

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

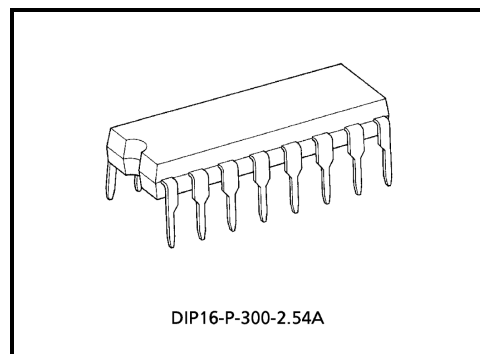
TA8164P

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.

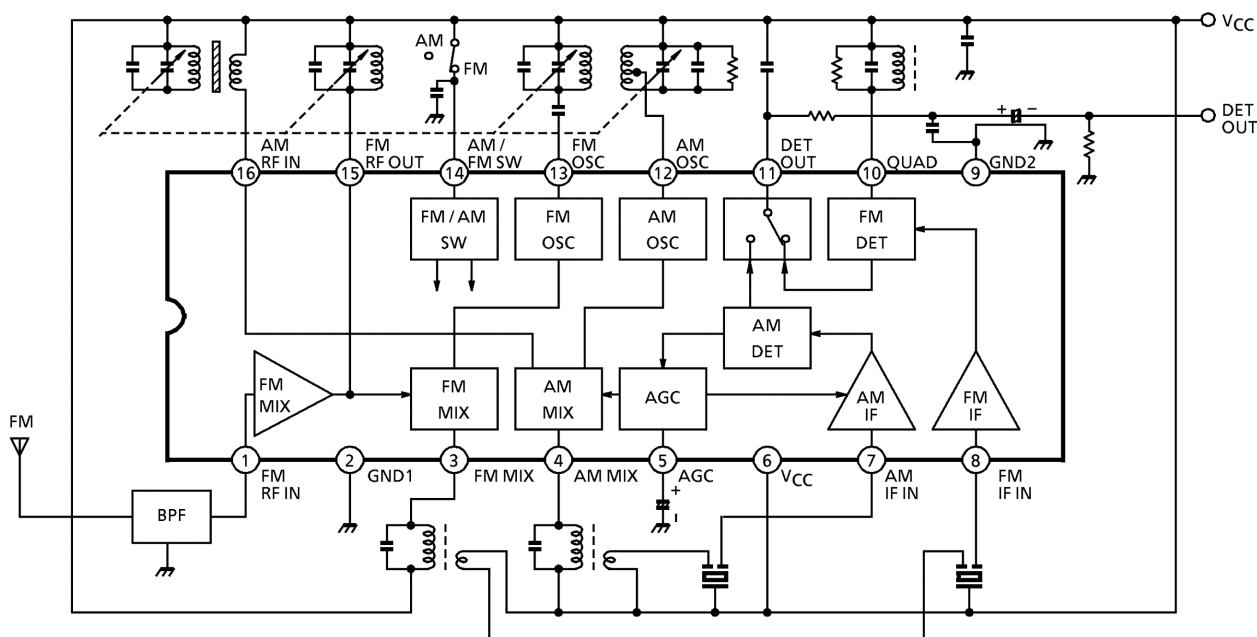
Features

- 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



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		1.4	1.4
12	AM OSC		3.0	3.0
13	FM OSC		3.0	3.0
14	AM / FM SW Pin (14) VCC →FM Pin (14) open →AM		—	3.0
15	FM RF out	Cf. Pin (1)	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

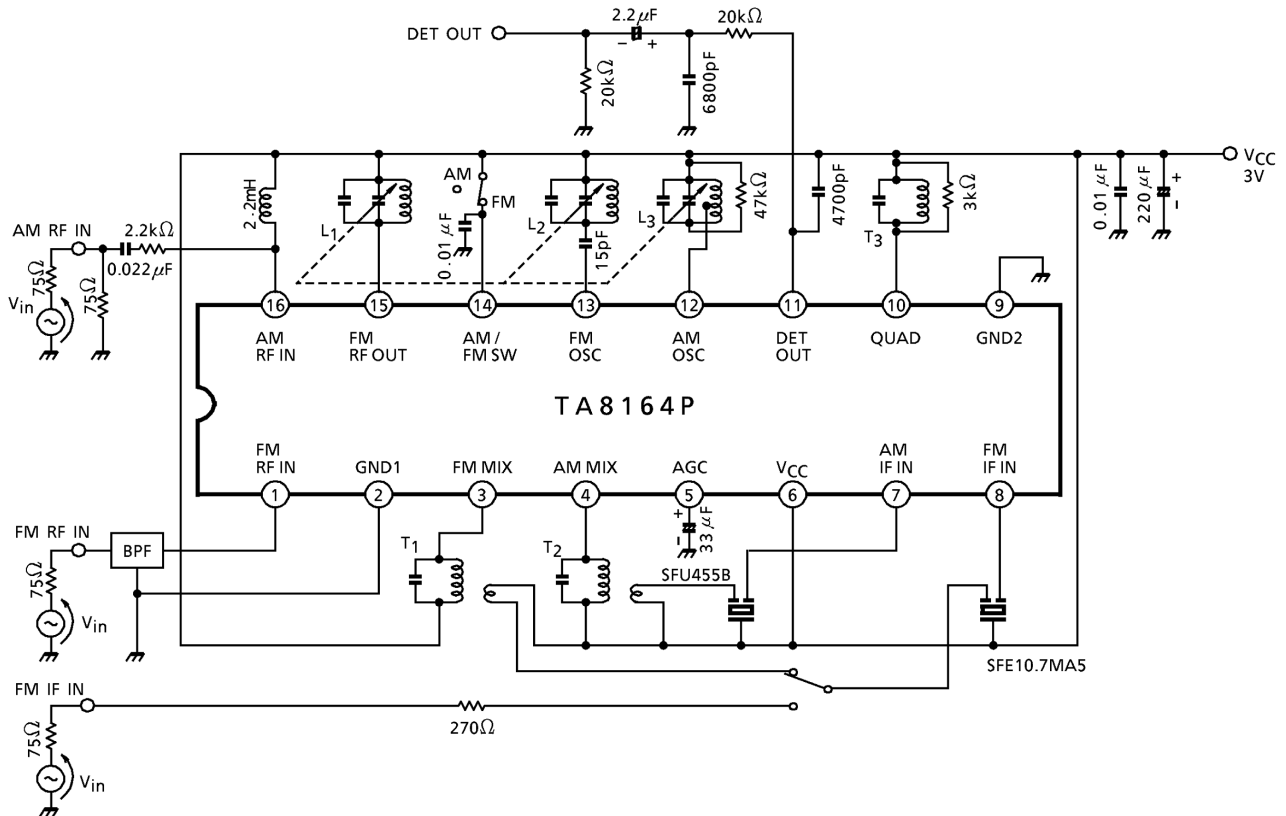
(Note) Derated above Ta = 25°C in the proportion of 6mW / °C.

Electrical Characteristics

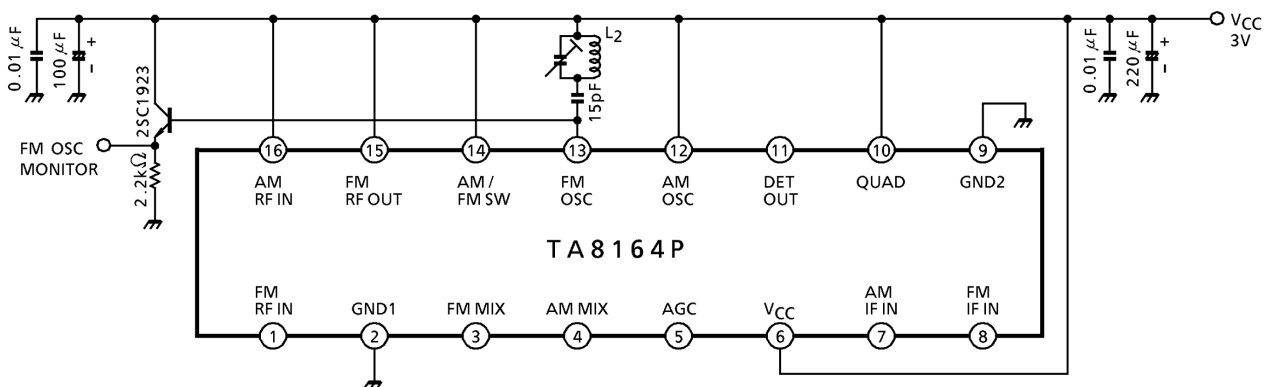
Unless Otherwise Specified, Ta = 25°C, V_{CC} = 3V, F / E: f = 98MHz, f_m = 1kHz
 FM IF: f = 10.7MHz, Δf = ±22.5kHz, f_m = 1kHz
 AM: f = 1MHz, MOD = 30%, f_m = 1kHz

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	—	dBμV EMF
	Quiescent sensitivity	Q _S	1	S / N = 30dB	—	12	—	dBμV 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	dBμV EMF
	Recovered output voltage	V _{OD}	1	V _{in} = 80dBμV EMF	20	35	55	mV _{rms}
	Signal to noise ratio	S / N	1	V _{in} = 80dBμV EMF	—	62	—	dB
	Total harmonic distortion	THD	1	V _{in} = 80dBμV EMF	—	0.4	—	%
	AM rejection ratio	AMR	1	V _{in} = 80dBμV EMF	—	33	—	dB
AM	Gain	G _V	1	V _{in} = 30dBμV EMF	15	30	45	mV _{rms}
	Recovered output voltage	V _{OD}	1	V _{in} = 60dBμV EMF	20	35	55	mV _{rms}
	Signal to noise ratio	S / N	1	V _{in} = 60dBμV EMF	—	43	—	dB
	Total harmonic distortion	THD	1	V _{in} = 60dBμV EMF	—	1.0	—	%
	Local OSC stop supply voltage	V _{stop} (AM)	1	V _{in} = 0	—	1.6	—	V

Test Circuit 1



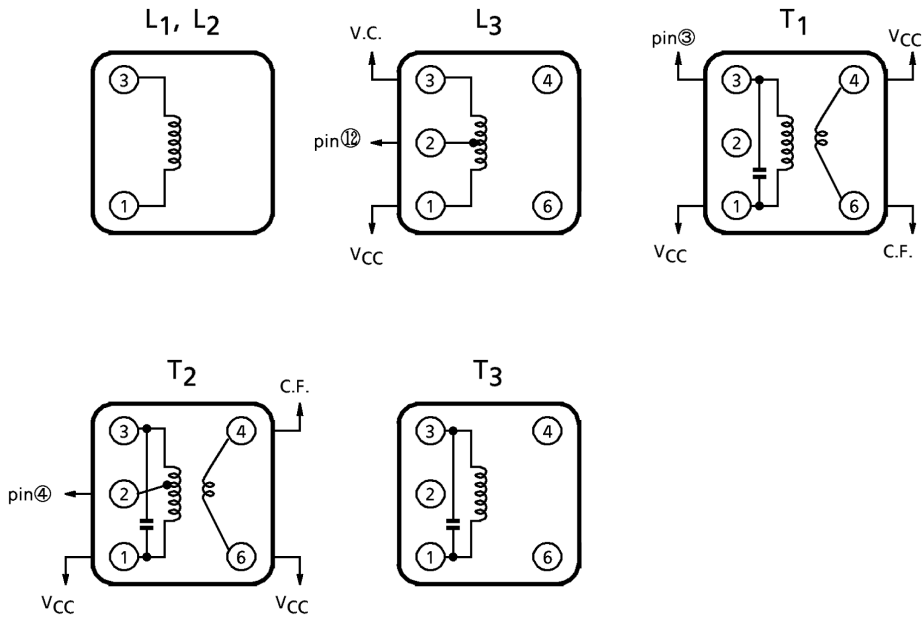
Test Circuit 2

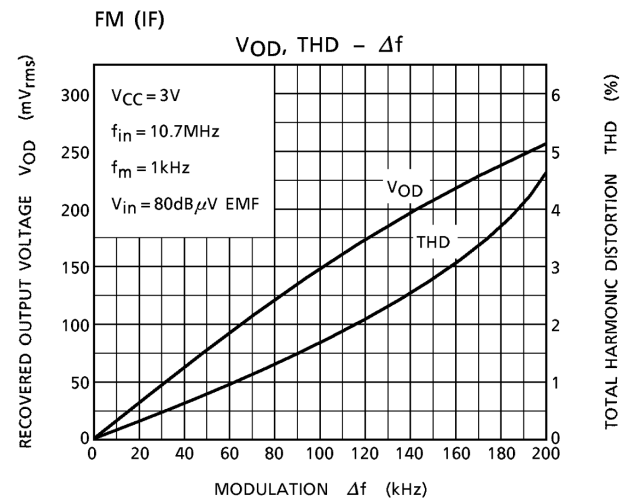
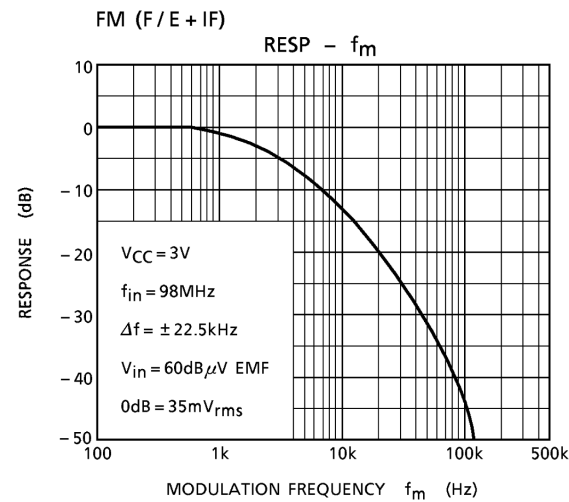
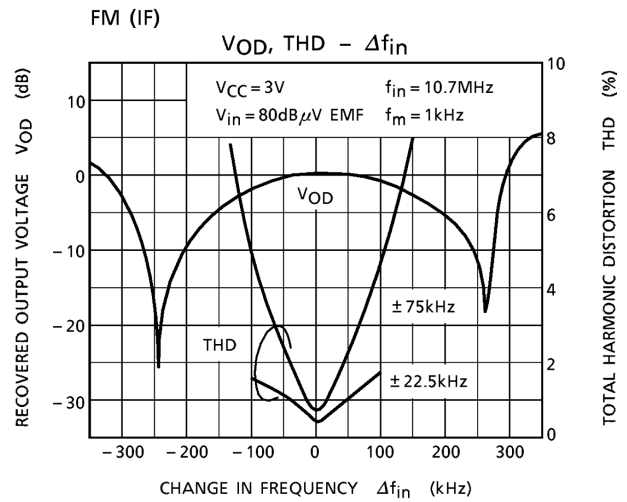
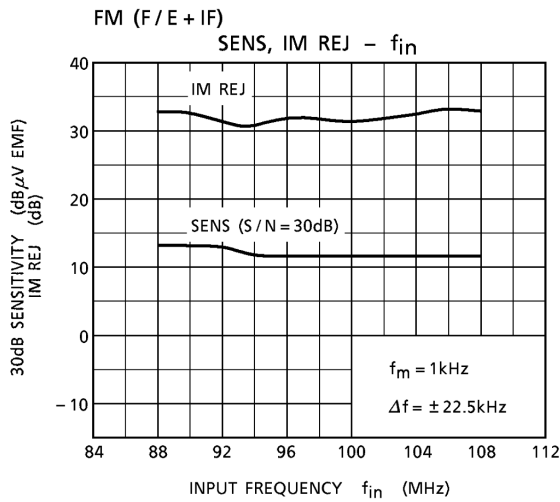
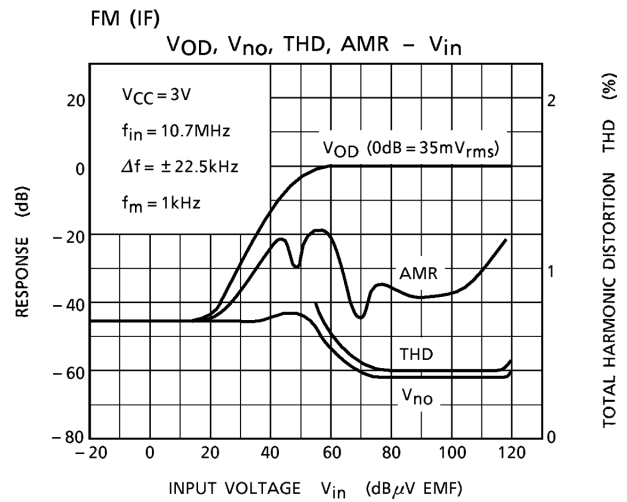
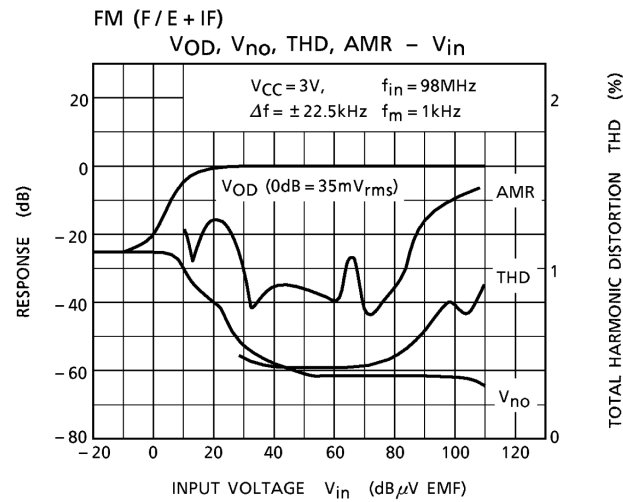


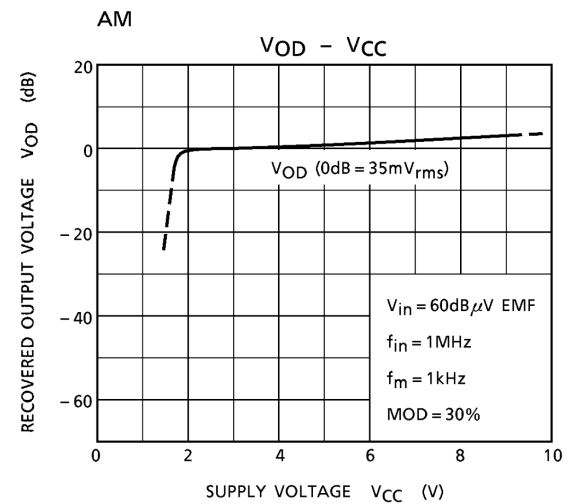
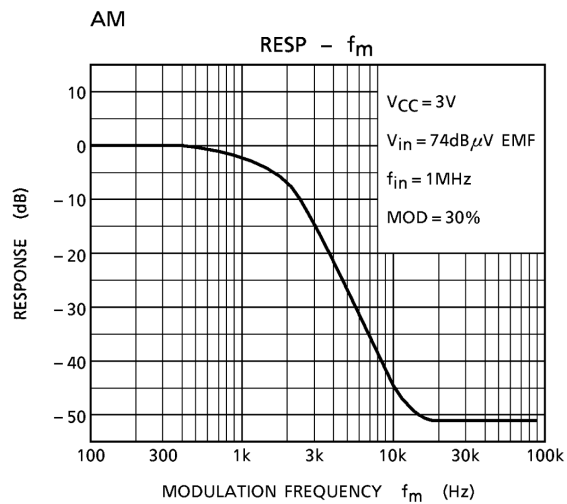
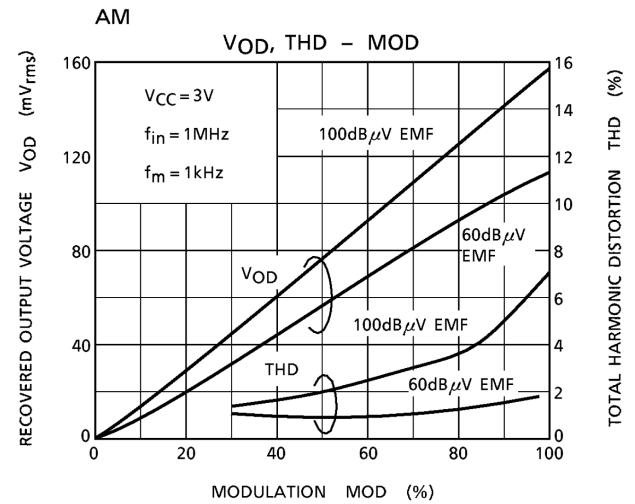
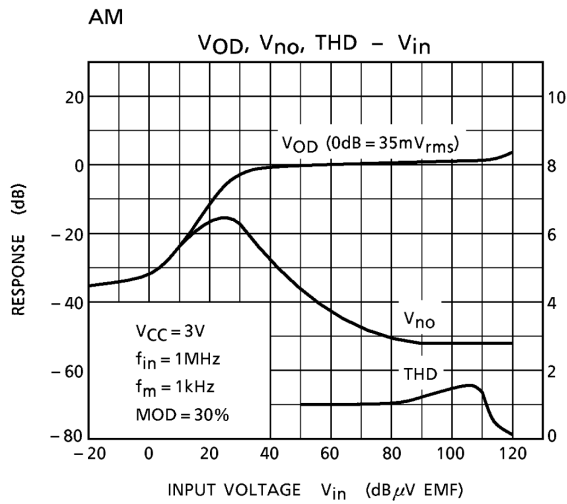
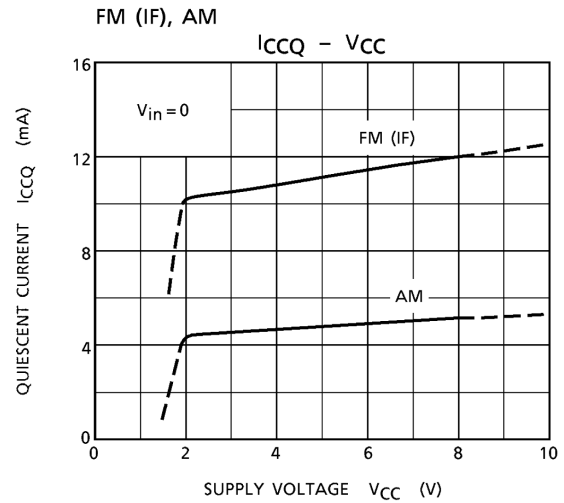
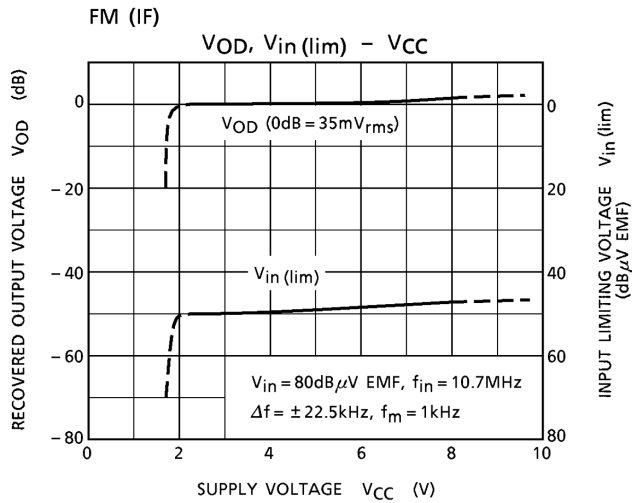
Coil Data

Coil No.	f (Hz)	L (μH)	C ₀ (pF)	Q ₀	Turns					Wire (mmφ)	Ref.
					1-2	2-3	1-3	1-4	4-6		
L ₁ FM RF	100M	—	—	100	—	—	—	$2\frac{1}{4}$	—	0.5UEW	(S) 0258-000-021
L ₂ FM OSC	100M	—	—	100	—	—	$1\frac{3}{4}$	—	—	0.5UEW	(S) 0258-000-020
L ₃ AM OSC	796k	268	—	125	14	86	—	—	—	0.06UEW	(S) 2157-2239-213A
T ₁ FM MIX	10.7M	—	75	100	—	—	13	—	2	0.1UEW	(S) 2153-414-041A
T ₂ AM MIX	455k	—	330	100	65	45	110	—	6	0.08UEW	(S) 4140-1289-311
T ₃ FM DET	10.7M	—	100	95	—	—	12	—	—	0.12UEW	(S) 2153-4095-189

(S): Sumida electric co., ltd.



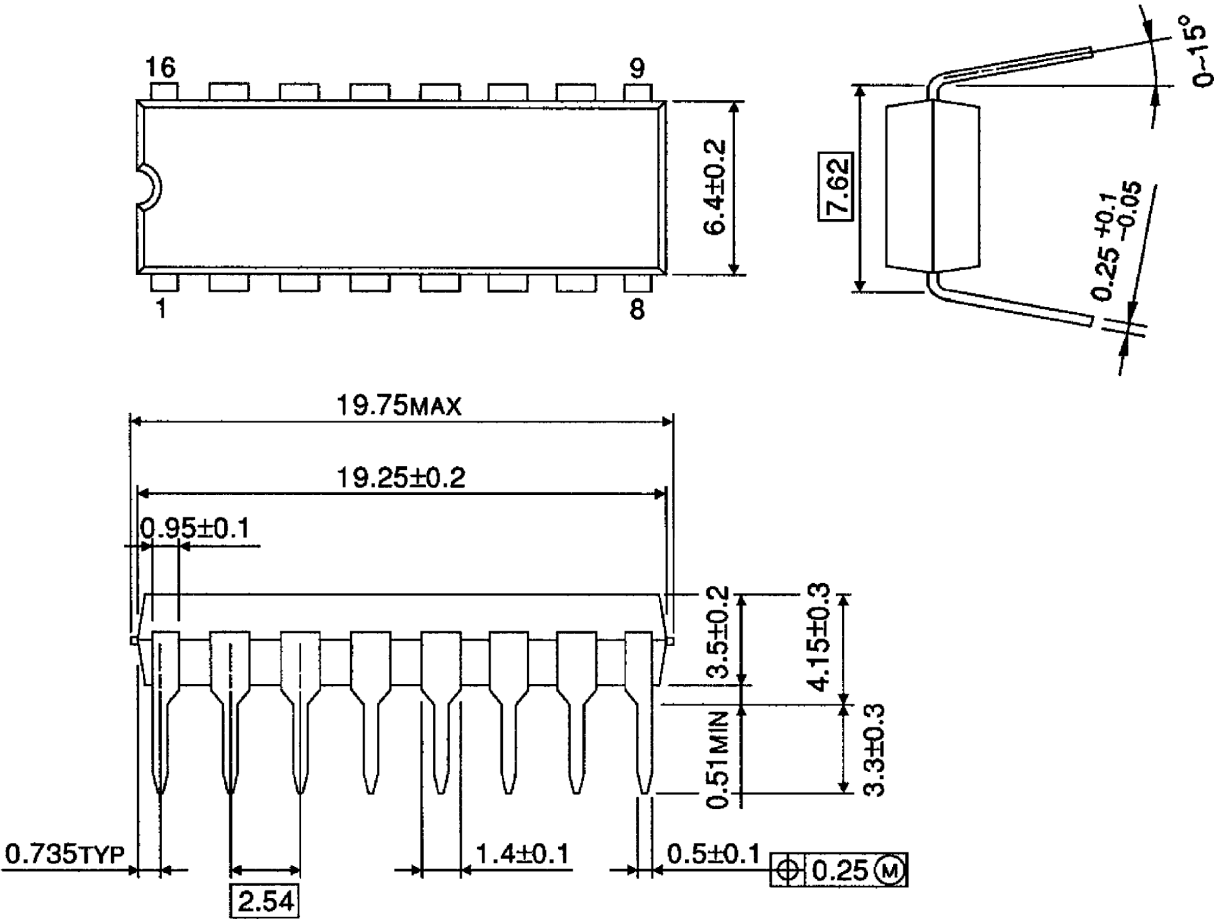




Package Dimensions

DIP16-P-300-2.54A

Unit : mm



Weight: 1.0g (typ.)

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