

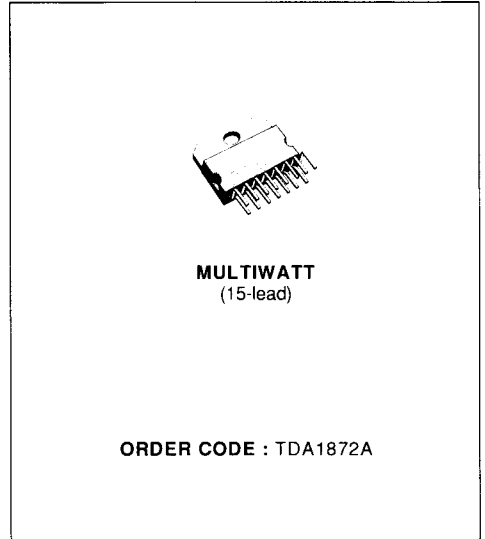
VERTICAL DEFLECTION CIRCUIT

- SYNCHRONIZATION CIRCUIT
- PRECISION OSCILLATOR AND RAMP GENERATOR
- 50/60Hz SYNCHRONIZATION IDENTIFICATION CIRCUIT WITH AUTOMATIC AMPLITUDE CORRECTION AND STATUS OUTPUT
- POWER OUTPUT AMPLIFIER WITH HIGH CURRENT CAPABILITY
- FLYBACK GENERATOR
- VOLTAGE REGULATOR
- PRECISION BLANKING PULSE GENERATOR
- THERMAL SHUT DOWN PROTECTION
- CRT PROTECTION CIRCUIT

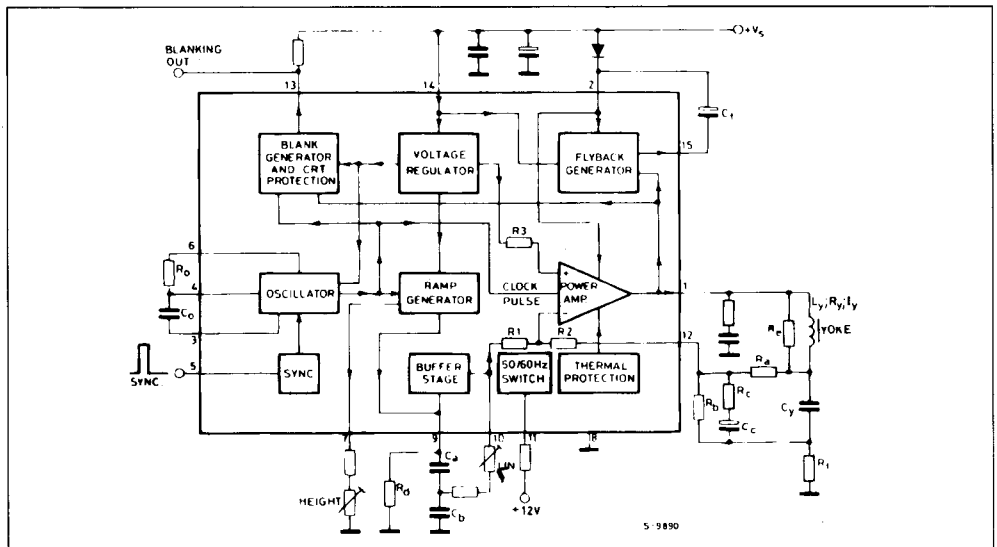
DESCRIPTION

The TDA1872A is a monolithic integrated circuit in 15 lead MULTIWATT package. It is a full performance and very efficient vertical deflection circuit intended for direct drive of the yoke of 110 degree color TV picture tubes.

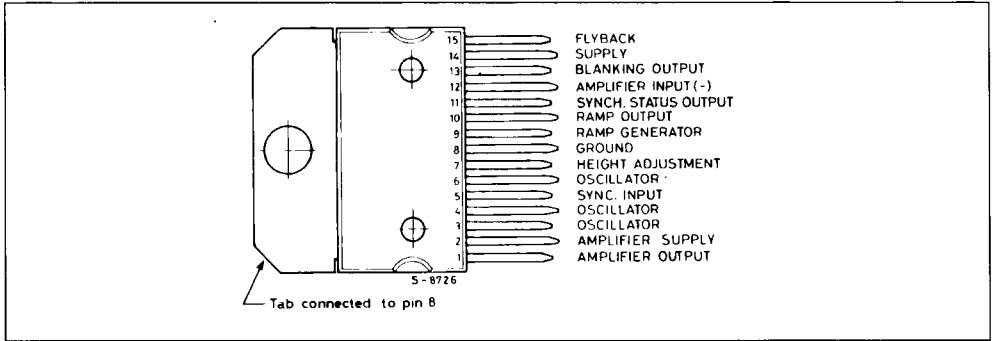
It offers a wide range of applications also in portable CTVs, BW TVs, monitors and displays.



BLOCK DIAGRAM



PIN CONNECTION (top view)



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_s	Supply Voltage at Pin 14	35	V
V_{1, V_2}	Flyback Peak Voltage	60	V
V_5	Synchronous Input Voltage	20	V
V_{12}	Power Amplifier Input Voltage	- 10 To V_s	V
V_{13}	Voltage at pin 13	V_s	
I_o	Output Current (non repetitive at $t = 20\text{ms}$)	3	A
I_o	Output Peak Current at $f = 50\text{Hz } t > 10\mu\text{s}$	2	A
I_o	Output Peak Current at $f = 50\text{Hz } t_{fly} \leq 1.5\text{ms}$	3.5	A
I_{15}	Pin 15 Peak to Peak Flyback Current at $f = 50\text{Hz } t_{fly} < 1.5\text{ms}$	3	A
I_{15}	Pin 15 DC Current at $V_1 < V_{14}$	100	mA
P_{tot}	Maximum Power Dissipation at $T_{case} \leq 60^\circ\text{C}$	30	W
T_{stg}	Storage Temperature	- 40 to 150	$^\circ\text{C}$
T_j	Junction Temperature	0 to 150	$^\circ\text{C}$

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal Junction-case	Max	3	$^\circ\text{C/W}$
$R_{th\ j\text{-}amb}$	Thermal Junction-ambient	Max	40	$^\circ\text{C/W}$

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

DC CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	Fig.
I_2	Pin 2 Quiescent Current	$I_1 = 0$		20	40	mA	2b
$-I_9$	Ramp Generator Bias Current	$V_9 = 0$ $-I_7 = 0\mu A$		0.02	1	μA	2b
$-I_9$	Ramp Generator Current	$V_9 = 0$ to 15V $-I_7 = 20\mu A$	18.5	20	21.5	μA	2b
ΔI_9	Current Variation From 50 to 60Hz	$-I_7 = 20\mu A$	17.7	20	21.1	%	2b
$\frac{ \Delta I_9 }{I_9}$	Ramp Generator non Linearity	$V_9 = 0$ to 15V $-I_7 = 20\mu A$		0.2	1	%	2b
I_{14}	Pin 14 Quiescent Current			25	45	mA	2b
V_1	Quiescent Output Voltage	$V_s = 35V$ $R_a = 2.2K\Omega$ $R_b = 1K\Omega$	16.4	17.8	19.5	V	2a
		$V_s = 15V$ $R_a = 390\Omega$ $R_b = 1K\Omega$	6.9	7.5	8.1	V	
V_{1L}	Output Saturation Voltage to Ground	$I_1 = 1.2A$		1	1.4	V	2c
V_{1H}	Output Saturation Voltage to Supply	$-I_1 = 1.2A$		1.6	2.2	V	2d
V_4	Oscillator Virtual Ground			0.45		V	2b
V_7	Regulated Voltage at Pin 7	$-I_7 = 20\mu A$	6.3	6.6	6.9	V	2b
$\frac{\Delta V_7}{\Delta V_s}$	Regulated Voltage Drift with Supply Voltage	$\Delta V_s = 15$ to 35V		1	2	$\frac{mV}{V}$	2b
V_{13}	Blanking Output Saturation Voltage	$I_{13} = 10mA$		0.35	0.5	V	2a
V_{15}	Pin 15 Saturation Voltage to Ground	$I_{15} = 20mA$		1.2	1.8	V	2a

ELECTRICAL CHARACTERISTICS (Refer to the AC test circuits of fig.1, $T_{amb} = 25^{\circ}\text{C}$, $V_s = 24\text{V}$, $f = 50\text{Hz}$, unless otherwise specified)

AC CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_s	Supply Current	$I_y = 2A_{pp}$		295		mA
I_5	Sync. Input Current Required to Sync.		100			μA
- I_7	Current at Pin 7	$I_y = 2A_{pp}$	36.3	38	39.7	μA
V_1	Flyback Voltage	$I_y = 2A_{pp}$		50		V
V_3	Peak to Peak Oscillator Sawtooth Voltage	$I_5 = 0$		3.6		V
		$I_5 = 100\mu\text{A}$		3.4		
V_{10thL}	Start Scan Level of the Input Ramp			1.85		V
t_{fly}	Flyback Time	$I_y = 2A_{pp}$		0.6		ms
t_{blank}	Blanking Pulse Duration	$f_o = 50\text{Hz}$ $T_j = 75^{\circ}\text{C}$	1.25	1.4	1.47	ms
		$f_o = 60\text{Hz}$ $T_j = 75^{\circ}\text{C}$		1.17		
f_o	Free Running Frequency	$R_o = 7.5\text{K}\Omega$ $C_o = 330\text{nF}$ $T_j = 75^{\circ}\text{C}$	41.5	44	46	Hz
		$R_o = 6.2\text{K}\Omega$ $C_o = 330\text{nF}$ $T_j = 75^{\circ}\text{C}$		52.5		Hz
Δf	Synchronization Range	$I_5 = 100\mu\text{A}$ $T_j = 75^{\circ}\text{C}$	19	20		Hz
V_{11}	Sync. Status Output	$f = 50\text{Hz}$ or Unsynchronized			1.5	V
		$f = 60\text{Hz}$	10.5			
T_j	Junction Temperature for Thermal Shut-down			145		$^{\circ}\text{C}$

Figure 1 : AC Test Circuit.

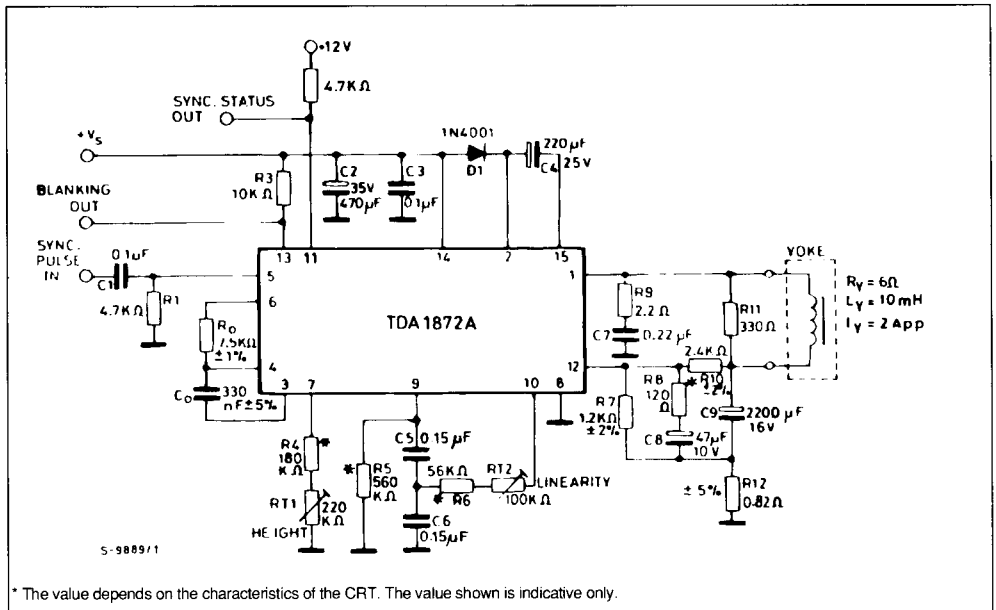


Figure 2 : DC Test Circuits.

Figure 2a.

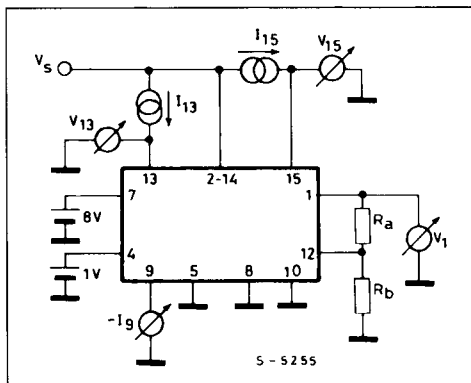


Figure 2b.

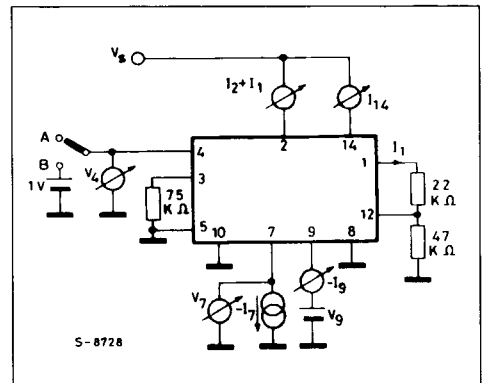


Figure 2 : DC Test Circuits (continued).

Figure 2c.

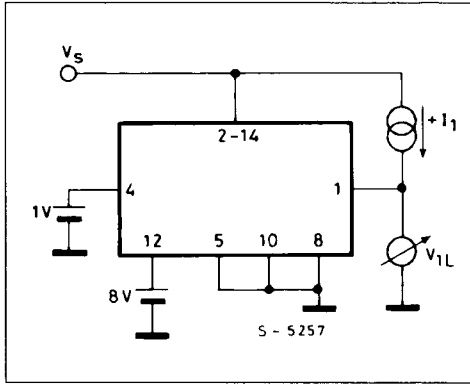


Figure 2d.

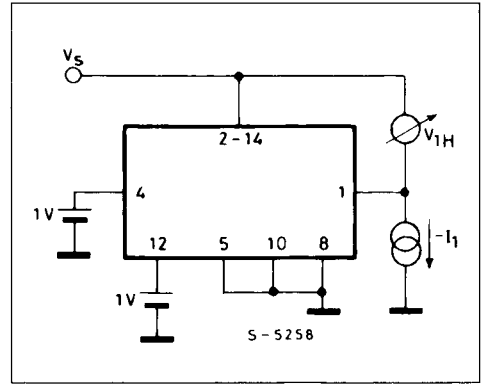
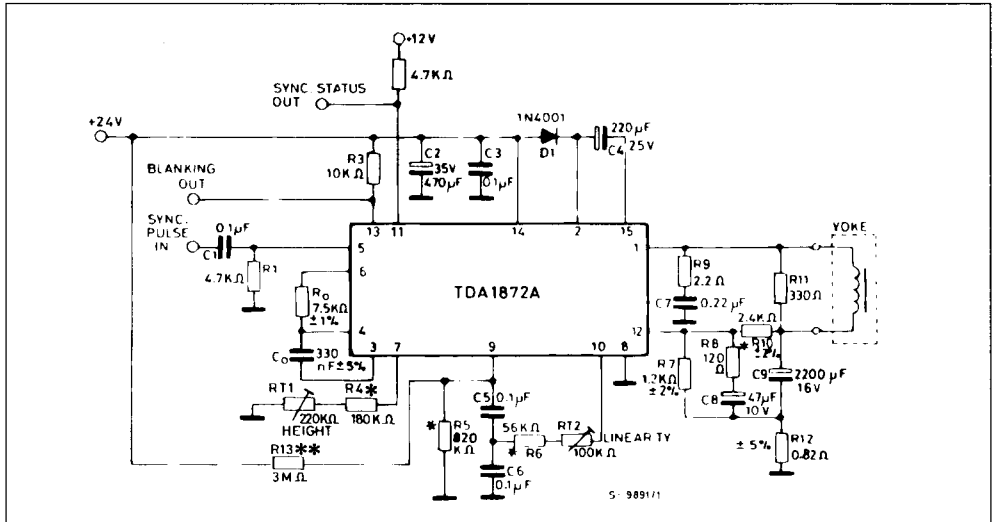
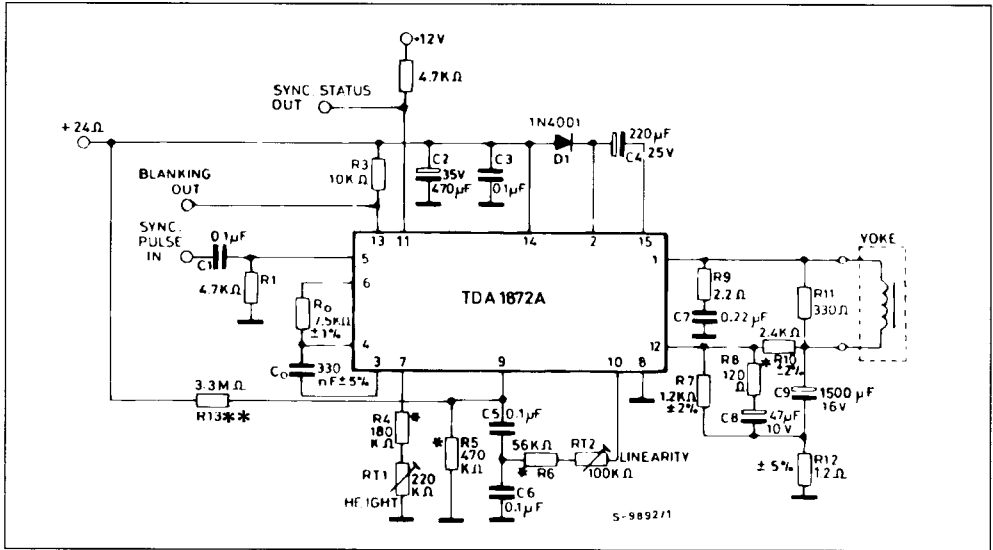


Figure 3 : Application Circuit Using Internal Ramp Generator (50 ÷ 60Hz ramp compensation) for 110° TVC set ($R_T = 5.9\Omega$; $L_y = 10mH$; $I_y = 1.95A_{app}$).



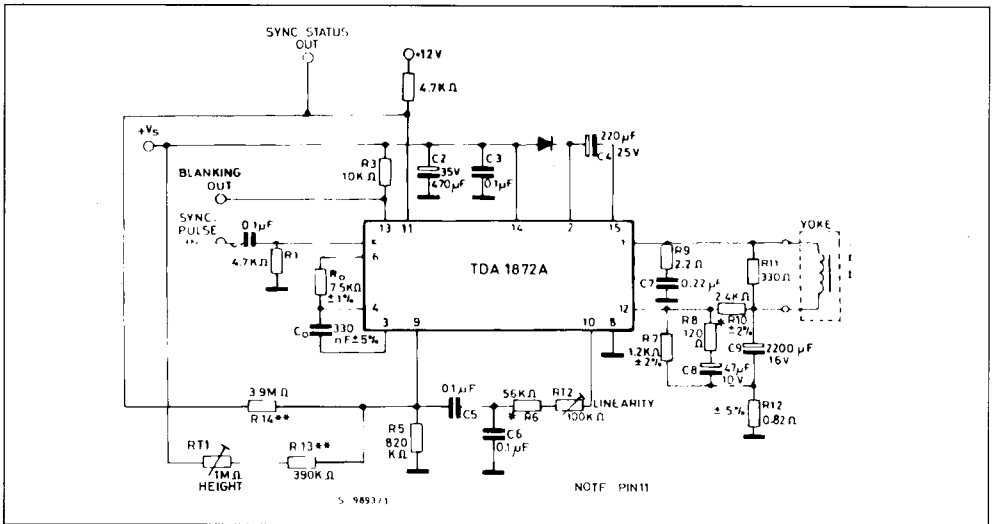
Note : Pin 11 must not be left floating.
 * The value depends on the characteristics of the CRT. The value shown is indicative only.
 ** The value depends on the characteristics of the CRT and on the supply voltage.

Figure 4 : Application circuit (50 ÷ 60Hz ramp Compensation) for 110° RVC set (R_T = 9.6Ω ; L_y = 24.6mH ; I_y = 1.2App).



Note : Pin 11 must not be left floating.
 * The value depends on the characteristics of the CRT. The value shown is indicative only.
 ** The value depends on the characteristics of the CRT and on the supply voltage.

Figure 5 : Application Circuit Using External Ramp Generator (50 ÷ 60Hz ramp and pumping compensation).



Note : Pin 11 must not be left floating.
 * The value depends on the characteristics of the CRT. The value shown is indicative only.
 ** The value depends on the characteristics of the CRT and on the supply voltage.