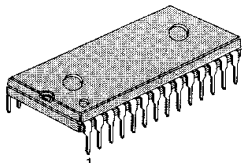
KA2915 1 CHIP FOR B/W TVs

TV VIF & SIF & DEFLECTION SYSTEM (IC FOR TV LARGE INTEGRATION)

The KA2915 is a monolithic integrated circuit containing all stages for the VIF, SIF and deflection functions of television receivers.

28-DIP-600A



FUNCTIONS

- IF Amp.
- Video Amp.
- IF AGC
- Tuner AFT
- Sound DET. (FM DET.)
- Vertical trig.
- Vertical drive
- Horizontal drive
- Video DET. (AM DET.)
- Noise canceller
- Forward RF AGC
- SIF Amp.
- Sync Separation
- Vertical oscillation
- Horizontal oscillation
- Horizontal AFC

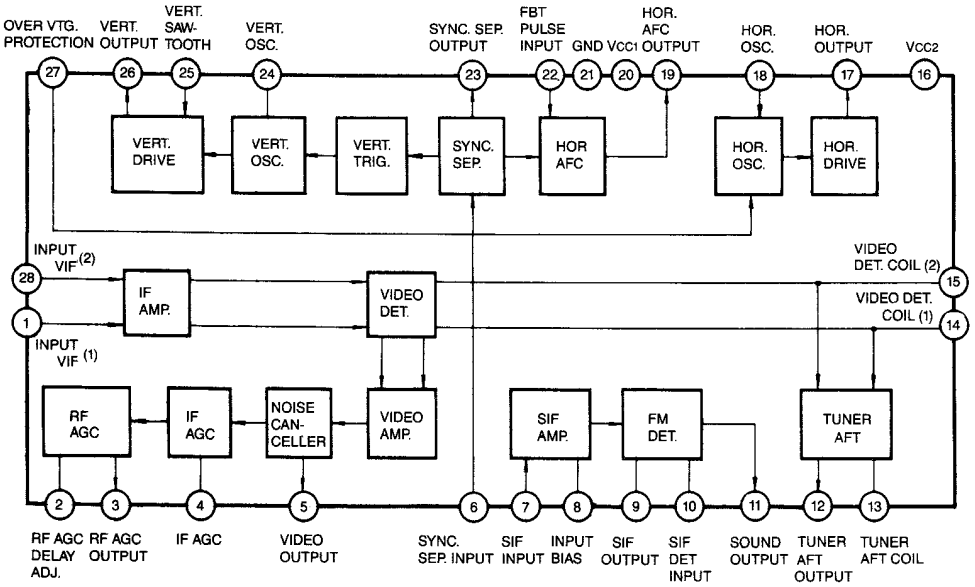
FEATURES

- High integrated technology makes it possible the integration of video IF circuit tuner AFC circuit sound IF circuit and deflection-jungle circuit on one single chip.
- Supply voltage range: 8~i2V (Typ. 10V).

ORDERING INFORMATION

Device	Package	Operating Temperature
KA2915	28-DIP-600A	-20¡ É+70¡ É

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (T_A=25¡ É)

Characteristic	Symbol	Value		Unit
Supply Voltage	$V_{CC}(V_{20-21})$	12		V
Supply Current	I_{20}	85		mA
	I_{16}	15		mA
Circuit Voltage	$V_{2,3,4,24-21}$	V_{20-21}	0	V
	V_{8-21}	5.5	0	V
	V_{13-21}	4.2	0	V
	V_{17-21}	V_{16-21}	0	V
Circuit Current	$I_{5,6,11,23,26}$	+0.3	-10	mA(peak)
	I_{19}	+0.6	-0.6	mA(peak)
	I_{25}	+10	0	mA(peak)
	I_{17}	+10	-4	mA(peak)
Power Dissipation (Ta =70¡ É)	P_D	1100		mW
Operating Temperature	T_{OPR}	-20~ +70		¡ É
Storage Temperature	T_{STG}	-55~ +150		¡ É

ELECTRICAL CHARACTERISTICS (V_{CC1}=10V, V_{CC}=9.5V, T_A=25¡ É)

Video Section

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Video Det. Output	V_O	m=87.5%	2.0	2.3	2.6	V_{P-P}
Input Sensitivity	S_{VI}	V_O =-3dB	-	50	55	dB¥ ì
Maximum Input	V_{MAX}	V_O >+0dB	105	110	-	dB
SN Rating	S/N	VI=80dB¥ ì	51	56	-	dB
Differential Gain	DG	m=87.5%	-	4	8	%
Differential Phase	DP	m=87.5%	-	3	6	deg
Video Freq. Characteristic	$G_{V(F)}$	V_O=-3dB	4.5	6.0	8.0	MHz
Sync. Peak Voltage	V_P		1.9	2.3	2.7	V
Noise Inverter Output Level	V_{NT}		1.0	1.4	1.8	V
Noise Inverter Capture Level	V_{NI}		3.0	4.0	5.0	V
Sound IF Output	V_{SIF}	P/S=20dB	100	104	107	dB¥ ì
Input Resistor	R_{INI}	f=45.75MHz	0.8	1.0	1.2	Kohm
Input Capaciter	C_{ZNI}	f=45.75MHz	3.0	3.4	3.8	pF
Output Resistor	R_O5	f=500kHz	30	50	150	ohm
RF AGC Gain	G_{RF} AGC	f=10kHz, V4=5mV	36	42	48	dB
RF AGC Max. Voltage	$V_{3(MAX)}$		8.2	8.8	9.4	V
RF AGC Min. Voltage	$V_{3(MIN)}$		3.6	4.2	4.8	V
AFT Center Voltage	V_2		4.0	5.4	6.0	V

Video Section (Continued)

Charateristic	Symbol	Test Condition	Min	Typ	Max	Unit
AFT SW Operating Voltage	VAFTSW	Rs=10§ Ú	0.5	2.6	3.0	V
AFT Maximum Output Voltage	V12(Max.)		8.5	9.6	10.0	V
AFT Minimum Output Voltage	V2(Min.)		0	0.7	1.2	V
Selection Sensitivity	¥ ì	RL =68§ ßß2§ Ú	30	50	90	mV/kHz

Sound Section

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Sound Det. Output	V_O	f_O = 4.5MHz, f_M =400Hz ¡ ß=¡ ²25kHz, VI =100mVrms	200	300	440	mVrms
Input Limit Voltage	$V_{I(LIM)}$	f =4.5MHz, f_M =400Hz ¡ ß=¡ ²25kHz	–	280	450	¥ ¥rms
Total Harmonic Distortion	THD	f_O = 4.5MHz, f_M =400Hz		0.6	1.0	%
AM Rejection Ratio	AMR	¡ ß=¡ ²25kHz, V_i =100mVrms	43	55	-	dB
Input Impedance	R_{17}	f =4.5MHz	6	20	100	§ Ú
	C_{17}		1.3	4.3	7.3	pF
Detector Input Impedance	R_{D9}	f =4.5MHz	2.0	3.0	4.0	§ Ú
	C_{D9}		2.1	5.1	8.1	pF
	R_{D10}		50	200	-	§ Ú
	C_{D10}		2.9	3.4	3.9	pF

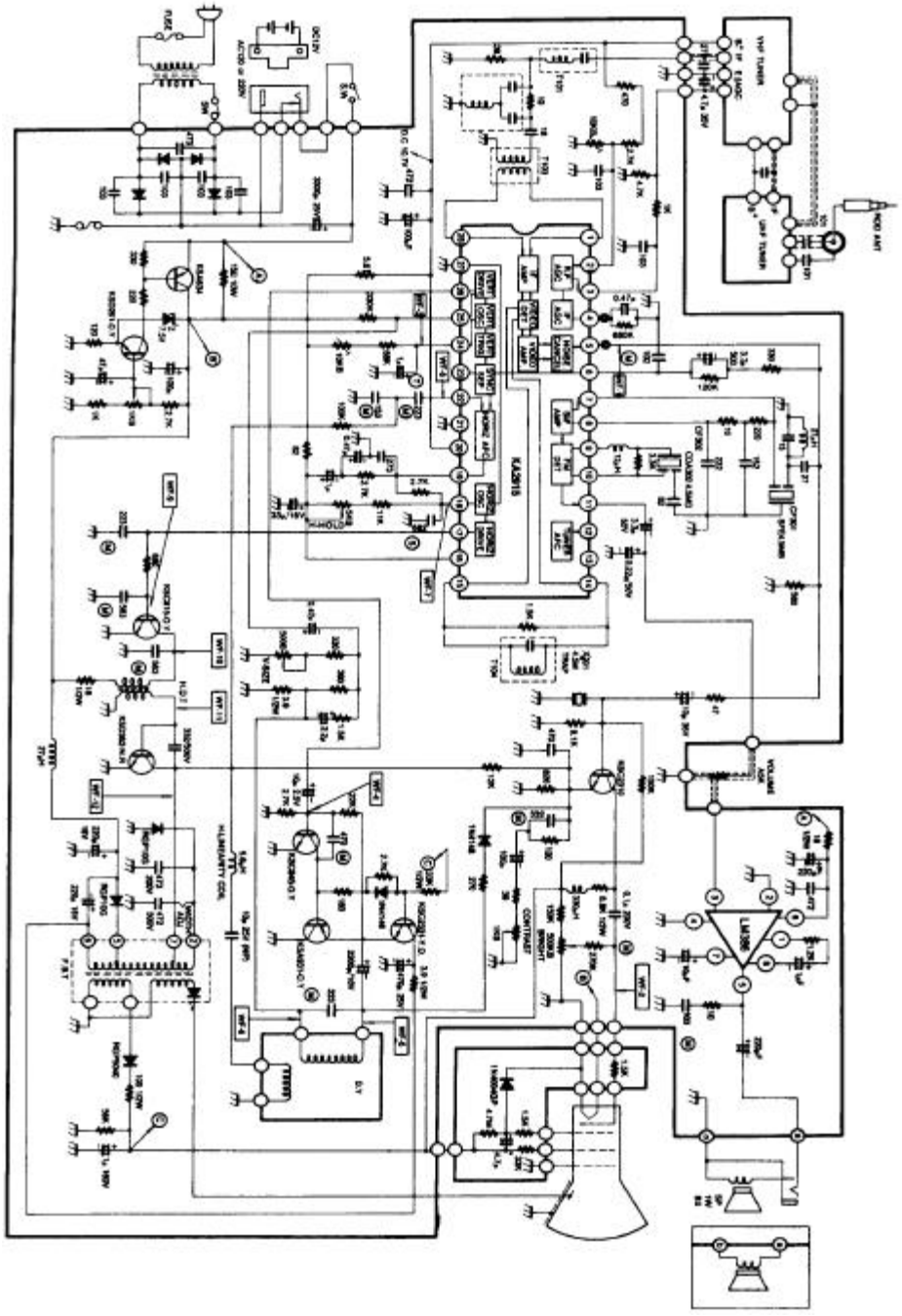
Deflection Section

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Sync Sep. Hori. Pulse Width (1)	t_{SYNC1}	Video Input 2.5V_{P-P}, APL =50%, V_{CC1} =10V	4.8	5.1	5.4	§ Á
Sync Sep. Hori. Pulse Width (2)	t_{SYNC2}	Video Input 1.0V_{P-P}, APL =50% V_{CC1}=10V	4.9	5.2	5.5	§ Á
Hori. AFC Hori. Pulse Width (1)	t_{SYNC3}	Video Input 2.5V_{P-P}, APL=50% V_{CC}1 =10V	4.8	5.1	5.4	§ Á
Hori. AFC Hori. Pulse Width (2)	t_{SYNC4}	Video Input 1.0V_{P-P}, APL=50% V_{CC1} =10V	4.9	5.2	5.5	§ Á
Vert Osc, Start Supply Voltage	$V_{FVO.S}$	fVO =50~70Hz Output=0.7V_{P-P}	-	-	6	V
Vert. Free Running Frequency	f_{VO}	$R_{OSC(V)}$=31.5§ Ú	57	60	63	Hz

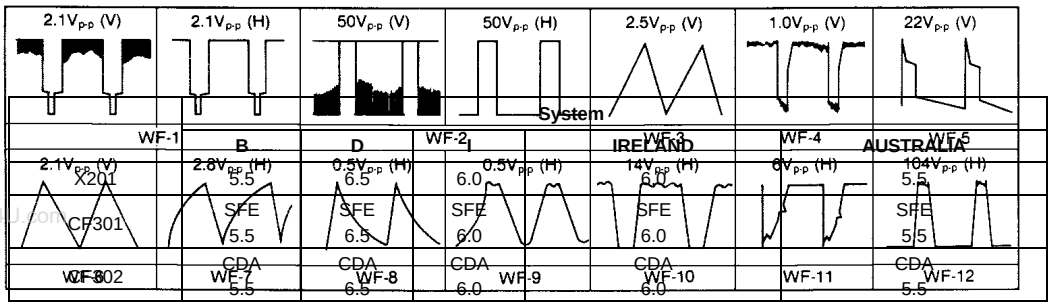
Deflection Section (Continued)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Vert. OSC. Pulse Width	t_{VO}	$R_{OSC(V)}$ =31.5Kohm	470	650	830	§ Á
Vert. full in Range	$f_{V(PULL)}$	V_{CC1} =12V, 8V ¡ fVO/V_{CC} =f_{VO} (12V)-f_{VO} (8V)	0	1.0	1.3	Hz
Vert. Full in Range	f_{PV}	Composite Signal Input $2V_{P-P}$	-	44	48	Hz
Hori. OSC. Start Supply Voltage	$V_{FHO.S}$	f_{HO} =10~20kHz Output =$1V_{P-P}$ Pin 16 Voltage	-	-	5	V
Hori. OSC. Freq.	f_{HO}	$R_{OSC (H)}$ =21§ Ú	15.0	15.75	16.25	kHz
Hori. OSC. Pulse Width	t_{HO}	$R_{OSC (H)}$ =21§ Ù	23	26	29	§ Á
Hori. OSC. Freq. Voltage Dependent	¡ fHO/V_{CC}	V_{CC2} =10V,8V ¡ fHO/V_{CC} =$f_{HO(10V)}$-$f_{HO(8V)}$	0	50	100	Hz
Hori. OSC. Control Sensitivity	¥ â	¡ ßL¡ ¥100§ ËInput Variable OSC. Freq. Variable	73	81	89	Hz/§ Ë
Phase Det. Sensitivity	¥ Ð	TV Input $2V_{P-P}$, $R_{(U)}$ =31.4§ Ú¥ ±V19*10	13.5	16.5	19.5	§ ßS Á
X-Ray Protector Operating Voltage	V_{27-21}		0.81	0.87	0.93	V
X-Ray Protector Input Resistor	R_{27}		16	19	22.5	§ Ú

TYPICAL APPLICATION CIRCUIT (12” or 14” B/W TV)



APPLICATION CIRCUIT (12” OR 14” B/W TV) (Continued)

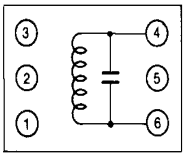


Change the System Location specifications on the following table for your system

NOTES: 1. All resistance values in ohm K=1,000 M=1,000,000.
2. All capacitors not noted in the schematic diagram are in pF the 3rd numeral of the capacitance value indicated 10^3 multiplier (EX: 638 68,000pF)
3. Voltage readings taken with V.T.V.M. from the point indicated to chassis ground tuner on an unused channel at max other controls at normal line voltage 120 volts.
4. All waveforms measured with a strong signal input contrast set give a normal picture.
5. Voltage reading may vary 10%.
6. With this fundamental circuit diagram, some production changes may be made without revision of the overall diagram.

COIL SPECIFICATIONS

T104 Video Detector Coil



Bottom View

C_O(pF)	f (MHz)	Q_O	Turns
4-6		4-6	4-6
51	45.75	100	5 7/8t

Wire: 0.3mm ¥ õ