

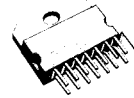
**VERTICAL DEFLECTION CIRCUIT**

- 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.

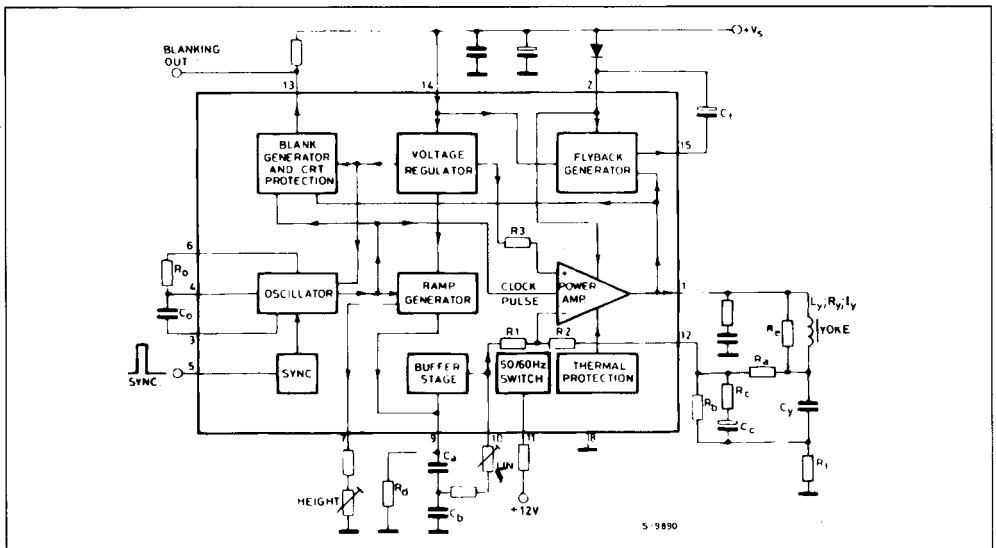
It offers a wide range of applications also in portable CTVs, BW TVs, monitors and displays.



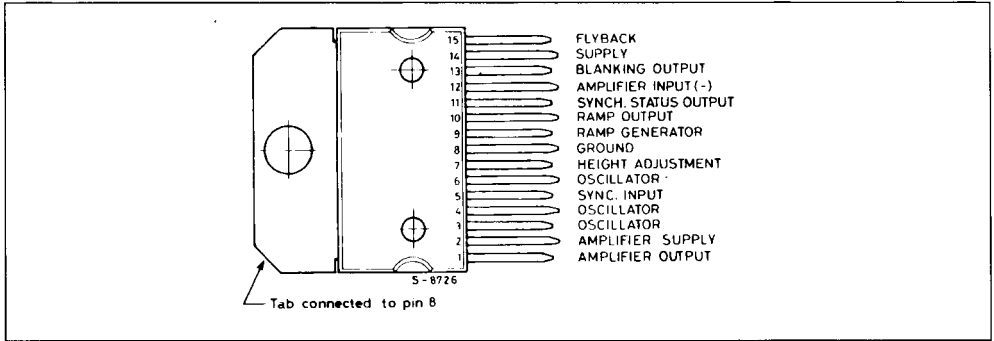
**MULTIWATT**  
(15-lead)

**ORDER CODE : TDA1872A**

**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 $t = 20ms$ )	3	A
$I_o$	Output Peak Current at $f = 50Hz$ $t > 10\mu s$	2	A
$I_o$	Output Peak Current at $f = 50Hz$ $t_{fly} \leq 1.5ms$	3.5	A
$I_{15}$	Pin 15 Peak to Peak Flyback Current at $f = 50Hz$ $t_{fly} < 1.5ms$	3	A
$I_{15}$	Pin 15 DC Current at $V_1 < V_{14}$	100	mA
$P_{tot}$	Maximum Power Dissipation at $T_{case} \leq 60^\circ C$	30	W
$T_{stg}$	Storage Temperature	- 40 to 150	$^\circ C$
$T_j$	Junction Temperature	0 to 150	$^\circ C$

**THERMAL DATA**

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

**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	$\mu A$	2b
$-I_9$	Ramp Generator Current	$V_9 = 0$ to 15V $-I_7 = 20\mu A$	18.5	20	21.5	$\mu A$	2b
$\Delta I_9$	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			$\mu\text{A}$
- $I_7$	Current at Pin 7	$I_y = 2A_{pp}$	36.3	38	39.7	$\mu\text{A}$
$V_1$	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
$\Delta f$	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.

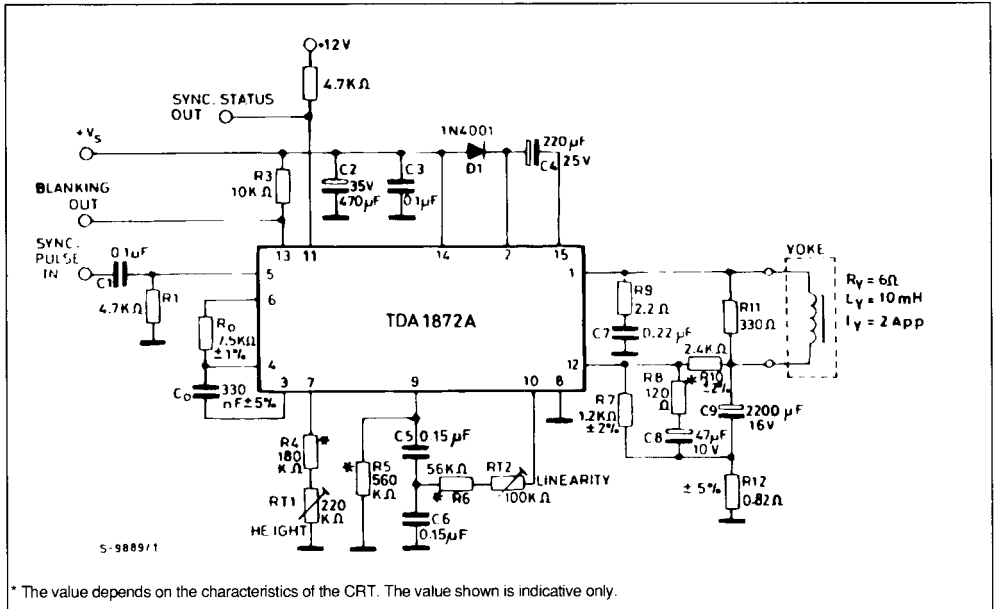


Figure 2 : DC Test Circuits.

Figure 2a.

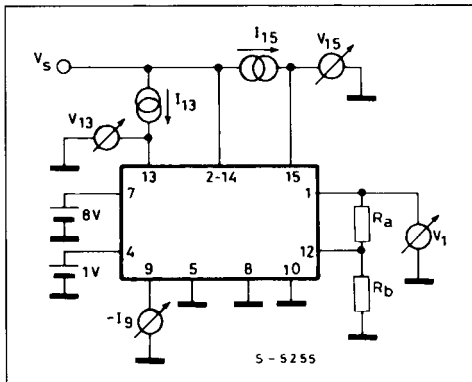


Figure 2b.

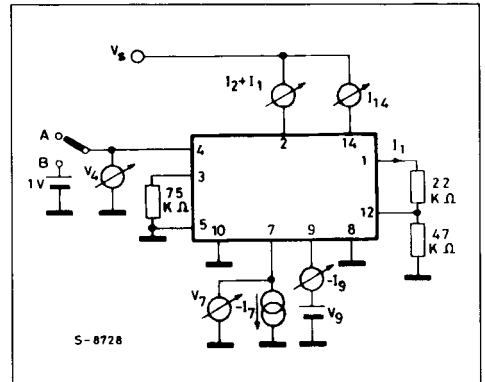


Figure 2 : DC Test Circuits (continued).

Figure 2c.

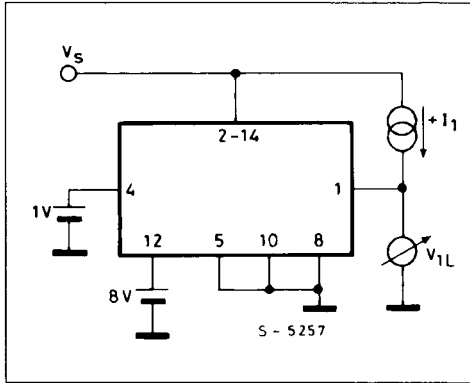


Figure 2d.

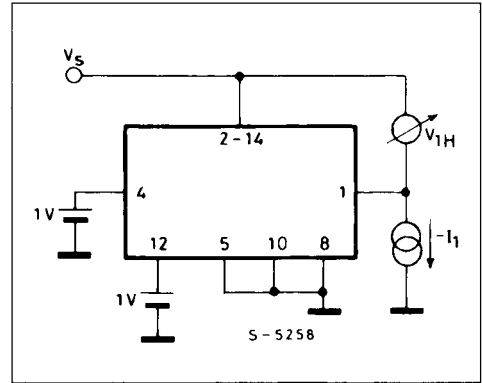
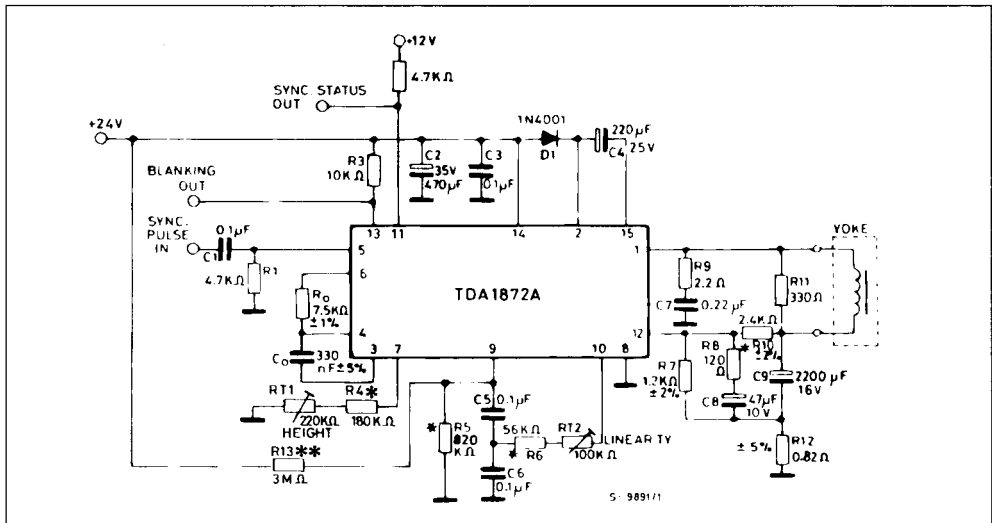
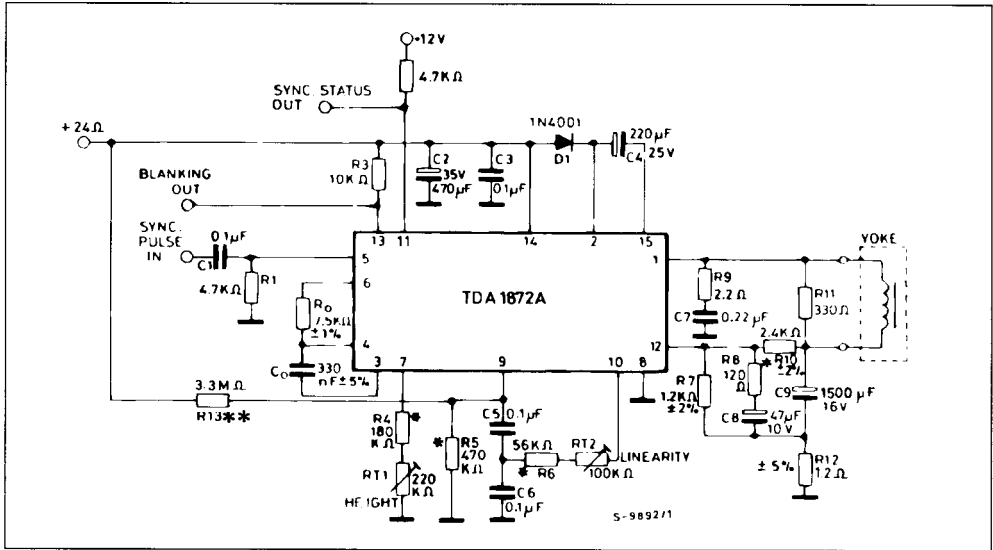


Figure 3 : Application Circuit Using Internal Ramp Generator (50 ÷ 60Hz ramp compensation) for 110° TVC set ( $R_T = 5.9\Omega$  ;  $L_y = 10mH$  ;  $I_y = 1.95A_{pp}$ ).



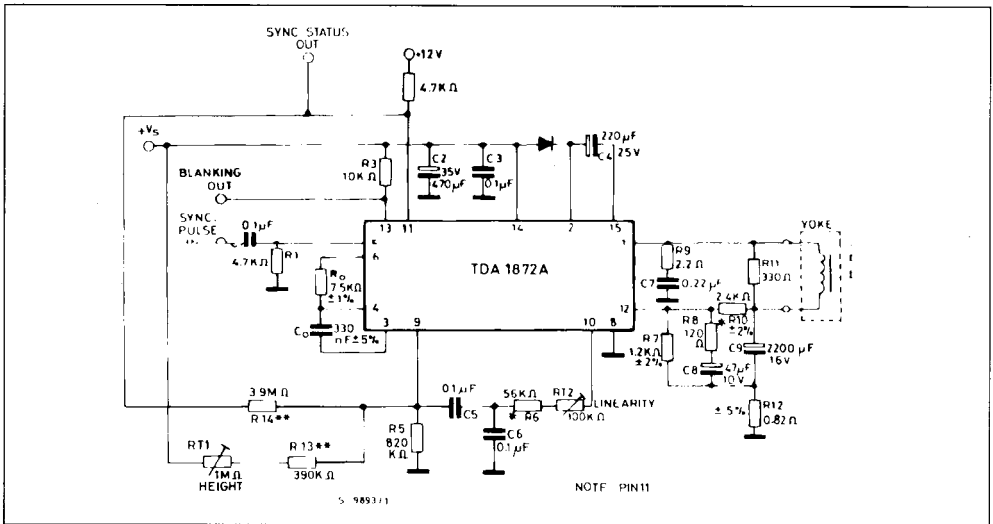
Note : Pin 11 must not be left floating.  
 \* The value depends on the characteristics of the CRT. The value shown is indicative only.  
 \*\* The value depends on the characteristics of the CRT and on the supply voltage.

**Figure 4 :** Application circuit (50 ÷ 60Hz ramp Compensation) for 110° RVC set (R<sub>T</sub> = 9.6Ω ; L<sub>y</sub> = 24.6mH ; I<sub>y</sub> = 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.