

SINGLE-CHIP TV PROCESSOR IC FOR VISION AND SOUND IF PROCESSING, VIDEO AND SYNCHRONIZATION FOR B/W TV

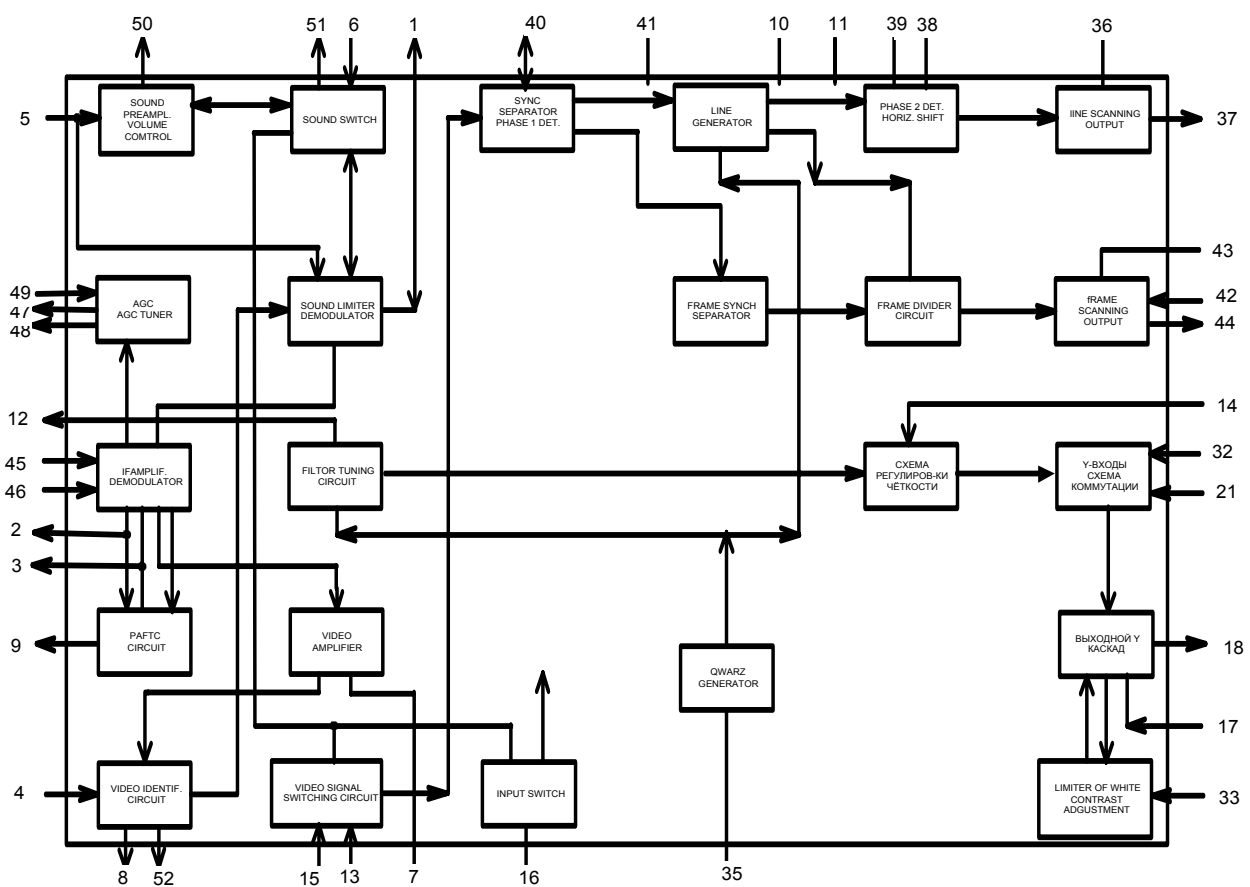
IC DESCRIPTION

ILA8362W is intended for b/w TV receiver and contain functional units for video and sound IF signals, line and frame synchronization , output Y-signal.

IC FEATURES

- circuit for processing Vision IF (positive and negative modulation).
- FM sound demodulator (4.5-6.5 MHz).
- Addition inputs for A/V (external and internal video inputs, internal and external audio inputs).
- Embedded delay line for brightness signal.
- control IC for output Y-signal and external Y-input and possibility of a direct information display on screen (OSD mode).
- Line synchronisation with two control circuits and a generator (adjustment is not needed).
- IC for frame divider and preamplifier of frame scanning.
- Low power consumption (500 mW).
- Minimum quantity of external parts.
- Only one adjustment is required (IF demodulator).

Block diagram of TV signal processor ILA 8362 W



ILA8362W incorporate advantages of bipolar and MOS technologies, fulfill almost all low signal functions of w/b TV receiver. To assemble b/w TV-set it's necessary to add tuner, output stages for video, audio, frame and line scannig.

IC is implemented in plastic 52-pin DIP with pitch 1.778 мм . Package marking 2151Ю.52-A.

Audio deemphasis/Pos. modulation/Audio out	1	52	Bandgap decoupling
Reference coil	2	51	Sound decoupling
Reference coil	3	50	Sound output
Identification	4	49	Tuner take-over adj.
Sound IF input + Volume	5	48	AGC decoupling
External audio input	6	47	Tuner AGC output
Video output (dem)	7	46	IF input
Digit. decoupling	8	45	IF input
AFC output	9	44	Vertical drive
Supply	10	43	Vertical ramp generator
Ground	11	42	Vertical feedback
Filter decoupling	12	41	Ground
Internal CVBS input	13	40	? control loop
Peaking control input	14	39	? control loop/Xray prot.
External CVBS/SVHS-Y input	15	38	Flyback in/Sandcastl out
A/V switch input	16	37	Horizontal drive
Brightness control	17	36	Start supply (horizontal)
Y output	18	35	X-tal (4.43 MHz)
NC	19	34	NC
NC	20	33	Contrast control
Fast blanking + Insertion	21	32	External Y input
NC	22	31	NC
NC	23	30	NC
NC	24	29	NC
NC	25	28	NC
NC	26	27	NC

ILA8362W

PIN DESCRIPTION TABLE

Pin description table for single-chip TV processor IC for vision and sound IF processing, video and synchronization for b/w TV

pin No	Symbol	Description
1	2	3
01	AUDEEM	Sound distortion correction
02	IFDEM1	connection of IF demodulator filter
03	IFDEM2	connection of IF demodulator filter
04	IDENT	Videoidentification output
05	SOIF	IF sound and volume control input
06	EXTAU	external sound input
07	IFVO	Video output
08	DECdig	Digital supply decoupling
09	AFCOUT	AFC output
10	Vcc	Supply
11	OV1	Ground 1
12	DECft	Filter decoupling
13	CVBSint	Internal video input
14	PEAK	Sharpness control input
15	CVBSext	External video input
16	VCH	Video switch input
17	BRI	Brightness control input
18	YO	Y output
19	unused	
20	unused	
21	YINCH	Y input switch input
22	unused	
23	unused	
24	unused	
25	unused	
26	unused	
27	unused	
28	unused	
29	unused	
30	unused	
31	unused	
32	YIN	External Y input
33	CON	Contrast control input
34	unused	
35	XTAL	Quartz connection (4.43 MHz)
36	HOSC	Line scanning generator starting
37	HOUT	line scanning output
38	FBI/SCO	Reverse motion signal input, three level pulse output
39	PH2LF	Φ 2 detector loop filter
40	PH1LF	Φ 1 detector loop filter
41	OV2	Ground 2
42	VFB	frame scanning loop input
43	VRAMP	frame scanning generator input
44	VOUT	frame scanning output
45	IFIN1	IF input 1
46	IFIN2	IF input 2
47	AGCOUT	External AGC output
48	DECagc	AGC capacity connection
49	TUNEadj	external AGC threshold adjustment input
50	AUOUT	Sound output
51	DECdem	Sound demodulator capacity connection
52	DECbg	Analog decoupling supply

MAIN ELECTRIC PARAMETERS FOR ILA8362W

N	Parameter	Symbol	Target	
			Min	Max
1	2	3	4	5
1.	Supply current, mA	I_p	—	100
2.	Scanning starting threshold, V	U_{th}	5.8	6.8
3.	Video IF amplifier input sensitivity , RMS value, μV	$U_i(rms)$	—	100
4.	Gain control range AGC, dB	G_{cr}	64	—
5.	AGC efficiency (while input signal changing is 50dB), dB	θ	—	6
6.	White level on videoamplifier output for negative modulation signal, V	U_{w7}	3.4	5.1
7.	Synchrosignal upper level on videoamplifier output , V	U_{s7}	1.5	2.5
8.	Videoamplifier output resistance, Ohm	R_{07}	—	50
9.	Signal altitude on videoamplifier output for negative modulation signals, V	U_{0p-p}	1.6	2.8
10.	Videosignal non-linearity on videoamplifier output, %	NL_{vid}	—	9
11.	Max white level on on output of V-ampl.,V	U_{th}	4,0	5.6
12.	Signal/noise ratio on V-ampl. output while input signal altitude is 10mV, dB	S/N	52	—
13.	Saturation voltage on external AGC, mV	U_{MAX}	—	300
14.	Input signal variation causing whole change of AGC voltage, dB	δU_{47}	0.5	4
15.	Control voltages range, V	U_{cr}	0.5	4.5
16.	Voltage swing on AFC output , V	U	5.8	—
17.	Characteristic's slope, KHz	f_{sl}	120	200
18.	Output voltage on identification output when there is no signal , V with signal, V	U_o	— 7,0	0.5 —
19.	Voltage on identification output while feeding input IF with altitude 100 μV , V	U_{id}	7.0	—
20.	Input sensitivity, RMS value, mV			2
21.	Rejection of amplitude-modulated signal , dB	AMR	46	—
22.				
23.	Output resistance, kOhm	R_{01}	12	18
24.	Output signal altitude variation in PAFTC capture range of sound demodulator, dB	E_o		3
25.	Constant component of output voltage , V	U_1	2.5	3.5
1	2	3	4	5
26.	Output voltage altitude, RMS value, mV, (pin 1)	U_{orms}	250	400
27.	Output signal altitude at level 6dB, RMS value, mV, (pit 50)	U_{orms}	400	800
28.	Constant component of output voltage, V	U_{50}	2.5	3.7
29.	Non-linear distortion ratio, %	THD	—	0.6
30.	Ratio signal/noise for internal signal source, dB	S/N	60	—
31.	Adjustment range, dB	VOL_{cr}	80	—
32.	Output signal rejection within silence mode, dB	OSS	80	—
33.	Output signal's constant component bias while transition into silence mode, mV	δU_{50}	—	100
34.	External signal gain, dB ϵ	δG_v	7	13
35.	External and internal signals inter-penetration under max gain, dB	α	60	—
36.	rejection of input videosignal not being selected, dB	ISS	50	—
37.	Black level differentiation between internal and external signals, mV	U_{diff}	—	100
38.	Input currents , μA	I_i	—	0.13
39.	Input current, mA	I_{21}	—	0.2
40.	Internal Y-signal rejection, dB	SSint	46	—
41.	External Y-signal rejection, dB	SSext	46	—
42.	Y-signal rejection in mode of OSD signal connection directly to Y output , dB	SSbt	46	—
43.	Input current in synchronization absence , mA	I_{14}	0.5	1.3
44.	Generator free oscillations frequency , Hz	f_{fr}	15156	16094
45.	Max frequency deviation while starting line scanning, %	δf_{max}	—	+75
46.	PAFTC holding band , KHz	f_{HR}	—	± 1.2
47.	PAFTC capture band, KHz	f_{CR}	—	± 0.6
48.	Low level of output voltage, V	U_{ol}	—	0.3
49.	Max output current, mA	I_{max}	10	—

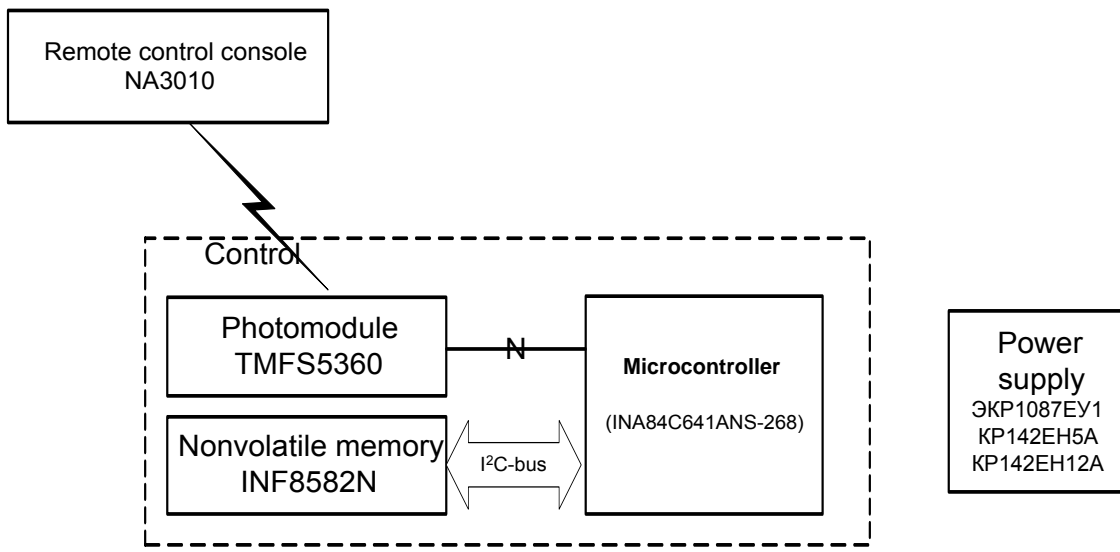
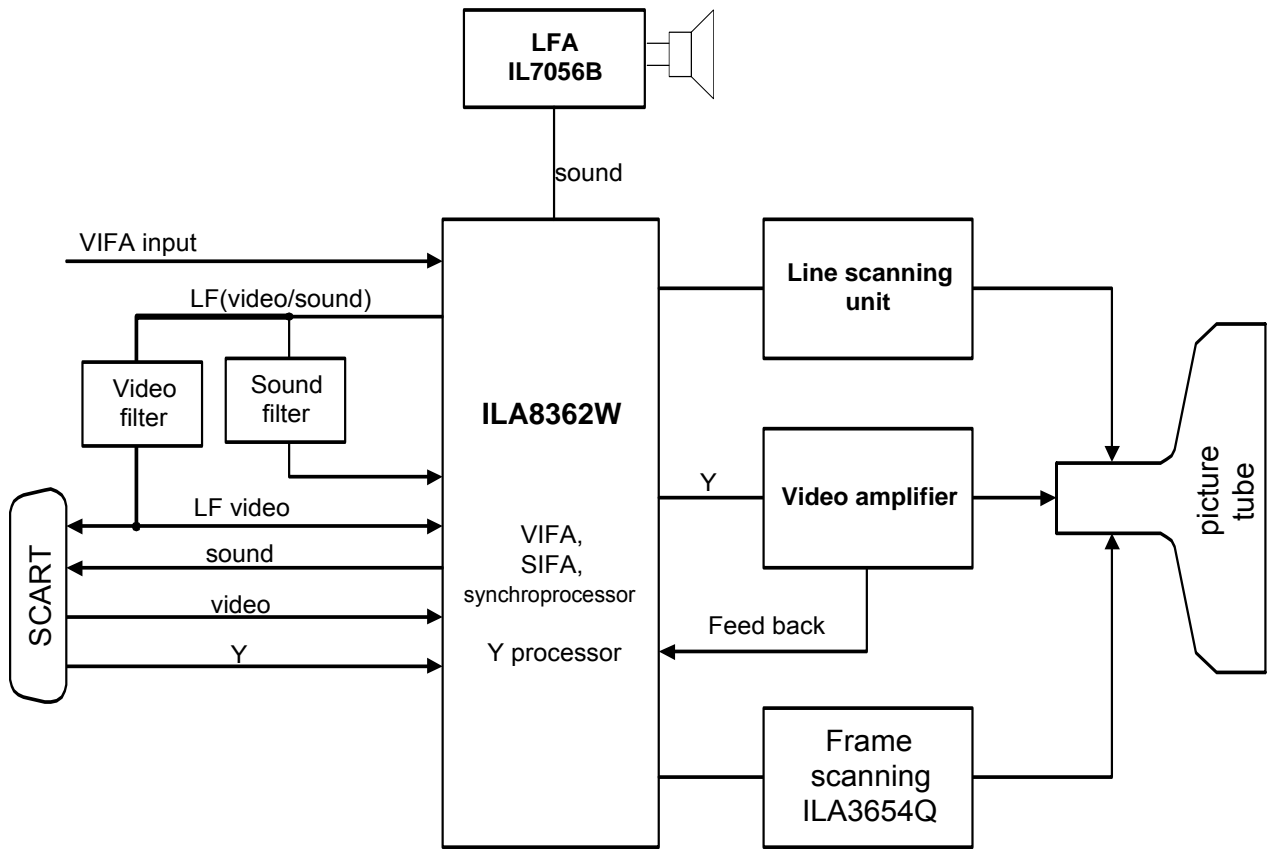
N	Parameter	Symbol	Target	
			Min	Max
1	2	3	4	5
50.	Constant voltage on line scanning output under operation of protection against X-ray, V	Uop	6.5	—
51.	Fulfillment ratio, %	n	43	57
52.	Input voltage while reverse moving, V	Uicl	2.2	3.8
53.	Output voltage of strobe, V suppression level, V	Uo	4.3 1.3	6.3 2.2
54.	Width of strobe pulse, μ s field, line suppression,	tW	3.2 14	4.1 14
55.	Ramp voltage altitude (swing), V	Usaw	1.3	1.7
56.	Max output voltage, V	Uomax	4.0	—
57.	Min output voltage, V	Uomin	—	0.3
58.	Constant voltage on frame scanning output while pin 42 protection is operating for lower threshold, V upper threshold, V	Uop	4.0	0.3 —
59.	Internal bias current of output emitter follower, mA	Ib	0.1	—
60.	Input current, μ A	I ₄₂	—	15
61.	Control range of contrast scale, dB	CRc	17	29
62.	Brightness control range, V	CRb	± 0.6	± 1.4
63.	Output signal altitude at nominal contrast range, swing, V	Uo	2.7	4.5
64.	Suppression level on Y-output, V	Uobl	0.6	0.9
65.	Black level on Y-output, V	Uobk	1.0	1.6
66.	Max pick level of white, V	Umax	3.8	6.5
67.	Internal bias current of output emitter follower, mA	Ib	1.8	—
68.	Max current source, mA	I _s	5	—

LIMITING OPERATION CONDITIONS

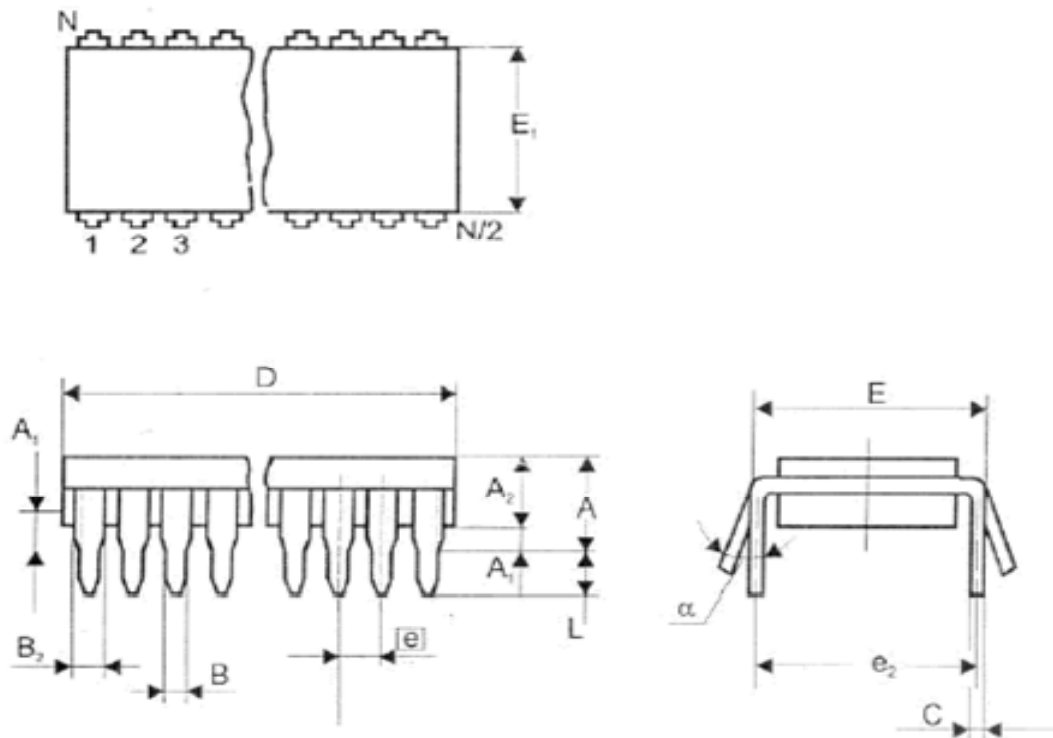
Values of limiting electrical operation conditions are given in temperature range from -60°C to +85°C.

Parameter name, measurement unit	Symbol	Limiting conditions	
		Min	Max
Supply voltage, V	Up	7.2	8.8
Range of control voltage on pins 05,17,25,26,27, V	Ui	0	5.0

RECOMMENDED FUNCTIONAL SCHEME OF TV



52-Pin Plastic Dual-in-Line (NS)



Dimension, mm		
A	max	5.08
A ₁	min	0.51
A ₂	min	3.05
	max	4.57
B	min	0.38
	max	0.56
B ₂	min	0.89
	max	1.14
C	min	0.23
	max	0.38
D	min	45.72
	max	46.23
E	min	15.24
	max	16
E ₁	min	12.7
	max	14.48
e	nom	1.778
e ₂	nom	15.24
L	min	2.54
	max	3.56
α	min	0°
	max	10°