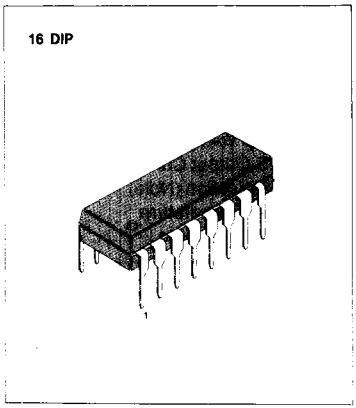
VIDEO IF SYSTEM FOR COLOR TVs

The KA2911, KA2916 are silicon monolithic integrated circuits designed for the VIF stage in color and B/W television receivers.

KA2911 for Reverse AGC Type.
KA2916 for Forward AGC Type.



FUNCTIONS

- Three controlled IF amplifier stages
- Video demodulator controlled by picture carrier
- Black noise and white noise inverter
- Peak AGC
- DC amplifier for RF AGC out
- Quadrature detector for AFT
- DC amplifier for AFT

FEATURES

- **High gain wide band IF amplifier**
- **Gain reduction with excellent stability**
- **Excellent DG/DP characteristics**
- **Excellent S/N characteristics due to delayed 3-stage AGC action**
- **Negative video output signal**
- **Fast AGC action due to noise inverter and peak AGC**
- **Switch off the video part with VTR SW**
- **Dual differential AFT output**

ORDERING INFORMATION

Device	Package	Operating Temperature
KA2911	16 DIP	– 20 +65°C
KA2916		

BLOCK DIAGRAM

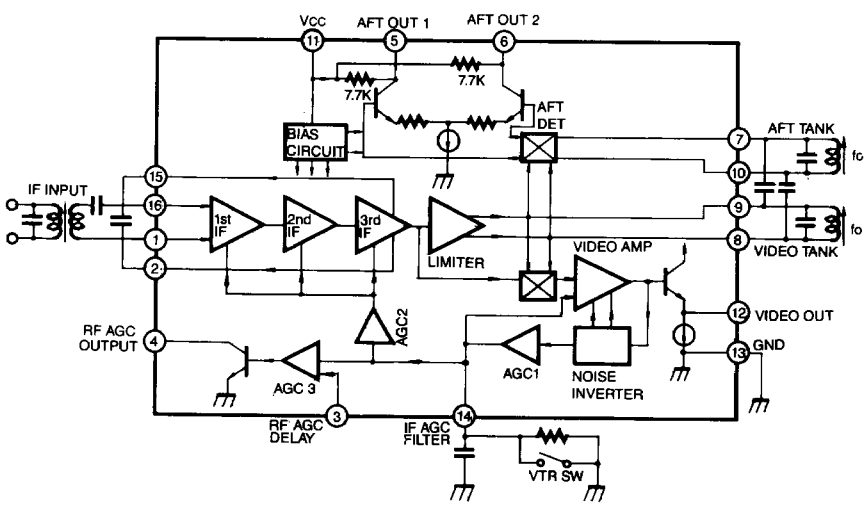


Fig. 2

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC} (Pin 11)	15	V
Open Loop Voltage	V_4 (Pin 4)	15	V
Video DC Output Current	I_{12} (Pin 12)	6	mA
Power Dissipation (Note)	P_d	1.4	W
Operating Temperature	Topr	−20 ~ +65	°C
Storage Temperature	Tstg	−55 ~ +150	°C

Note: Derated above T_a=25°C in the proportion of 11.2mW/°C

ELECTRICAL CHARACTERISTICS (T_a=25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit	Test C'CT
Recommended Supply Voltage	V_{CC} (V_{11})		10.8	12.0	13.2	V	
Supply Current	I_{CC} (I_{11})	V_{CC}=12V	42	51	63	mA	1
Video DC Output Voltage	V_{12}	V_{CC}=12V	5.2	5.5	5.8	mA	1
AFT DC Output Voltage	V_5, V_6	V_{CC}=12V SW_1: ON, SW_2: ON	5.3	6.8	8.3	V	1
AFT Output Offset Voltage	V_5-V_6	V_{CC}=12V SW_1: ON, SW_2: ON	−1.5	0	1.5	V	1
RF AGC Residual Output Voltage	V_4 (sat)	V_{CC}=12V, SW_3: 2, SW_4: 2 KA2916 SW_4: 1 KA2911	—	—	0.5	V	1
RF AGC Leak Current	I_4 (Leak)	V_{CC}=12V, SW_3: 1, SW_4: 2 KA2911 SW_4: 1 KA2916	—	—	1	μA	1
Video Sensitivity	v_i Pin (1-16)	V_{CC}=12V, V_{12}=0.8V_{P-P} f_o=45.75MHz AM: 30%	100	200	300	μVrms	2
AGC Range	ΔA (IF)	V_{CC}=12V, f_o=45.75MHz V_{14}=11.5V→4.0V	60	64	—	dB	2
Sync Tip Level Voltage	V_{SYNC} (V_{12})	V_{CC}=12V f_o=45.75MHz	2.3	2.5	2.7	V	2
Maximum IF Input Voltage	v_{IN} (Max)	V_{CC}=12V f_o=45.75MHz	100	120	—	mVrms	2
White Noise Threshold	V_{WTH} (V_{12})	V_{CC}=12V f_o=45.75MHz	5.8	6.2	6.6	V	2
White Noise Clamp Level	V_{WCL} (V_{12})	V_{CC}=12V f_o=45.75MHz	3.7	4.1	4.5	V	2
Black Noise Threshold	V_{BTH} (V_{12})	V_{CC}=12V f_o=45.75MHz	1.4	1.6	1.8	V	2
Black Noise Clamp Level	V_{BCL} (V_{12})	V_{CC}=12V f_o=45.75MHz	2.9	3.3	3.7	V	2
Video Frequency Response	F_{BW}	Input 45.75MHz Sweep generator	4.5	5.5	—	MHz	2

ELECTRICAL CHARACTERISTICS (T_a =25°C)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit	Test Fig
Suppression of Carrier	C_L	SG_1 =100mVrms SG_2, SG_3 OFF	40	50	—	dB	4
Suppression of and 2nd Carrier	I_{2nd}	SG_1 =100mVrms SG_2, SG_3 OFF	40	50	—	dB	4
920KHz Beat Level	I_{920}	SG_1 =100mVrms SG_2 =32mVrms SG_3 =32mVrms	33	38	—	dB	4
Differential Phase	DP		—	3.5	5	deg	3
Differential Gain	DG		—	7	10	dB	3
Input Impedance	R_{IN}	f_o =45.75MHz between Pin 16-1	3.0	4.5	6.0	KΩ	
	C_{IN}		—	2.0	5.0	pF	
AFT Sensitivity	$\Delta F/\Delta V_{5-6}$	f_o =45.75MHz	—	16	—	KHz/V	2
AFT Output Upper Voltage	V_5, V_6 (UPP)	f_o =45.75MHz	11.7	11.9	12.0	V	2
AFT Output Lower Voltage	V_5, V_6 (Low)	f_o =45.75MHz	1.8	2.3	2.8	V	2
Max Available Current	I_4 (max)	KA2911	0.3	—	—	mA	2
		KA2916	7	—	—	mA	

TYPICAL APPLICATION CIRCUIT

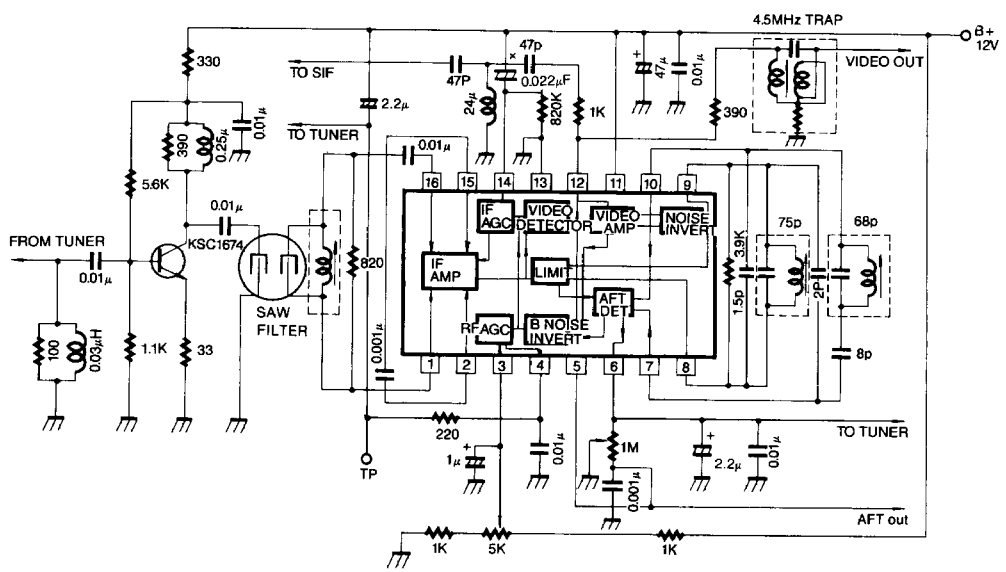


Fig. 2

TEST CIRCUIT 1 (DC Characteristics)

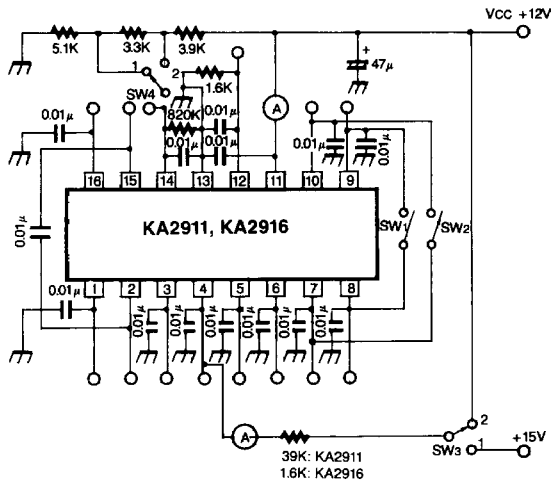


Fig. 3

TEST CIRCUIT 2 (Dynamic Characteristics)

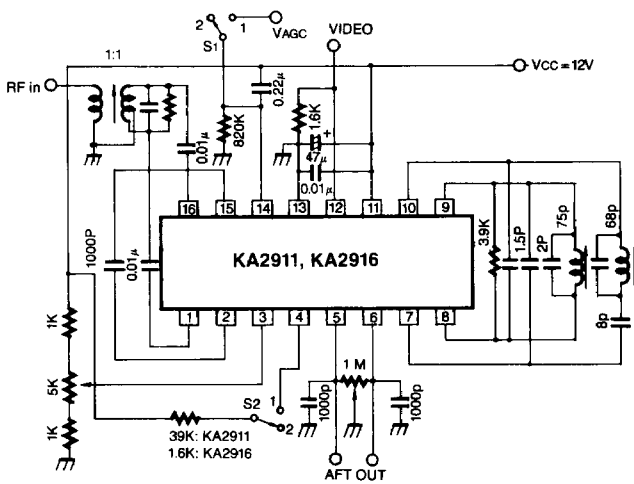


Fig. 4

TEST CIRCUIT 3 (DP, DG)

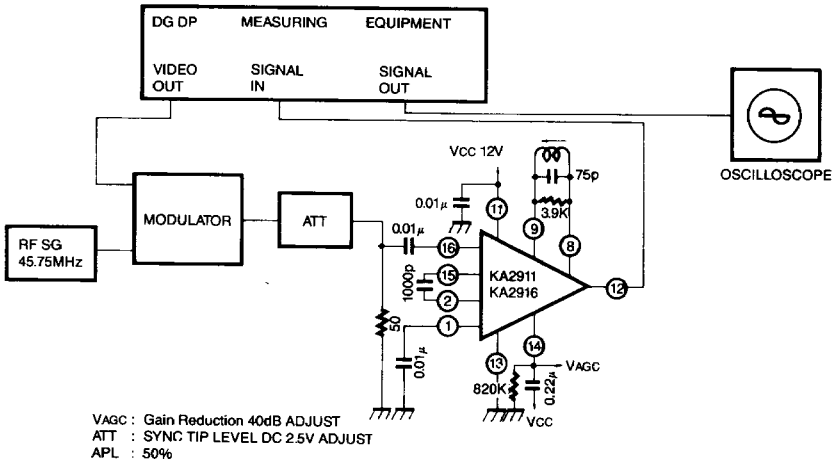


Fig. 4

TEST CIRCUIT 4 (Inter Modulation)

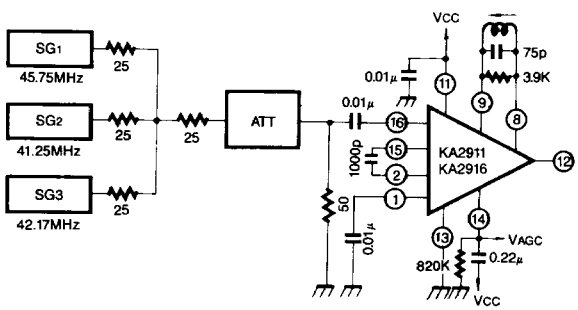


Fig. 5