



LINEAR INTEGRATED CIRCUIT

LOW-NOISE TV VERTICAL DEFLECTION SYSTEM

The TDA 1170D is a monolithic integrated circuit in a 16-lead dual in-line plastic package. It is intended for use in black and white and colour TV receivers. **Low-noise meakes this device particularly suitable for use in monitors.** The functions incorporated are:

- synchronization circuit
- oscillator and ramp generator
- high power gain amplifier
- flyback generator
- voltage regulator

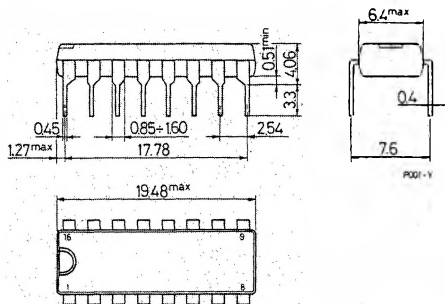
ABSOLUTE MAXIMUM RATINGS

V_s	Supply voltage at pin 2	35	V
$V_{6, V7}$	Flyback peak voltage	60	V
V_{14}	Power amplifier input voltage	+ 10 - 0.5	V V
I_o	Output peak current (non repetitive) at $t = 2$ msec	2	A
I_o	Output peak current at $f = 50$ Hz $t \leq 10 \mu\text{sec}$	2.5	A
I_o	Output prak current at $f = 50$ Hz $t > 10 \mu\text{sec}$	1.5	A
I_3	Pin 3 DC current at $V_6 < V_2$	100	mA
I_3	Pin 3 peak to peak flyback current for $f = 50$ Hz, $t_{fly} \leq 1.5$ msec	1.8	A
I_{10}	Pin 10 current	± 20	mA
P_{tot}	Power dissipation: at $T_{lab} = 90^\circ\text{C}$	4.3	W
	at $T_{amb} = 70^\circ\text{C}$ (free air)	1	W
T_{stg}, T_j	Storage and junction temperature	-40 to 150	$^\circ\text{C}$

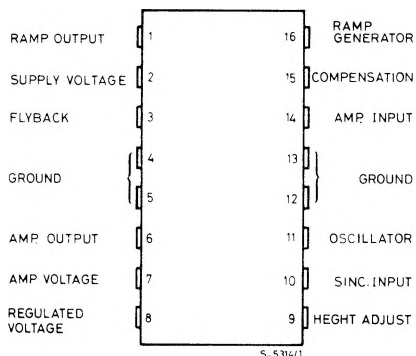
ORDERING NUMBER: TDA 1170D

MECHANICAL DATA

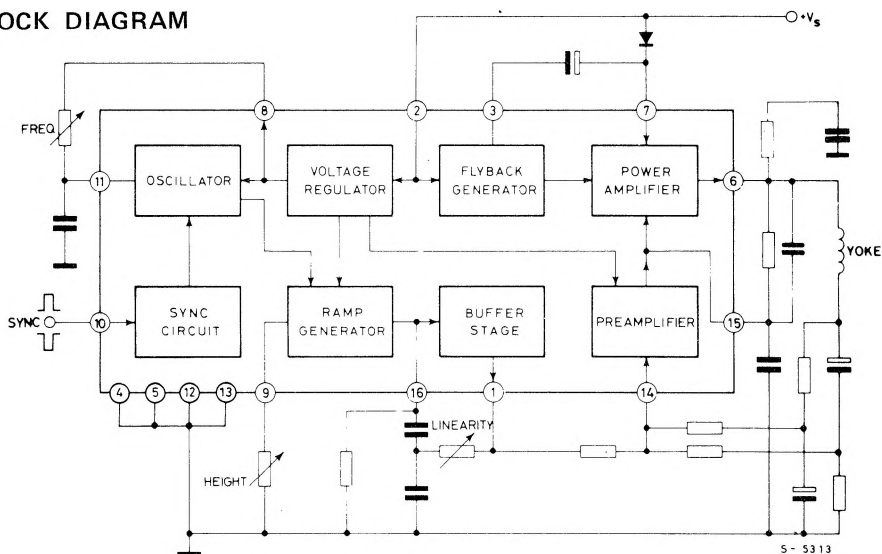
. Dimensions in mm



CONNECTION DIAGRAM



BLOCK DIAGRAM



THERMAL DATA

$R_{th\ j-tab}$	Thermal resistance junction-pins	max	14 °C/W
$R_{th\ j-amb}$	Thermal resistance junction-ambient	max	80 °C/W (°)

(°) Obtained with pins 4, 5, 12, 13 soldered to printed circuit with minimized copper area.

ELECTRICAL CHARACTERISTICS (Refer to the test circuits, $V_s = 35V$, $T_{amb} = 25^{\circ}C$, unless otherwise specified)

Parameter	Test conditions	Min.	Typ.	Max.	Unit	Fig.
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DC CHARACTERISTICS

I_2	Pin 2 quiescent current	$I_3 = 0$		7	14	mA	1b
I_7	Pin 7 quiescent current	$I_4 = 0$		8	15	mA	1b
$-I_{11}$	Oscillator bias current	$V_{11} = 1V$		0.1	1	μA	1a
$-I_{12}$	Amplifier input bias current	$V_{12} = 1V$		1	7	μA	1b
$-I_{16}$	Ramp generator bias current	$V_{16} = 0$		0.02	0.3	μA	1a
$-I_{16}$	Ramp generator current	$I_7 = 20 \mu A$ $V_{16} = 0$	19	20	24	μA	1b
$\frac{\Delta I_{16}}{I_{16}}$	Ramp generator non-linearity	$\Delta V_{16} = 0$ to $12V$ $I_9 = 20 \mu A$		0.2	1	%	1b
V_s	Supply voltage range		10		35	V	—
V_1	Pin 1 saturation voltage to ground	$I_1 = 1 mA$		1	1.4	V	—
V_3	Pin 3 saturation voltage to ground	$I_3 = 10 mA$		1.7	2.6	V	1a
V_6	Quiescent output voltage	$V_s = 10V$ $R_1 = 10 K\Omega$ $R_2 = 10 K\Omega$	4.17	4.4	4.63	V	1a
		$V_s = 35V$ $R_1 = 30 K\Omega$ $R_2 = 10 K\Omega$	8.35	8.8	9.25	V	1a
V_{6L}	Output saturation voltage to ground	$-I_6 = 0.1A$		0.9	1.2	V	1c
		$-I_6 = 0.8A$		1.9	2.3	V	1c
V_{6H}	Output saturation voltage to supply	$I_6 = 0.1A$		1.4	2.1	V	1d
		$I_6 = 0.8A$		2.8	3.2	V	1d
V_8	Regulated voltage at pin 6		6.1	6.5	6.9	V	1b
V_9	Regulated voltage at pin 7	$I_9 = 20 \mu A$	6.2	6.6	7	V	1b
$\frac{\Delta V_8}{\Delta V_s}; \frac{\Delta V_9}{\Delta V_s}$	Regulated voltage drift with supply voltage	$\Delta V_s = 10$ to $35V$		1		mV/V	1b
V_{14}	Amplifier input reference voltage		2.07	2.2	2.3	V	--
R_{10}	Pin 10 input resistance	$V_{10} \leq 0.4V$	1			$M\Omega$	1a

Fig. 1 - DC test circuit

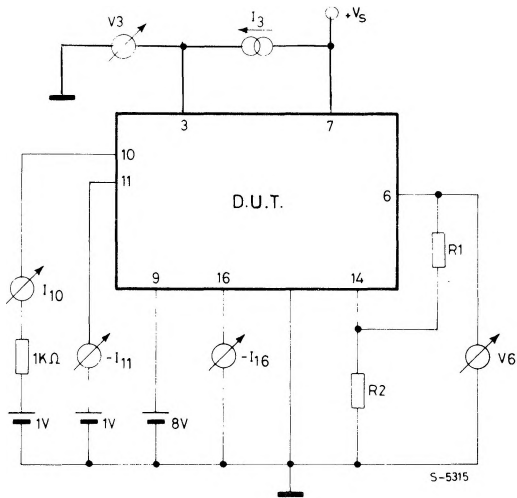


Fig. 1a

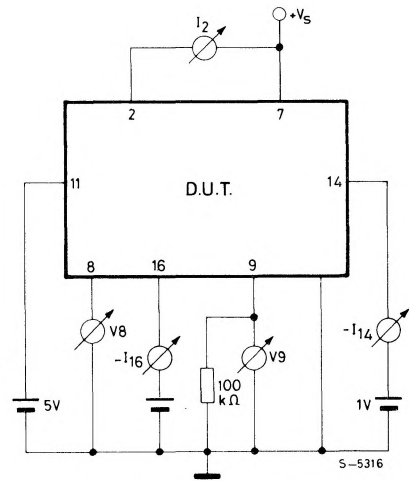


Fig. 1b

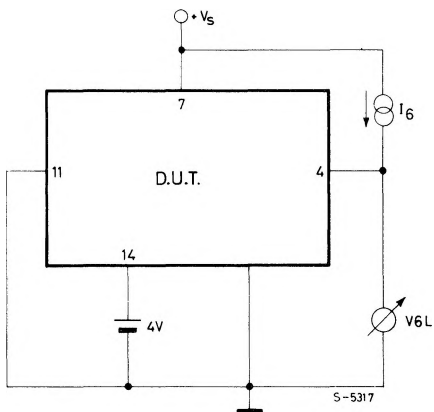


Fig. 1c

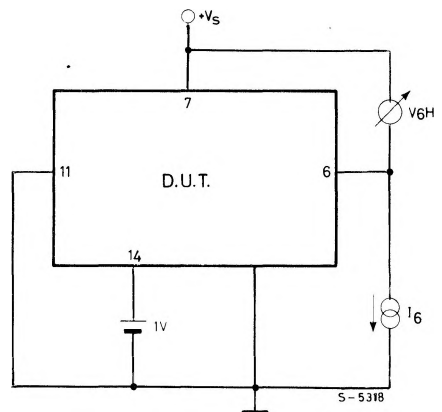


Fig. 1d

ELECTRICAL CHARACTERISTICS (Refer to the AC test circuit, $V_s = 25V$; $f = 50\text{ Hz}$; $T_{amb} = 25^{\circ}C$, unless otherwise specified)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_s	Supply current	$I_y = 1\text{ App}$		140	mA
I_{10}	Sync. input current (positive or negative)	500			μA
V6	Flyback voltage	$I_y = 1\text{ App}$		51	V
t_{fly}	Flyback time	$I_y = 1\text{ App}$		0.7	ms
V_{ON}	Peak to peak output noise	$BW = 20 \div 20.000\text{ Hz}$		50	mV
f_o	Free running frequency	$(P1 + R1) = 260\text{ K}\Omega$ $C2 = 0.1\text{ }\mu F$		52.4	Hz
		$(P1 + R1) = 300\text{ K}\Omega$ $C2 = 100\text{ nF}$		43.7	Hz
Δf	Synchronization range	$I_g = 0.5\text{ mA}$		14	Hz
$\frac{\Delta f}{\Delta V_s}$	Frequency drift with supply voltage	$V_s = 10\text{ to }35V$		0.005	Hz/V
$\frac{\Delta f}{\Delta T_{pins}}$	Frequency drift vs. pins 4, 5, 12 and 13 temp.	$T_{tab} = 40\text{ to }120^{\circ}C$		0.01	Hz/ $^{\circ}C$

Fig. 2 – AC test circuit

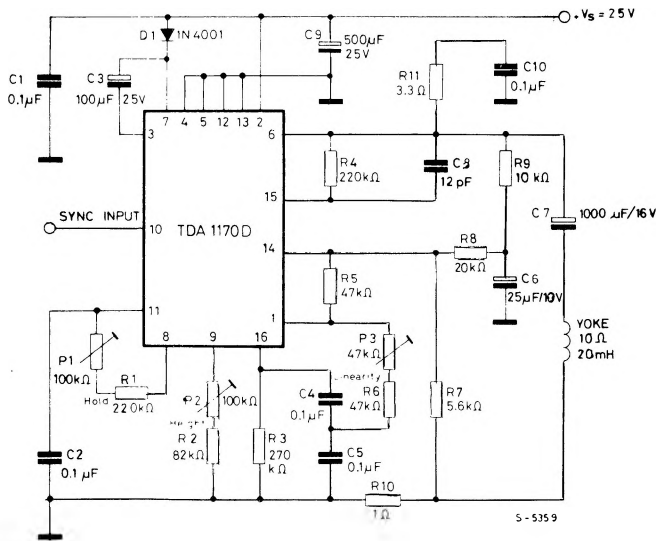


Fig. 3 - P.C. board and components layout of the AC test circuit.

