

# KA2915

# 1 CHIP FOR B/W TVs

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

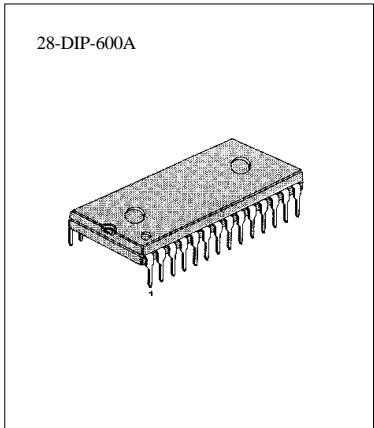
The KA2915 is a monolithic integrated circuit containing all stages for the VIF, SIF and deflection functions of television receivers.

### 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

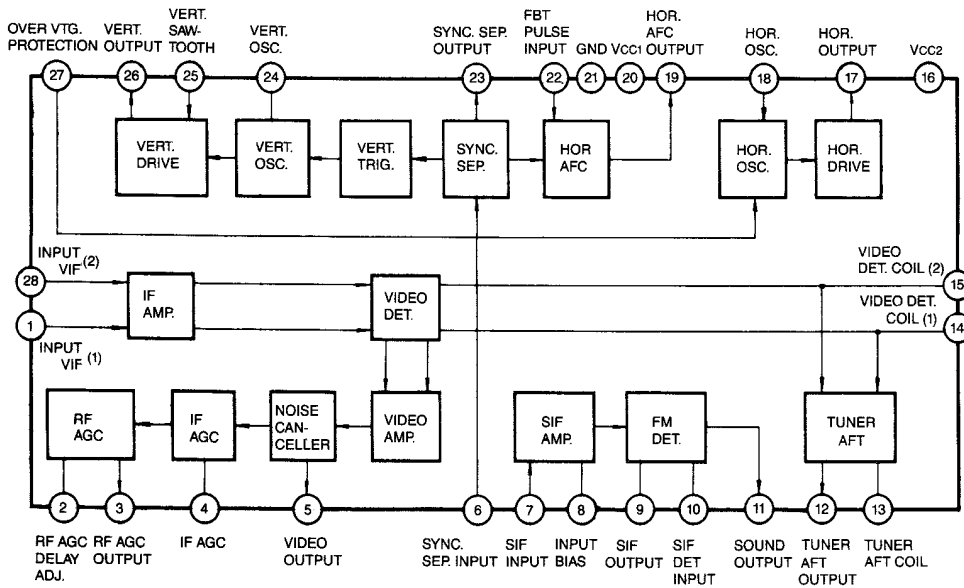
- High integrated technology makes it possible the integration of video IF circuit tuner AFC circuit sound IF circuit and deflection-jungle circuit on one single chip.
- Supply voltage range: 8-12V (Typ. 10V).



### ORDERING INFORMATION

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

### BLOCK DIAGRAM



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## ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25; ħ)

Characteristic	Symbol	Value		Unit
Supply Voltage	V <sub>CC</sub> (V <sub>20-21</sub> )	12		V
Supply Current	I <sub>20</sub>	85		mA
	I <sub>16</sub>	15		mA
Circuit Voltage	V <sub>2,3,4,24-21</sub>	V <sub>20-21</sub>	0	V
	V <sub>8-21</sub>	5.5	0	V
	V <sub>13-21</sub>	4.2	0	V
	V <sub>17-21</sub>	V <sub>16-21</sub>	0	V
Circuit Current	I <sub>5,6,11,23,26</sub>	+0.3	-10	mA(peak)
	I <sub>19</sub>	+0.6	-0.6	mA(peak)
	I <sub>25</sub>	+10	0	mA(peak)
	I <sub>17</sub>	+10	-4	mA(peak)
Power Dissipation (T <sub>a</sub> =70; ħ)	P <sub>D</sub>	1100		mW
Operating Temperature	T <sub>OPR</sub>	-20~ +70		ħ
Storage Temperature	T <sub>STG</sub>	-55~ +150		ħ

## ELECTRICAL CHARACTERISTICS (V<sub>CC1</sub>=10V, V<sub>CC</sub>=9.5V, T<sub>A</sub>=25; ħ)

### Video Section

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Video Det. Output	V <sub>O</sub>	m=87.5%	2.0	2.3	2.6	V <sub>P-P</sub>
Input Sensitivity	S <sub>VI</sub>	V <sub>O</sub> =-3dB	-	50	55	dBħ ħ
Maximum Input	V <sub>MAX</sub>	V <sub>O</sub> >+0dB	105	110	-	dB
SN Rating	S/N	V <sub>I</sub> =80dBħ ħ	51	56	-	dB
Differential Gain	DG	m=87.5%	-	4	8	%
Differential Phase	DP	m=87.5%	-	3	6	deg
Video Freq. Characteristic	G <sub>V(F)</sub>	V <sub>O</sub> =-3dB	4.5	6.0	8.0	MHz
Sync. Peak Voltage	V <sub>P</sub>		1.9	2.3	2.7	V
Noise Inverter Output Level	V <sub>NT</sub>		1.0	1.4	1.8	V
Noise Inverter Capture Level	V <sub>NI</sub>		3.0	4.0	5.0	V
Sound IF Output	V <sub>SIF</sub>	P/S=20dB	100	104	107	dBħ ħ
Input Resistor	R <sub>INI</sub>	f=45.75MHz	0.8	1.0	1.2	Kohm
Input Capaciter	C <sub>ZNI</sub>	f=45.75MHz	3.0	3.4	3.8	pF
Output Resistor	R <sub>O5</sub>	f=500kHz	30	50	150	ohm
RF AGC Gain	G <sub>RF AGC</sub>	f=10kHz, V <sub>4</sub> =5mV	36	42	48	dB
RF AGC Max. Voltage	V <sub>3(MAX)</sub>		8.2	8.8	9.4	V
RF AGC Min. Voltage	V <sub>3(MIN)</sub>		3.6	4.2	4.8	V
AFT Center Voltage	V <sub>2</sub>		4.0	5.4	6.0	V

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## Video Section (Continued)

Charateristic	Symbol	Test Condition	Min	Typ	Max	Unit
AFT SW Operating Voltage	VAFTSW	$R_s=10\ \Omega$	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	$\Delta i$	$R_L=68\ \Omega$	30	50	90	mV/kHz

## Sound Section

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Sound Det. Output	$V_o$	$f_o = 4.5\text{MHz}, f_M=400\text{Hz}$ $i_a=i_j \ 25\text{kHz}, V_i=100\text{mVrms}$	200	300	440	mVrms
Input Limit Voltage	$V_{i(LIM)}$	$f = 4.5\text{MHz}, f_M=400\text{Hz}$ $i_a=i_j \ 25\text{kHz}$	-	280	450	$\mu\text{Vrms}$
Total Harmonic Distortion	THD	$f_o = 4.5\text{MHz}, f_M=400\text{Hz}$		0.6	1.0	%
AM Rejection Ratio	AMR	$i_a=i_j \ 25\text{kHz}, V_i=100\text{mVrms}$	43	55	-	dB
Input Impedance	$R_{17}$	$f = 4.5\text{MHz}$	6	20	100	$\Omega$
	$C_{17}$		1.3	4.3	7.3	pF
Detector Input Impedance	$R_{D9}$	$f = 4.5\text{MHz}$	2.0	3.0	4.0	$\Omega$
	$C_{D9}$		2.1	5.1	8.1	pF
	$R_{D10}$		50	200	-	$\Omega$
	$C_{D10}$		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 <sub>P-P</sub> , APL=50%, $V_{CC1}=10\text{V}$	4.8	5.1	5.4	$\mu\text{s}$
Sync Sep. Hori. Pulse Width (2)	$t_{SYNC2}$	Video Input 1.0V <sub>P-P</sub> , APL=50% $V_{CC1}=10\text{V}$	4.9	5.2	5.5	$\mu\text{s}$
Hori. AFC Hori. Pulse Width (1)	$t_{SYNC3}$	Video Input 2.5V <sub>P-P</sub> , APL=50% $V_{CC1}=10\text{V}$	4.8	5.1	5.4	$\mu\text{s}$
Hori. AFC Hori. Pulse Width (2)	$t_{SYNC4}$	Video Input 1.0V <sub>P-P</sub> , APL=50% $V_{CC1}=10\text{V}$	4.9	5.2	5.5	$\mu\text{s}$
Vert Osc, Start Supply Voltage	$V_{FVO.S}$	$f_{VO}=50\sim 70\text{Hz}$ Output=0.7V <sub>P-P</sub>	-	-	6	V
Vert. Free Running Frequency	$f_{VO}$	$R_{OSC(V)}=31.5\ \Omega$	57	60	63	Hz

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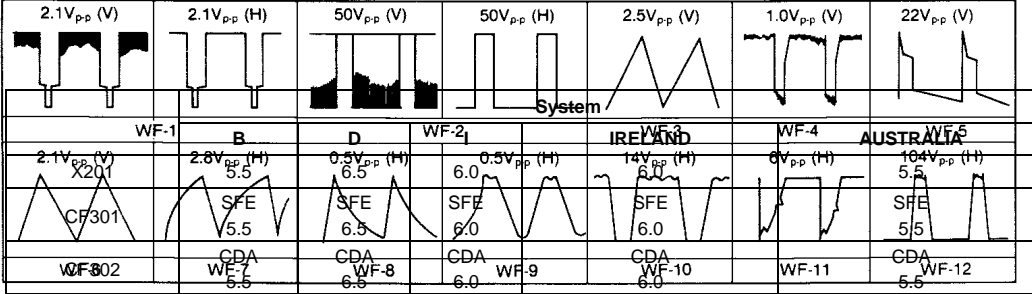
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**Deflection Section (Continued)**

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Vert. OSC. Pulse Width	$t_{VO}$	$R_{OSC(V)} = 31.5 \text{Kohm}$	470	650	830	$\mu\text{s}$
Vert. full in Range	$f_{V(PULL)}$	$V_{CC1} = 12V, 8V$ $f_{VO}/V_{CC} = f_{VO(12V)} - f_{VO(8V)}$	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	$V_{FHO.S}$	$f_{HO} = 10\text{--}20\text{kHz}$ Output $= 1V_{P-P}$ Pin 16 Voltage	-	-	5	V
Hori. OSC. Freq.	$f_{HO}$	$R_{OSC(H)} = 21 \mu\Omega$	15.0	15.75	16.25	kHz
Hori. OSC. Pulse Width	$t_{HO}$	$R_{OSC(H)} = 21 \mu\Omega$	23	26	29	$\mu\text{s}$
Hori. OSC. Freq. Voltage Dependent	$f_{HO}/V_{CC}$	$V_{CC2} = 10V, 8V$ $f_{HO}/V_{CC} = f_{HO(10V)} - f_{HO(8V)}$	0	50	100	Hz
Hori. OSC. Control Sensitivity	$\Delta a$	$\Delta I_i \approx 100 \mu\text{A}$ Input Variable OSC. Freq. Variable	73	81	89	Hz/ $\mu\text{A}$
Phase Det. Sensitivity	$\Delta P$	TV Input $2V_{P-P}$ , $R_{(U)} = 31.4 \mu\Omega \pm V19 \times 10$	13.5	16.5	19.5	$\mu\text{s}/\mu\text{A}$
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	$\mu\Omega$



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



Change the  
Location

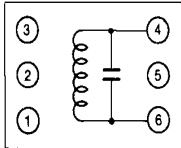
specifications on

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 <sub>0</sub> (pF)	f (MHz)	Q <sub>0</sub>	Turns
4-6		4-6	4-6
51	45.75	100	5 7/8t

Wire: 0.3mm  $\nabla$   $\bar{o}$