TA8611AN

VIDEO AND SOUND IF FOR TV SET

FUNCTION

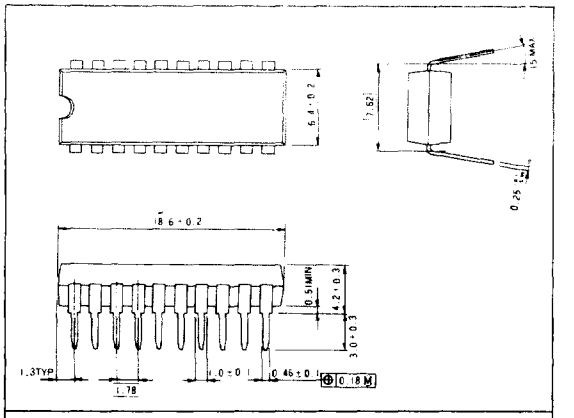
PIF

- 3-stage IF amplifier
- Video detector
- Black/white noise inverting circuits
- Single AFT output
- Fast response AGC (peak) with dual time constants
- Reverse RF AGC

SIF

- Quadrature detector

Unit: mm



MAXIMUM RATINGS (Ta = 25°C)

ITEM	SYMBOL	RATING	UNIT
Power Supply Voltage	V_{CC} MAX	12	V
Power Disspation	P_D	1.4	W
Input Signal Voltage	e_{in} MAX	5	Vp-p
Operating Temperature	T_{opr}	-20 to 75	°C
Storage Temperature	T_{stg}	-55 to 150	°C

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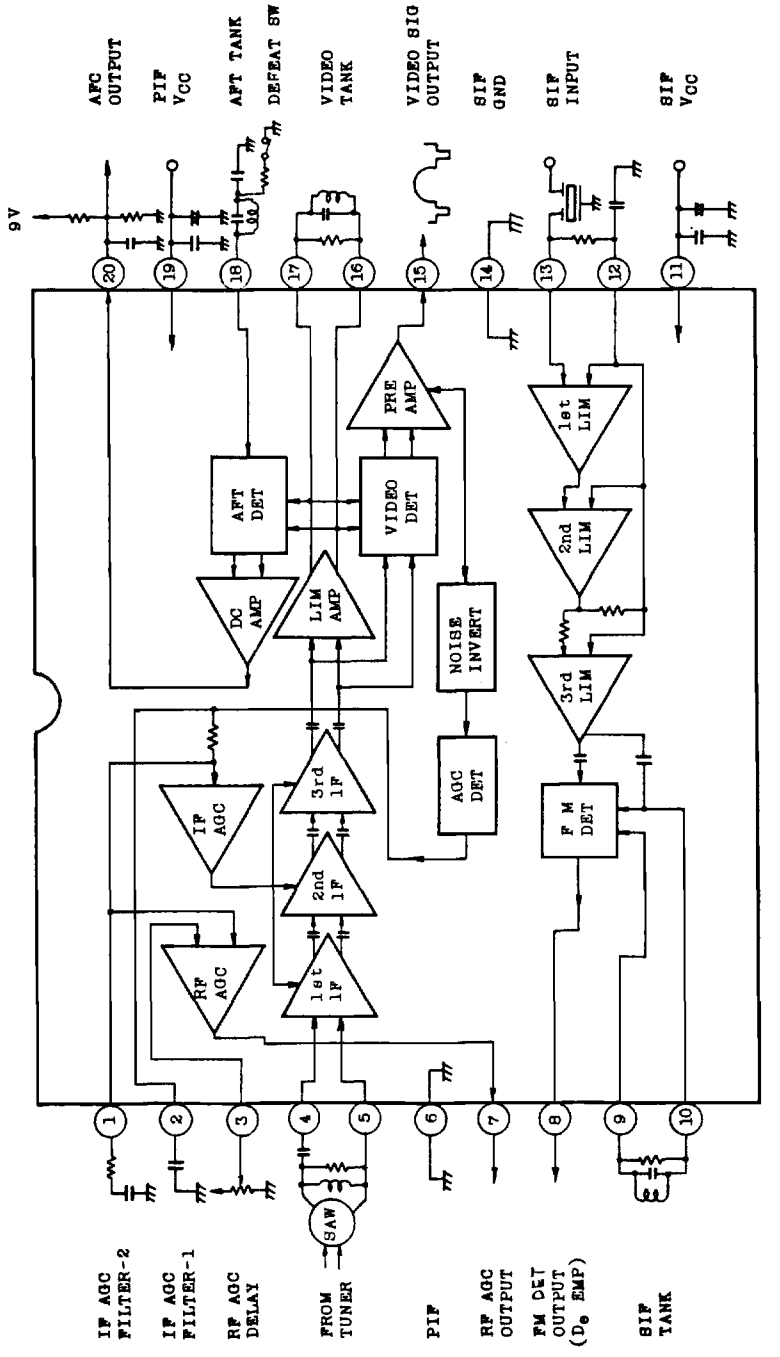
BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

DC CHARACTERISTICS (Ta = 25°C, V_{CC} = 9V)

ITEM		SYMBOL	TEST CIRCUIT	TEST CONDITIONS	MINI-MUM	TYPI-CAL	MAXI-MUM	UNIT
Recommended Supply Voltage		V_{CC}	—		8.1	9	9.9	V
Supply Current		I_{CC}	1		32	47	63	mA
Terminal Voltage	3	V_3	1	SW_4: a	—	6	—	V
	4	V_4	1		3.6	4.0	4.4	V
	5	V_5	1		3.6	4.0	4.4	V
	7	$V_{7(1)}$	1	SW_1: c, SW_4: b	8.8	—	—	V
		$V_{7(2)}$	1	SW_1: c, SW_4: c	—	—	0.1	V
	8	V_8	—		3.7	4.2	4.7	V
	9	V_9	1		5.3	5.8	6.3	V
	12	V_{12}	1		1.7	2.3	2.8	V
	13	V_{13}	1		1.7	2.3	2.8	V
	15	V_{15}	1		4.0	4.5	5.0	V
	16	V_{16}	1		5.6	6.2	6.8	V
	17	V_{17}	1		5.6	6.2	6.8	V
	18	V_{18}	1		3.6	4.0	4.4	V
	20	V_{20}	1		3.3	4.5	5.7	V

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AC CHARACTERISTICS (Ta = 25°C, V_{CC} = 9V)

ITEM	SYMBOL	TEST CIRCUIT	TEST CONDITIONS	MINIMUM	TYPICAL	MAXIMUM	UNIT
PIF							
Video Sensitivity	v_{in} MIN	2		50	100	200	μV_{rms}
Maximum IF Input Voltage	v_{in} MAX	2		100	120	—	mV_{rms}
IF AGC Range	ΔA	2		60	64	—	dB
Differential Gain	DG	3		—	—	10	%
Differential Phase	DP	3		—	—	5	deg
VIDEO DC Output Voltage		2		4.0	4.5	5.0	V
Sync Tip Level Voltage	V_{SYNC}	2		1.5	2.0	2.5	V
VIDEO Output Level	V_{OUT}	2		1.7	2.0	2.3	V
White Noise Threshold	V_{WTH}	2		—	5.2	—	V
White Noise Clamp Level	V_{WCL}	2		—	3.5	—	V
Black Noise Threshold	V_{BTH}	2		—	1.5	—	V
Black Noise Clamp Level	V_{BCL}	2		—	3.0	—	V
Suppression of Carrier	CL	2		40	—	—	dB
Suppression of 2nd Carrier	I_{2nd}	2		40	—	—	dB
AFT Sensitivity	$\Delta F/\Delta V_{20}$	2		—	15	26	kH/V
AFT Output Voltage MIN.	V_L	2		—	1.0	1.5	V
AFT Output Voltage MAX.	V_U	2		7.5	8.0	—	V
Suppression of Sound Carrier/Color Subcarrier	I_{920}	4		30	38	—	dB

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ITEM	SYMBOL	TEST CIRCUIT	TEST CONDITIONS	MINI-MUM	TYPI-CAL	MAXI-MUM	UNIT
SIF							
Recovered Output Voltage	V_{OD}	5		250	360	—	mV_{rms}
Input Limiting Voltage	V_{INLIM}	5		—	200	400	μV_{rms}
AM Rejection Ratio	AMR	5		40	—	—	dB
Detector Band Width 1	$\pm\Delta f_G$	5	Output: -3 dB of V_{OD}	60	80	—	kHz
Detector Band Width 2	$\pm\Delta f_D$	5	Total Harmonic Distortion = 1.5%	50	70	—	kHz

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TEST CONDITION

NOTE 1) PIF IN; f = 58.75 MHz, fm = 1 kHz, 30% AM Modulation
Adjust PIF input level so that the detected output of P15, measured with a high-impedance probe, becomes 0.6 Vp-p; then measure the input level.

NOTE 2) Measure PIF input level v1, v2 the same as NOTE 1).
V1: Apply 9V to P1
V2: Apply 3V to P2
$\Delta A = 20 \log (v1/v2)$ [dB]

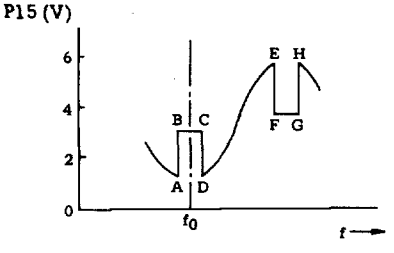
NOTE 3) Gain Reduction = 40 dB
PIF IN; CW f = 58.75 MHz APL 50%, 87.5% AM Modulation.
(1) Adjust ATT so that the sync tip level of P15 becomes 2.0V DC.
(2) Measure DP and DG.

NOTE 4) PIF IN; No Signal
Measure output level of P15.

NOTE 5) PIF IN; f = 58.75 MHz CW 15 mV_{rms}
Measure DC level of P15.

NOTE 6) PIF IN; f = 58.75 MHz 100% APL 15 mV_{rms}
Measure detected output voltage.

NOTE 7) PIF IN; f = 58.75 MHz $\pm$10 MHz variable or sweep 15 mV_{rms}; measure DC level of P15.



AD V_{BTH}
BC V_{BCL}
EH V_{WTH}
FG V_{WCL}

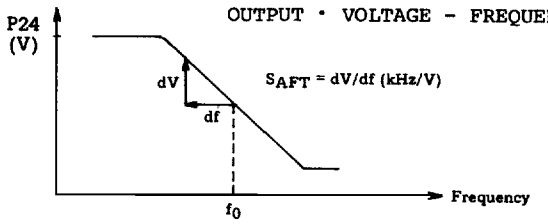
NOTE 8) PIF IN; 58.75 MHz, 1 kHz 87.5% AM Modulation 15 mV_{rms}.
(1) Adjust VAGC so that output AC level of P15 becomes 2.0 Vp-p.
(2) Measure CL of P15 after setting 0% AM of SG.

NOTE 9) Measure I 2nd carrier of P15 the same as NOTE 8).

NOTE 10) PIF IN; SG = variable, 15 mV_{rms} CW

(1) P24 DC voltage will be 4.5V.

(2) Apply SG signal to P4 and measure P24 voltage change as shown below.



NOTE 11) SG1; 58.75 MHz (P; Picture) 15 mV_{rms}.

SG2; 54.25 MHz (S; Sound) -6 dB of SG1

SG3; 55.17 MHz (C; Chroma) -6 dB of SG1

(1) Adjust VAGC so that the output tip level of P15 becomes 2.0V DC.

(2) Measure the level difference [dB] between C-level and 920 kHz level.

NOTE 12) SIF IN; fm = 400 Hz 25 kHz dev. 100 $dB\mu$ FM Modulation

Measure the output level at P8.

NOTE 13) SIF IN; fm = 400 Hz 25 kHz dev. 100 $dB\mu$ FM Modulation

Decrease the input level so that the detected output level will drop to 3 dB less than P8; then measure the input level.

NOTE 14) SIF IN; f = 4.5 MHz, 100 dB

(1) FM: Δf = 25 kHz, fm = 400 Hz

(2) AM: 30%, fm = 400 Hz

NOTE 15) SIF IN; f = 4.5 MHz 7.5 kHz dev. 100 $dB\mu$

Vary the frequency so that the detected output level will drop to 3 dB less than the peak; then measure the carrier frequency.

NOTE 16) Adjust SIF IN so that the detected output level of Harmonic Distortion becomes 1.5%; then measure the carrier frequency the same as NOTE 15).

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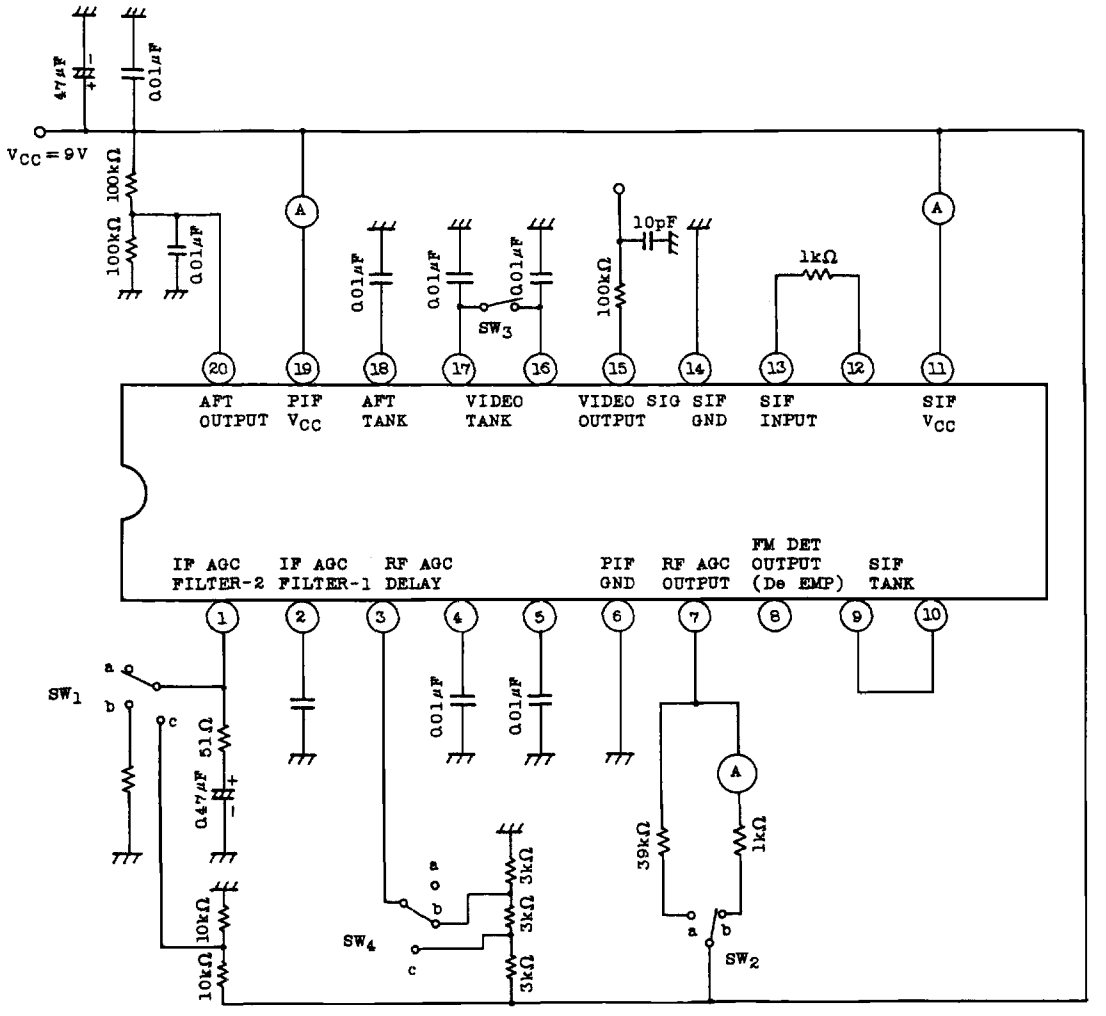
TEST CIRCUIT

1. DC CHARACTERISTICS



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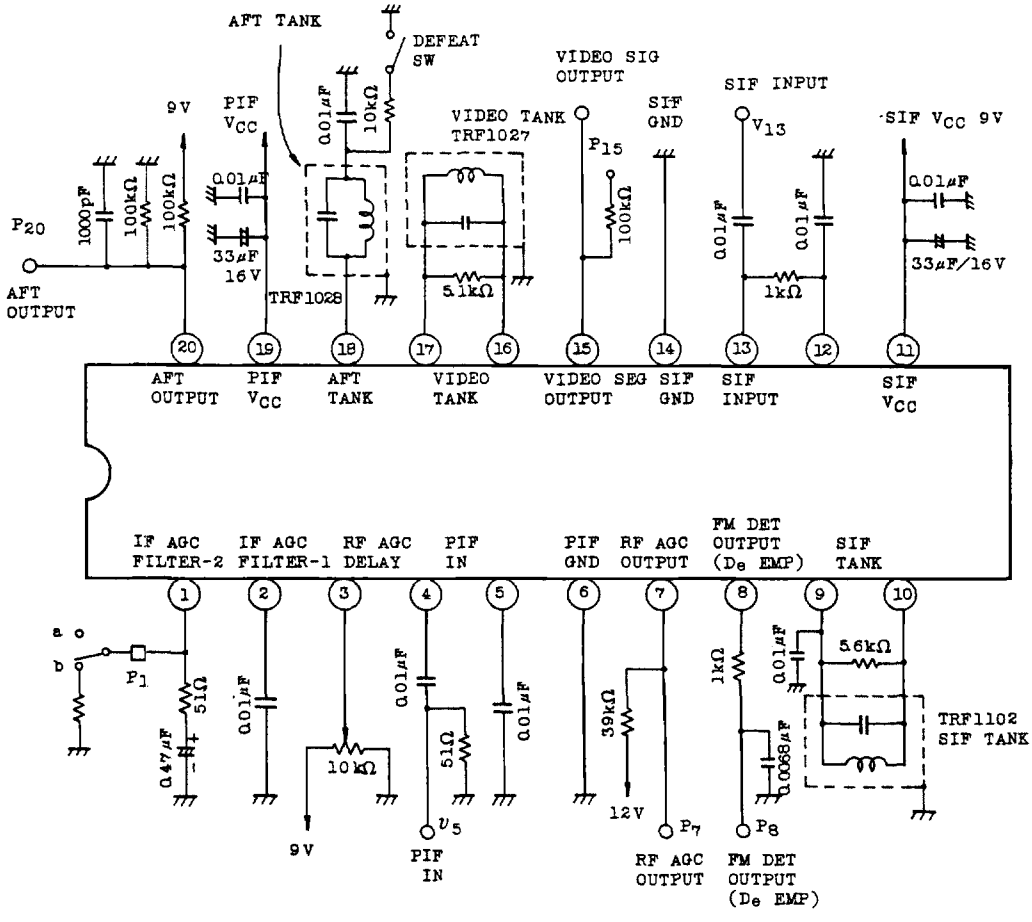
2. AC CHARACTERISTICS



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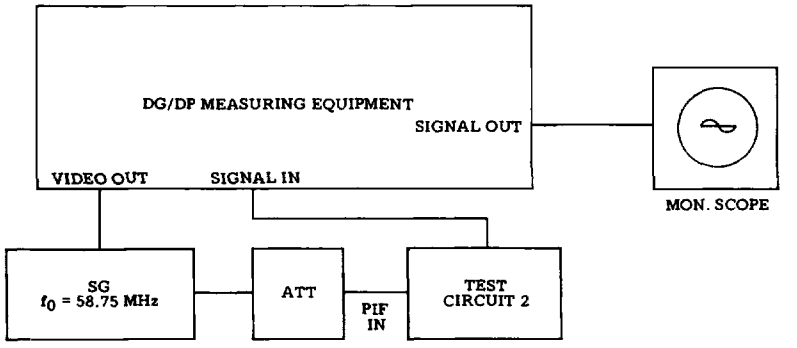
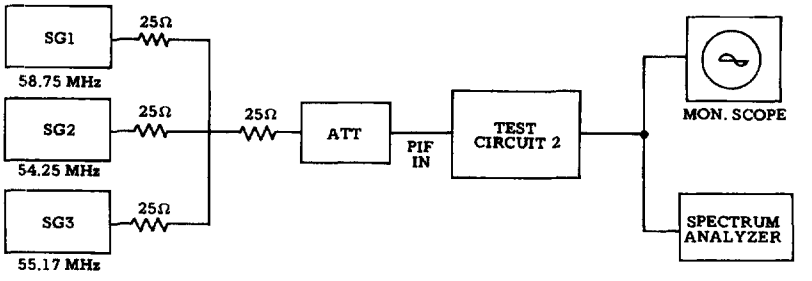
3. DG. DP

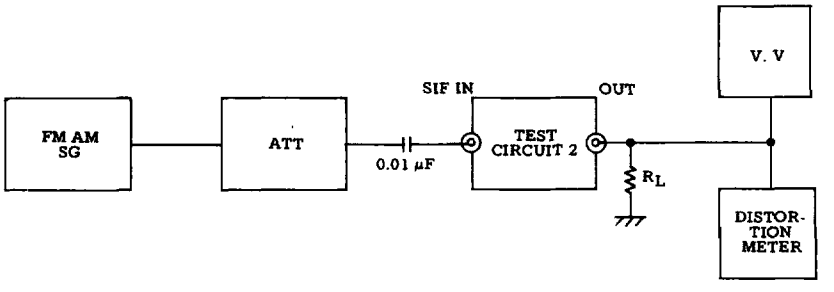


APL = 50%
ATT: ADJUST SYNC TIP LEVEL TO DC 2.0V

4. INTERMODULATION



5. $V_{IN(LIM)}$, AMR, V_{OD}, Δf_G, Δf_D



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APPLICATION CIRCUIT