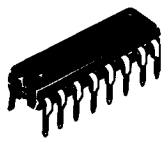
HA1197

AM TUNER FOR

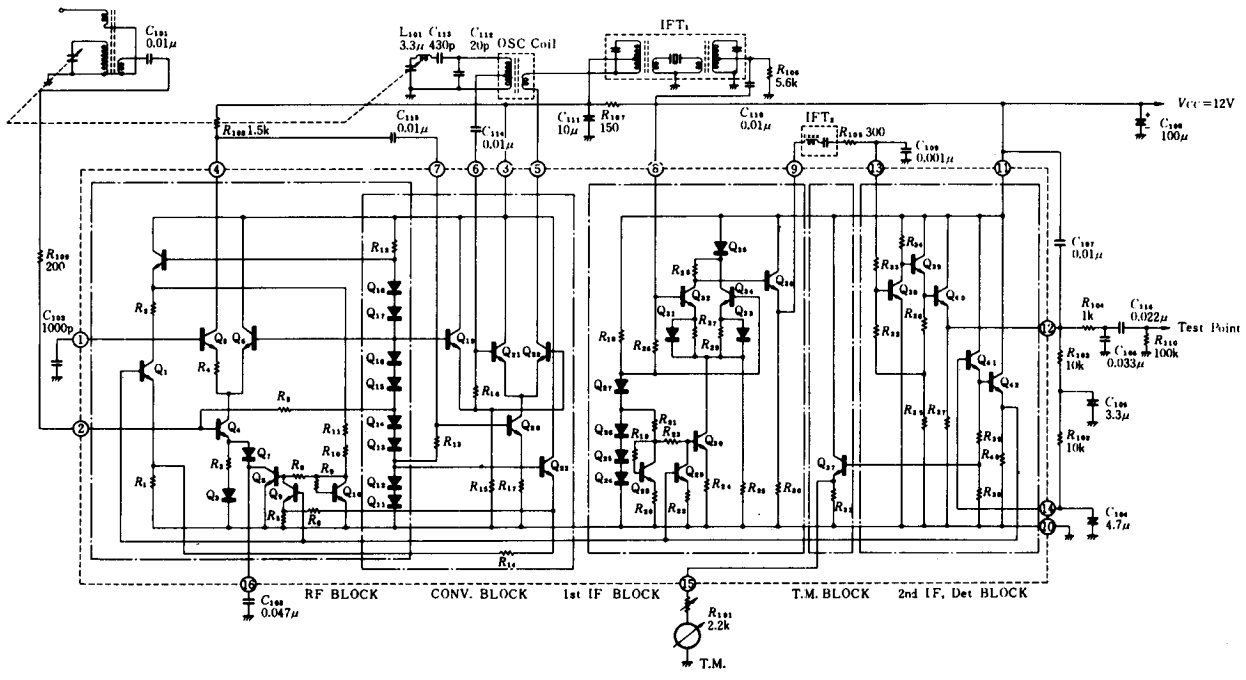
■ FEATURES

- Complete 1-chip AM Tuner
- Good high-input characteristics provided with automatic dynamic range mag. control at the RF stage (T.H.D = 1% typ. at 108dBμ)
- High AGC FOM (75dB typ.)
- Good usable sensitivity (20dBμ typ.)
- Low distortion (0.4% typ. at 100dBμ, 30% mod.)
  (0.8% typ. at 74dBμ, 90% mod.)
- Good tuning meter characteristics



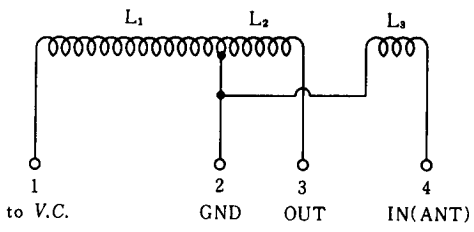
(DP-16)

■ CIRCUIT SCHEMATIC AND TYPICAL EXTERNAL COMPONENTS



■ EXTERNAL PARTS SPECIFICATIONS

1. Bar Ant.



1~2 220μH
2~3 5t
2~4 6t

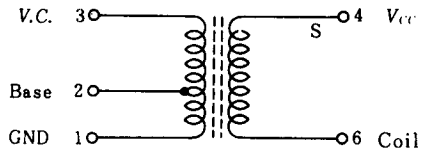
2. Variable Capacitor

Max 426.4 pF Min 9 pF

3. Lo Coil

Center freq.		1.4 MHz		
Lo (1–3)		120μH		
Qu		80 min		
Turns	1–2	6t	2–3	51t
	4–6	6t		

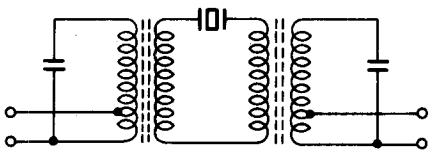
TOKO Inc. Part No. RWR-41694N



4. IFT 1

Center freq.	455 kHz
6 dB Bandwidth	5.5 kHz min
Selectivity (±10 kHz)	40 dB min

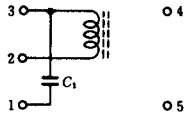
TOKO Inc. Part No. CFX-014



5. IFT 2

Center freq.	455 kHz
C1	180 pF
Stray Capacitor	10 pF
Freq. variability	±3%
Qu	90 min
Turns 2–3	165t

TOKO Inc. Part No. RMC-21563XB



■ ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Rating	Unit
Supply Voltage	V_{CC}	15	V
Power Dissipation	P_T	450	mW
Operating Temperature	T_{opr}	−20~+70	°C
Storage Temperature	T_{stg}	−55~+125	°C

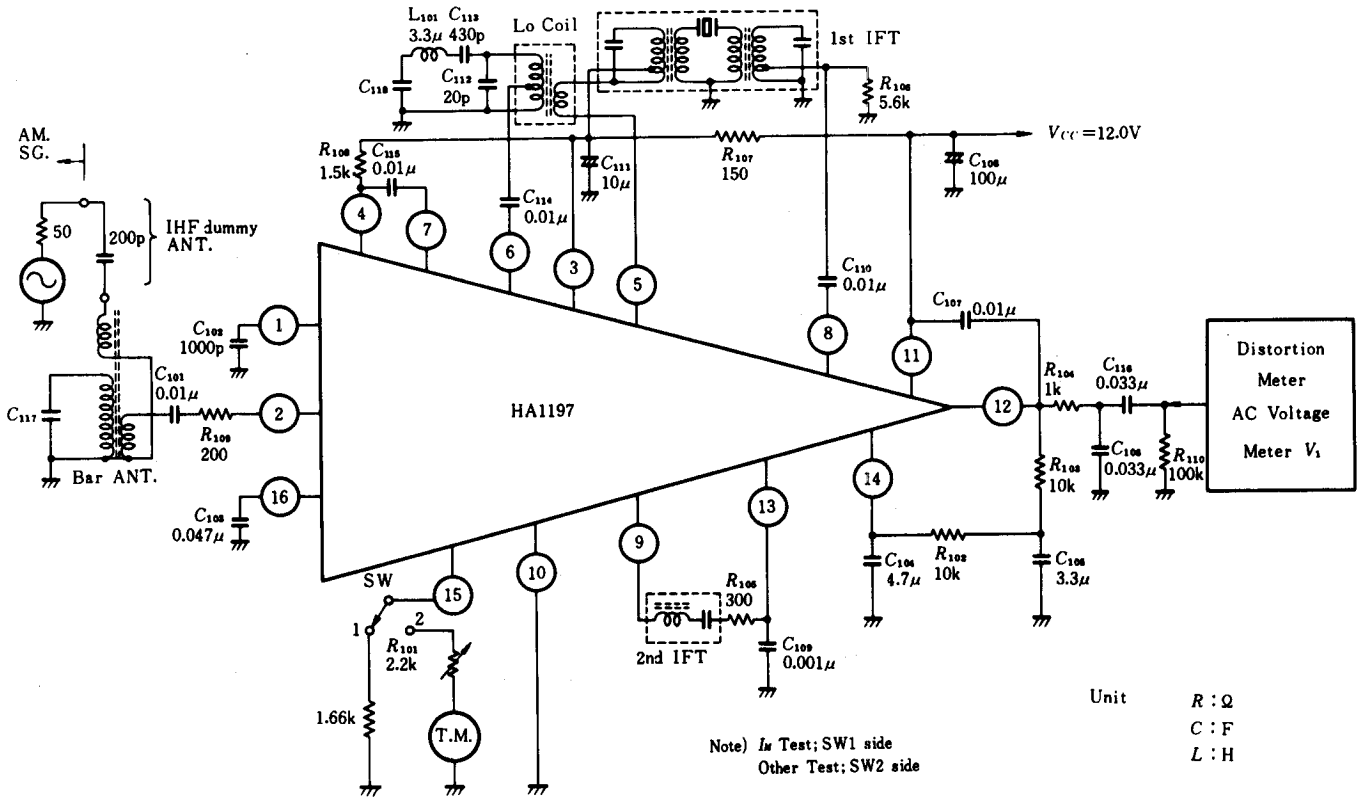
■ ELECTRICAL CHARACTERISTICS (V_{CC}=12V, f=1MHz, f_m=400Hz, Ta=25°C)

Item	Symbol	Test Circuit	Test Condition	min	typ	max	Unit
Quiescent Current	I_Q	1		—	14.5	25	mA
Signal-to-noise Ratio	S/N	2	Input 74dBμ, Mod. 30%	47	53	—	dB
			Input 34dBμ, Mod. 30%	29	33.5	—	
Total Harmonic Distortion	T.H.D	2	Input 74dBμ, Mod. 90%	—	0.8	—	%
			Input 100dBμ, Mod. 30%	—	0.4	1.0	
AGC FOM		2	−10dB point from output voltage with 100dBμ input	65	75	—	dB
Output Voltage	V_O	2	Input 74dBμ, Mod. 30%	150	212	300	mV
Tuning Meter Current	I_M	2	Input 100dBμ, Mod. 30%	—	240	—	μA

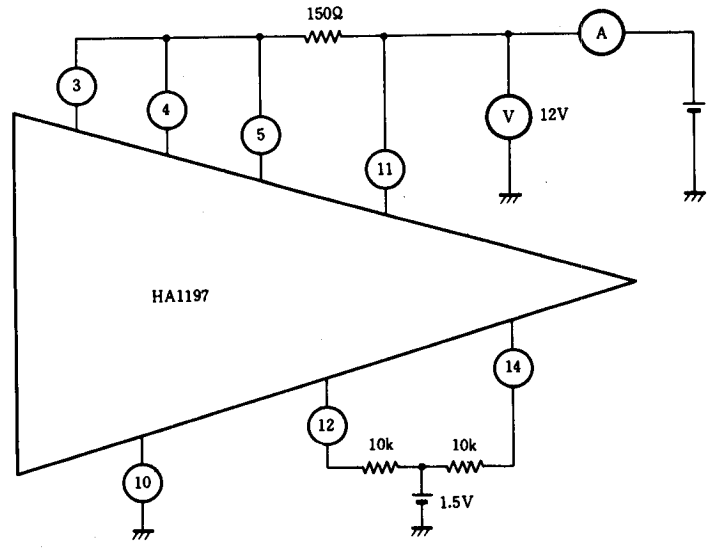
Note : Input level is defined as open-circuit voltage. The IHF (200pF) dummy antenna is used.

■ TEST CIRCUIT

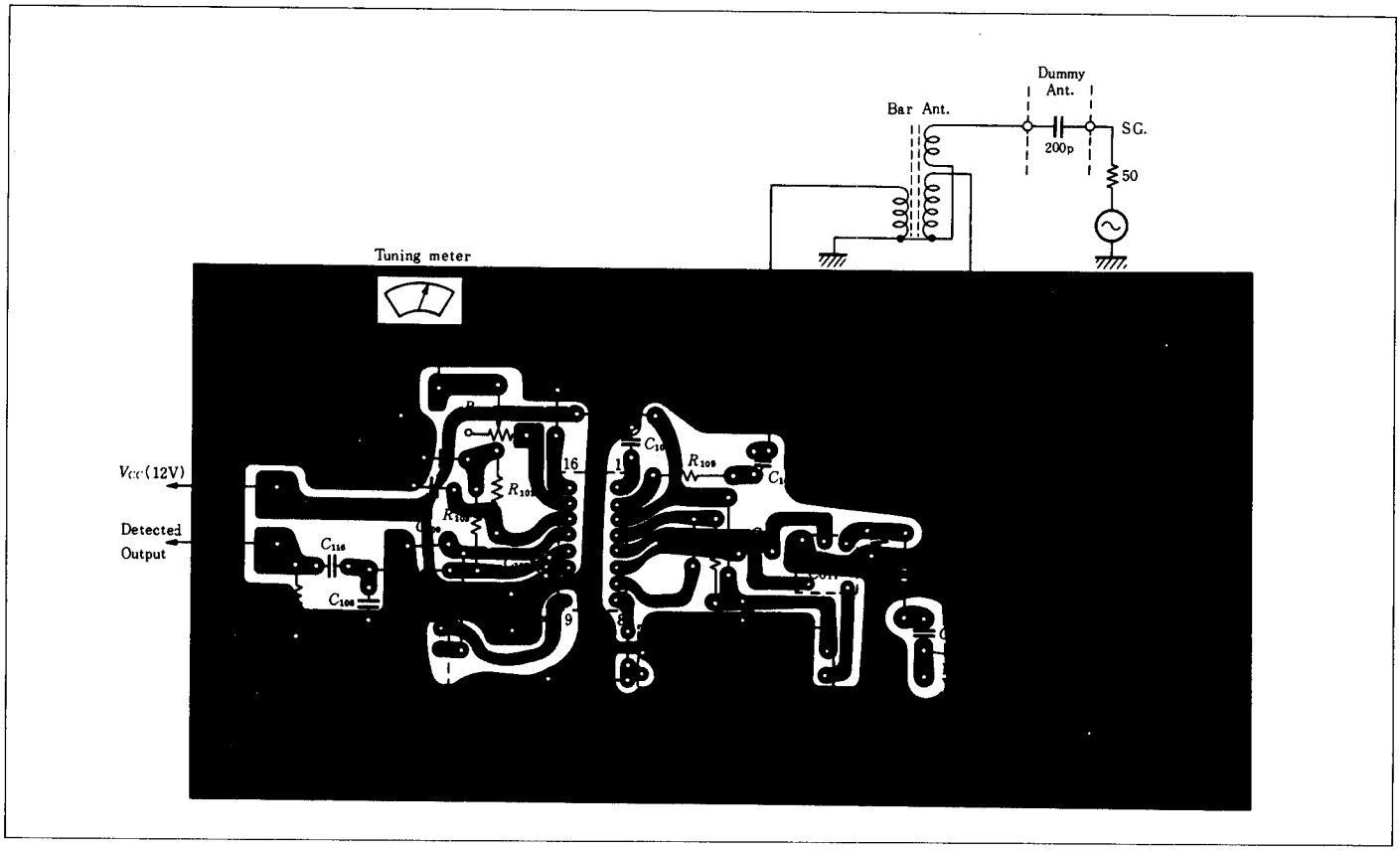
1.



2.



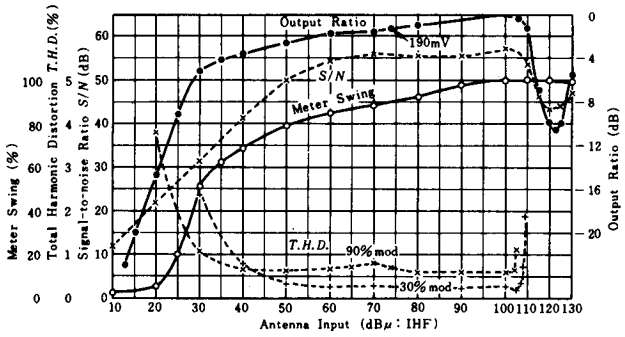
■ PRINTED CIRCUITS BOARD (Bottom View)



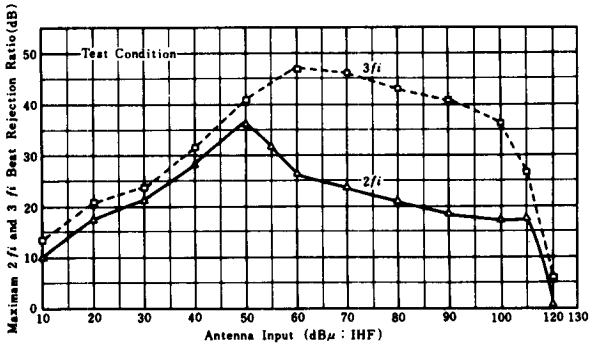
■ EXTERNAL COMPONENTS

Parts No.	Recommended Value	Purpose	Influence		Remarks
			Larger than Recommended Value	Smaller than Recommended Value	
R_{101}	2.2kΩ Volume	Adjustment of tuning meter	Poor accuracy of adiustment	Adjustment impossible	——
R_{102} R_{103}	10kΩ 10kΩ	Ripple filter of AGC Voltage	Poor response of AGC characteristics	Degradation of T.H.D at low modulation frequency input	——
R_{104} C_{106}	1kΩ 0.033μF	Construction of LPF	Degradation of high-frequency characteristics	Degradation of S/N	——
R_{105}	300Ω	Adjustment of second IF Gain	Gain down	Gain up Instability	——
R_{106}	5.6kΩ	Impedance matching	Gain up	Gain down	——
R_{108}	1.5kΩ	Load resistor of RF amp	RF gain depends more on supply voltage	Gain down	——
R_{109}	200Ω	Protection against damage	Good protection S/N degradation at low level input	Poor protection	——
R_{110} C_{116}	100kΩ 0.022μF	Construction of HPF	Large beat output	Detected output down	——
C_{102}	1000pF	Maintain good S/N at middle level input	Poor AGC response	Degradation of S/N at middle-level input	——
C_{103}	0.047μF	RF by-passing	Improvement in sensitivity	Degradation of sensitivity	——
C_{104} C_{105}	4.7μF 3.3μF	Ripple filter of AGC Voltage	Poor AGC response	Degradation of T.H.D at low modulation frequency input	——
C_{109}	0.001μF	Stability	Gain down	Oscillation	——

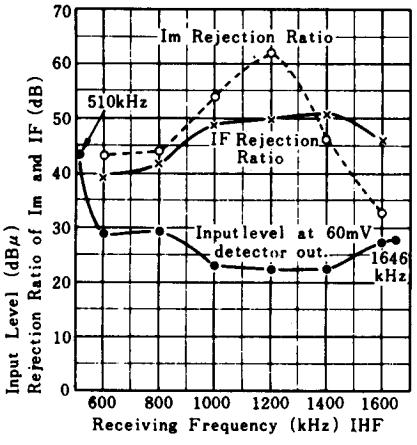
OUTPUT RATIO, SIGNAL-TO-NOISE RATIO, METER SWING AND TOTAL HARMONIC DISTORTION VS. ANTENNA INPUT



MAXIMUM 2fi AND 3fi BEAT REJECTION RATIO VS. ANTENNA INPUT



REJECTION RATIO AND INPUT LEVEL VS. RECEIVING FREQUENCY



FREQUENCY RESPONSE AND TOTAL HARMONIC DISTORTION VS. MODULATION FREQUENCY