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

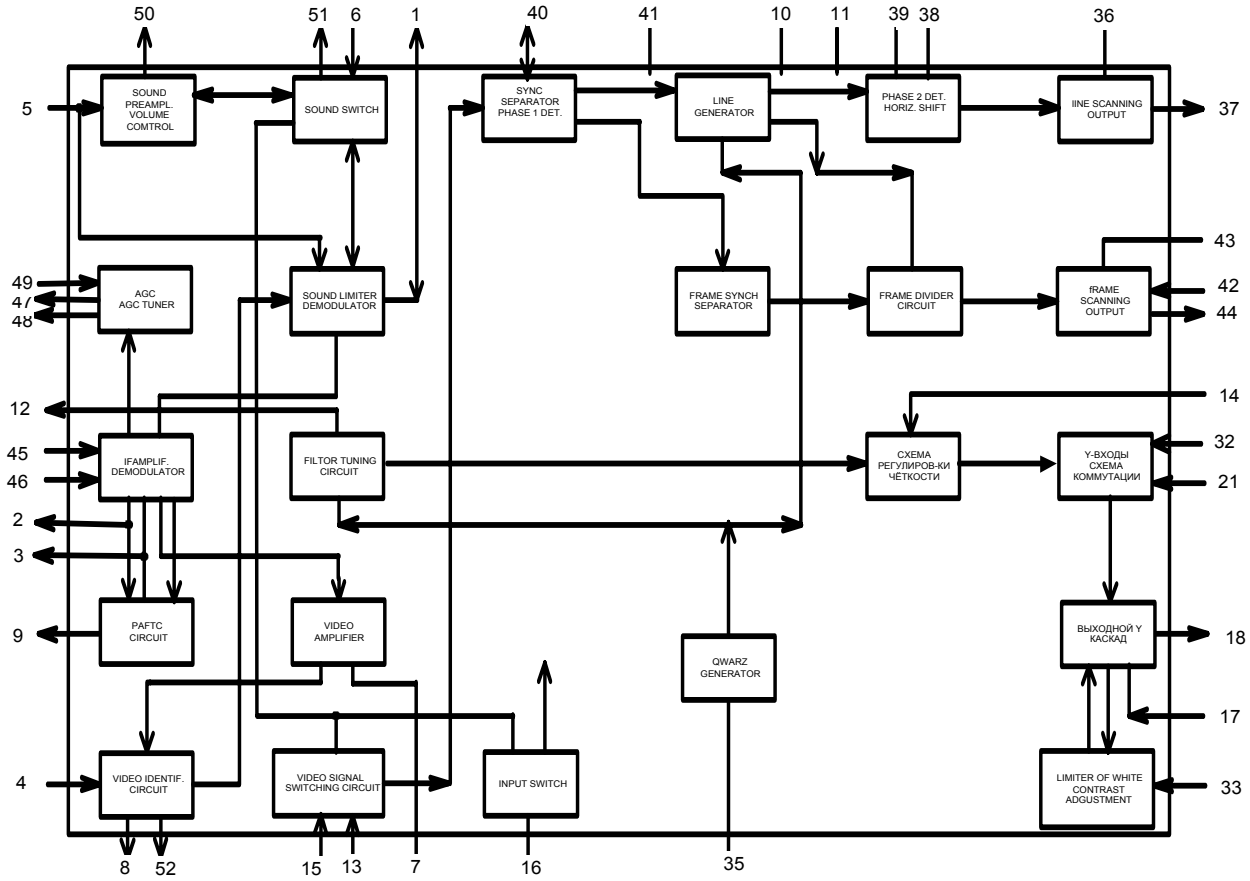
IC DESCRIPTION

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

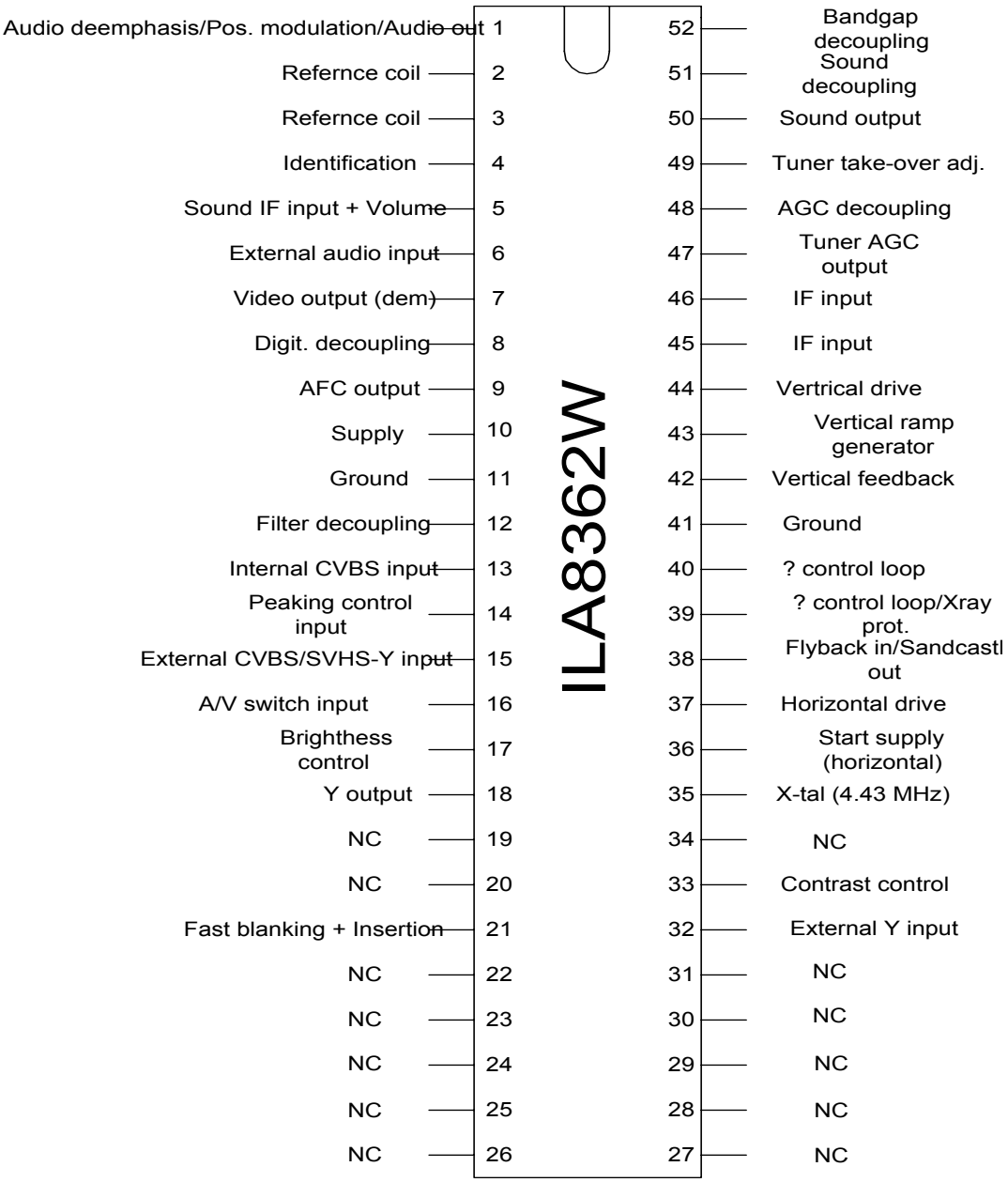
- circuit for processing Vision IF (positive and negative modulation).
- FM sound demodulator (4.5-6.5 MHz).
- Addition inputs for A/V (external and internal video inputs, internal and external audio inputs).
- Embedded delay line for brightness signal.
- control IC for output Y-signal and external Y-input 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.


ILA8362W
Audio deemphasis/Pos. modulation/Audio out 1
Refernce coil 2
Refernce coil 3
Identification 4
Sound IF input + Volume 5
External audio input 6
Video output (dem) 7
Digit. decoupling 8
AFC output 9
Supply 10
Ground 11
Filter decoupling 12
Internal CVBS input 13
Peaking control input 14
External CVBS/SVHS-Y input 15
A/V switch input 16
Brighthess control 17
Y output 18
NC 19
NC 20
Fast blanking + Insertion 21
NC 22
NC 23
NC 24
NC 25
NC 26
52 Bandgap decoupling
51 Sound decoupling
50 Sound output
49 Tuner take-over adj.
48 AGC decoupling
47 Tuner AGC output
46 IF input
45 IF input
44 Vertrical drive
43 Vertical ramp generator
42 Vertical feedback
41 Ground
40 ? control loop
39 ? control loop/Xray prot.
38 Flyback in/Sandcastl out
37 Horizontal drive
36 Start supply (horizontal)
35 X-tal (4.43 MHz)
34 NC
33 Contrast control
32 External Y input
31 NC
30 NC
29 NC
28 NC
27 NC

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 imput
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	Φ2 detector loop filter
40	PH1LF	Φ1 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, мА	Ip	___	100
2.	Scanning starting threshold, V	Uth	5.8	6.8
3.	Video IF amplifier input sensitivity , RMS value, μV	Ui(rms)	___	100
4.	Gain control range AGC, dB	Gcr	64	___
5.	AGC efficiency (while input signal changing is 50dB), dB	θ	___	6
6.	White level on videoamplifier output for negative modulation signal, V	Uw7	3.4	5.1
7.	Synchrosignal upper level on videoamplifier output , V	Us7	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, %	NLvid	___	9
11.	Max white level on on output of V-ampl.,V	Uth	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	δU47	0.5	4
15.	Control voltages range, V	Ucr	0.5	4.5
16.	Voltage swing on AFC output , V	U	5.8	___
17.	Characteristic's slope, KHz	fsl	120	200
18.	Output voltage on identification output when there is no signal , V with signal, V	Uo	___ 7,0	0.5 —
19.	Voltage on identification output while feeding input IF with altitude 100μV, V	Uid	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	Eo		3
25.	Constant component of output voltage , V	U1	2.5	3.5
1	2	3	4	5
26.	Output voltage altitude, RMS value, mV, (pin 1)	Uorms	250	400
27.	Output signal altitude at level 6dB, RMS value, mV, (pit 50)	Uorms	400	800
28.	Constant component of output voltage, V	U50	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	VOLcr	80	___
32.	Output signal rejection within silence mode, dB	OSS	80	___
33.	Output signal's constant component bias while transition into silence mode, mV	δU50	___	100
34.	External signal gain, dBБ	δGv	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	Udiff	___	100
38.	Input currents , μA	Ii		0.13
39.	Input current, mA	I21	___	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	ffr	15156	16094
45.	Max frequency deviation while starting line scanning, %	δfmax	___	+75
46.	PAFTC holding band , KHz	fHR	___	±1.2
47.	PAFTC capture band, KHz	fCR	___	±0.6
48.	Low level of output voltage, V	Uol	___	0.3
49.	Max output current, mA	Imax	10	—

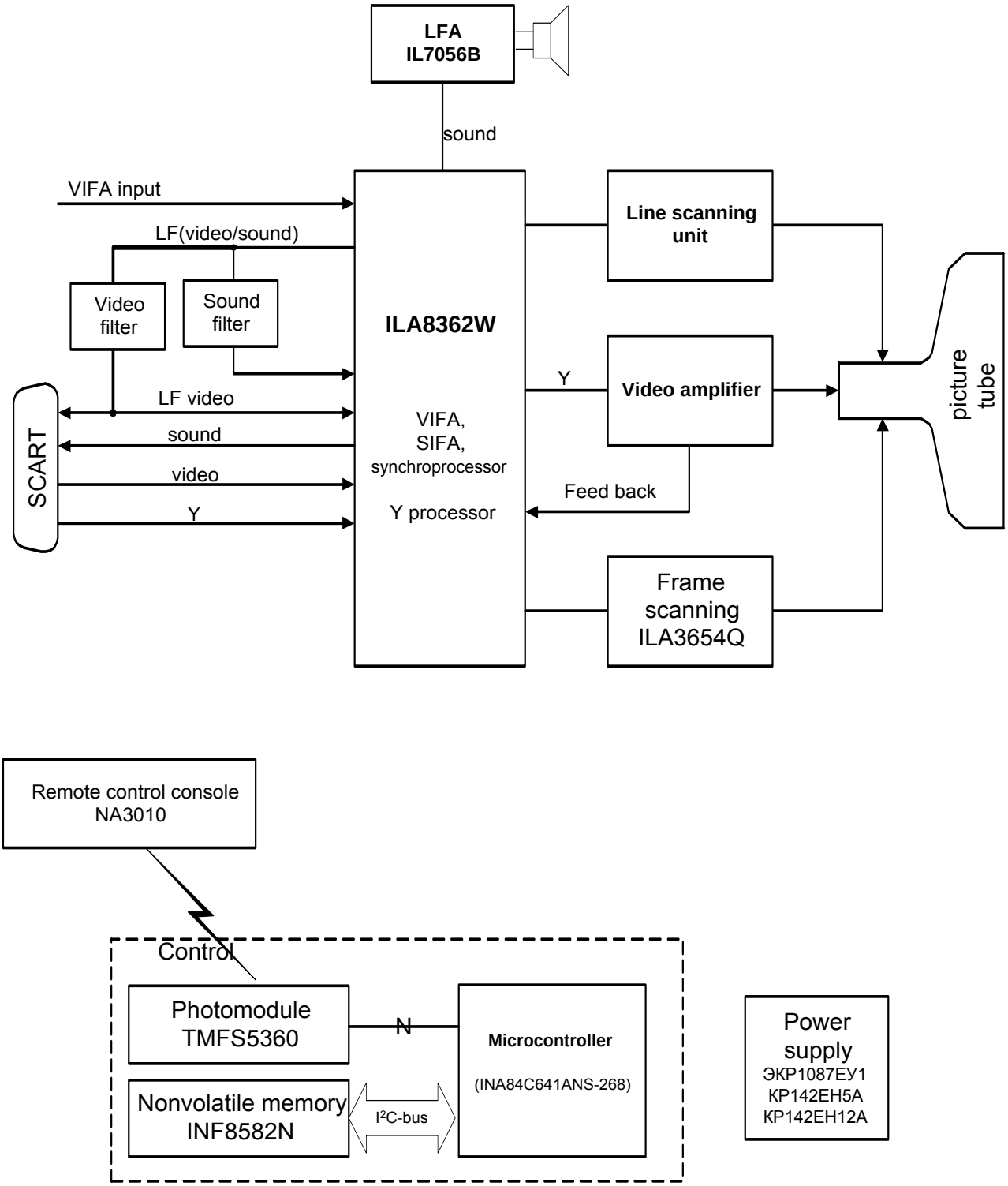
N	Parameter	Symbol	Target	
			Min	Max
1	2	3	4	5
50.	Constant voltage on line scanning output under operation of protection against X-ray, V	Uop	6.5	—
51.	Fulfillment ratio , %	n	43	57
52	Input voltage while reverse moving, V	Uicl	2.2	3.8
53.	Output voltage of strobe , V suppression level, V	Uo	 4.3 1.3	 6.3 2.2
54.	Width of strobe pulse, μs 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, μA	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	Is	5	—

LIMITING OPERATION CONDITIONS

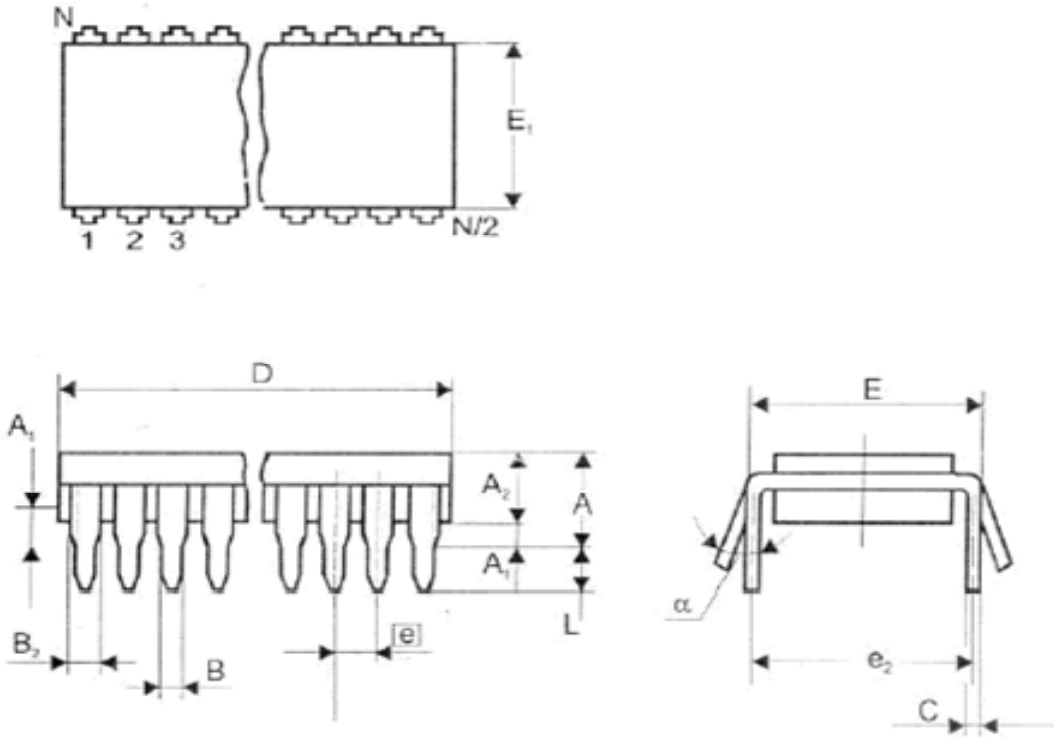
Values of limiting electrical operation conditions are given in temperature range from -60°C to +85°C .

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
A1	**min**	0.51
A2	**min**	3.05
	max	4.57
B	**min**	0.38
	max	0.56
B2	**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
E1	**min**	12.7
	max	14.48
e	**nom**	1.778
e2	**nom**	15.24
L	**min**	2.54
	max	3.56
α	**min**	0º
	max	10º