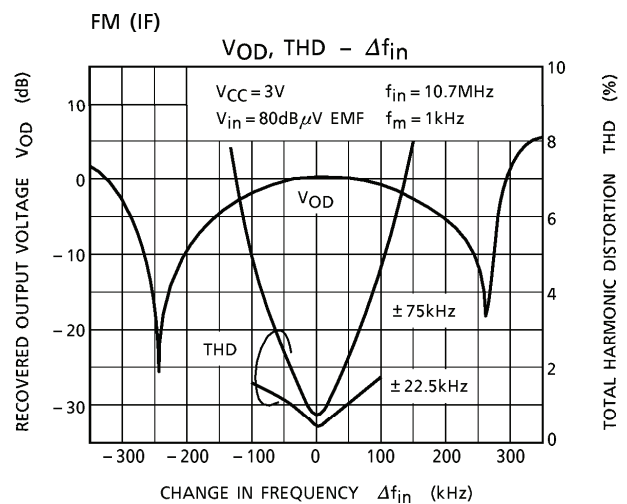
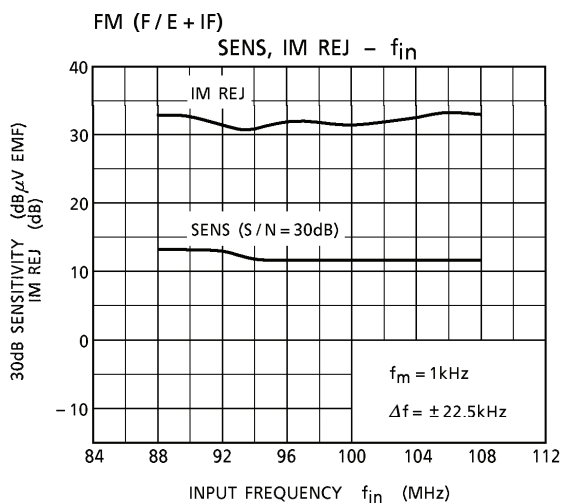




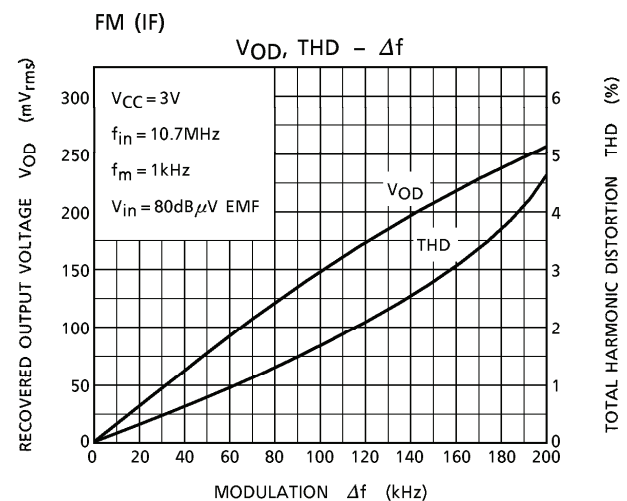
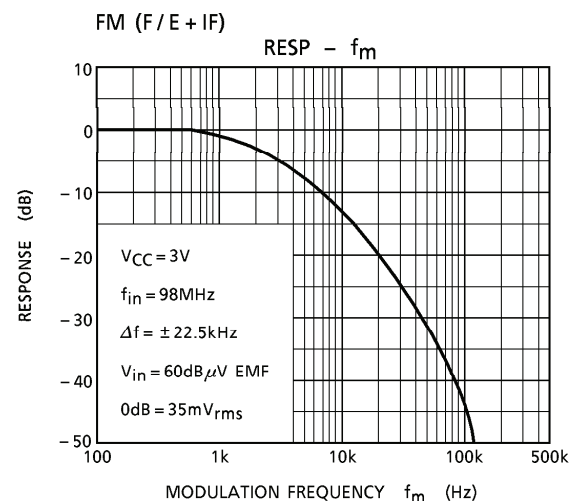
TOTAL HARMONIC DISTORTION THD (%)



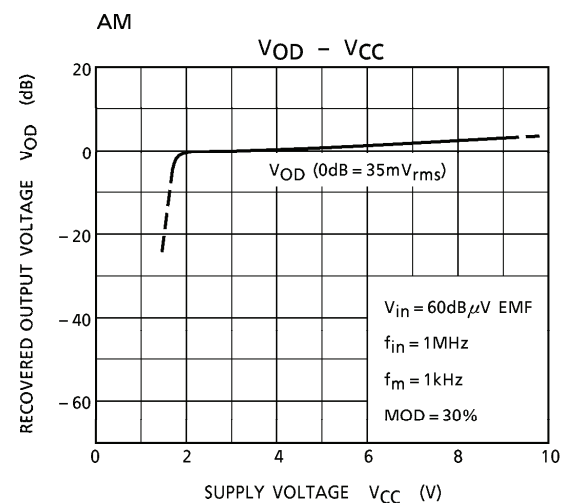
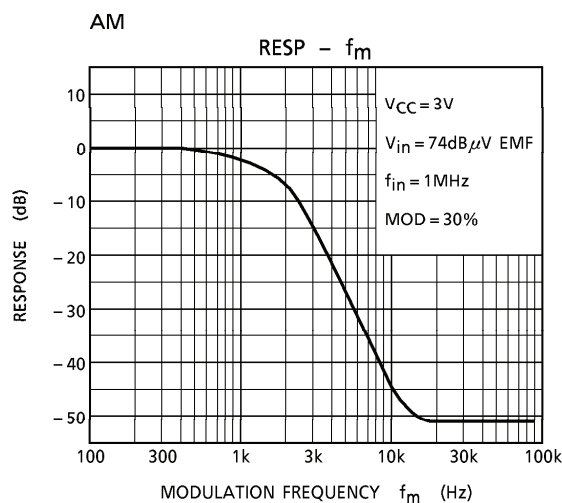
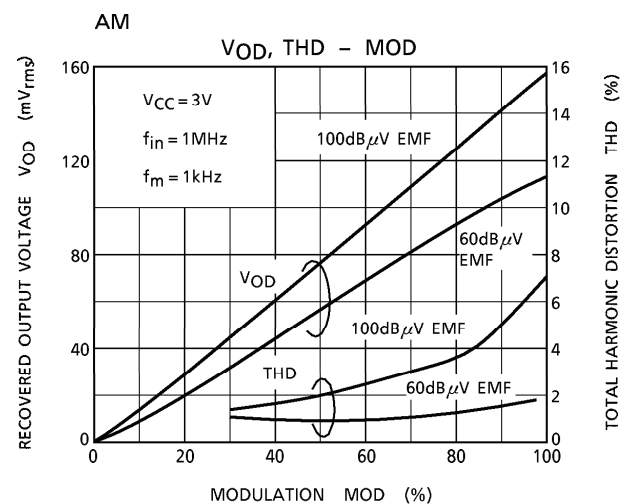
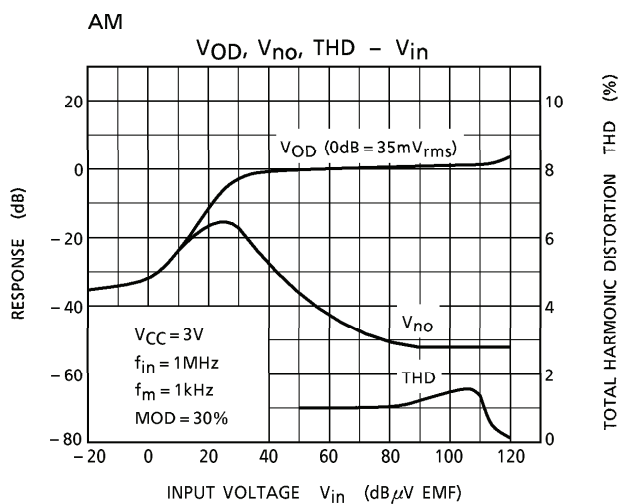
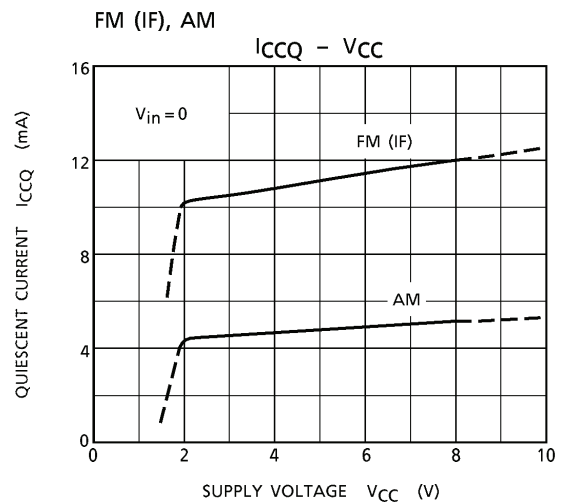
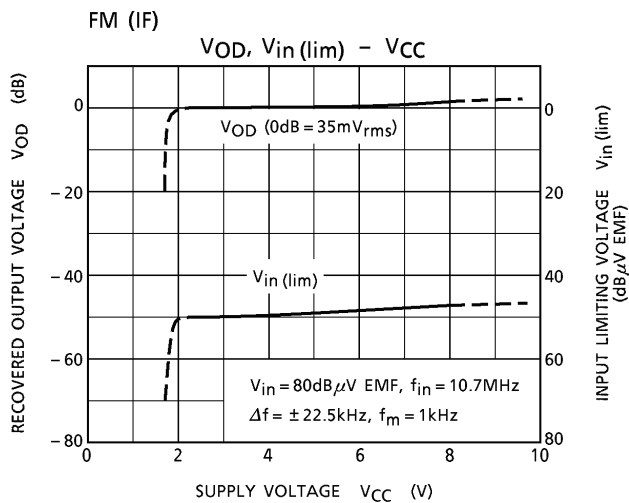
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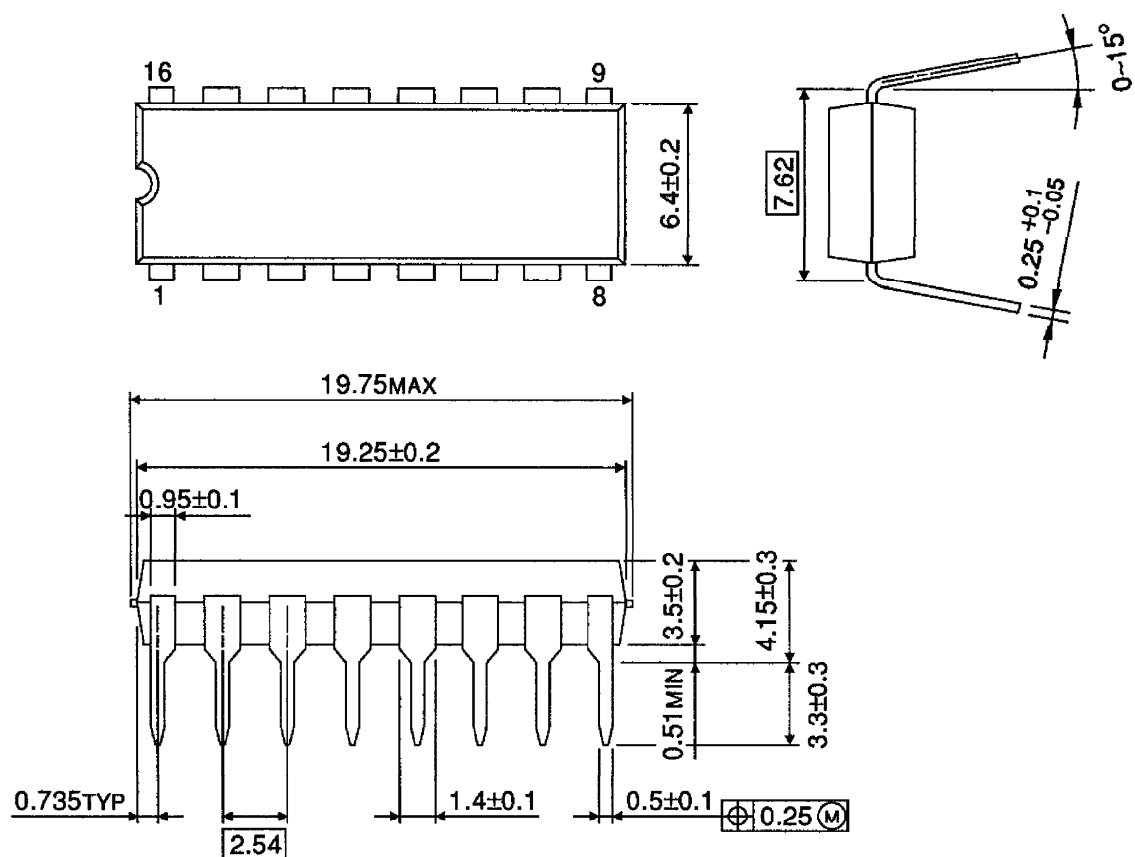


TOTAL HARMONIC DISTORTION THD (%)



OUTLINE DRAWING
DIP16-P-300-2.54A

Unit : mm



Weight : 1.0g (Typ.)