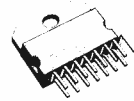# SGS-THOMSON
MICROELECTRONICS

TDA1872A

VERTICAL DEFLECTION CIRCUIT

- SYNCHRONIZATION CIRCUIT
- PRECISION OSCILLATOR AND RAMP GENE-RATOR
- 50/60Hz SYNCHRONIZATION IDENTIFICA-TION CIRCUIT WITH AUTOMATIC AMPLI-TUDE 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

MULTIWATT
(15-lead)

ORDER CODE : TDA1872A

DESCRIPTION

The TDA1872A is a monolithic integrated circuit in 15 lead MULTIWATT package. It is a full perfor-mance and very efficient vertical deflection circuit in-tended for direct drive of the yoke of 110 degree color TV picture tubes.
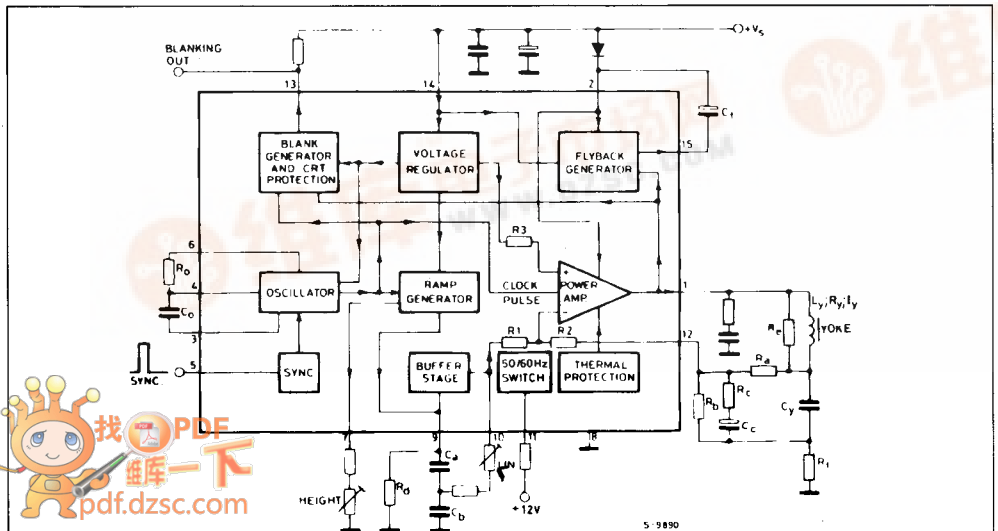
It offers a wide range of applications also in porta-ble CTVs, BW TVs, monitors and displays.

BLOCK DIAGRAM

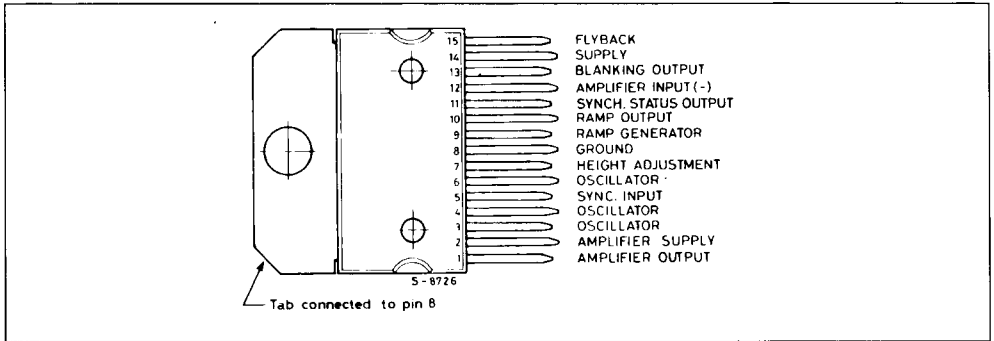5 - 9890

PIN CONNECTION (top view)


```
                    15  FLYBACK
                    14  SUPPLY
                    13  BLANKING OUTPUT
                    12  AMPLIFIER INPUT (-)
                    11  SYNCH. STATUS OUTPUT
                    10  RAMP OUTPUT
                     9  RAMP GENERATOR
                     8  GROUND
                     7  HEIGHT ADJUSTMENT
                     6  OSCILLATOR
                     5  SYNC. INPUT
                     4  OSCILLATOR
                     3  OSCILLATOR
                     2  AMPLIFIER SUPPLY
                     1  AMPLIFIER OUTPUT

        S - 8726
    Tab connected to pin 8
```

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 > 10µs	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°C	30	W
T_{stg}	Storage Temperature	- 40 to 150	°C
T_j	Junction Temperature	0 to 150	°C

THERMAL DATA

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

ELECTRICAL CHARACTERISTICS (V_s = 35V, T_{amb} = 25°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
$\left\| \dfrac{\Delta I_9}{I_9} \right\|$	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
$\dfrac{\Delta V_7}{\Delta V_s}$	Regulated Voltage Drift with Supply Voltage	$\Delta V_s = 15$ to 35V		1	2	$\dfrac{mV}{V}$	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

TDA1872A

ELECTRICAL CHARACTERISTICS (Refer to the AC test circuits of fig.1, $T_{amb} = 25°C$, $V_s = 24V$, $f = 50Hz$, 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
		$I_5 = 100µA$			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	$f_o = 50Hz$	$T_j = 75°C$	1.25	1.4	1.47	ms
		$f_o = 60Hz$	$T_j = 75°C$		1.17		
f_o	Free Running Frequency	$R_o = 7.5K\Omega$ $C_o = 330nF$	$T_j = 75°C$	41.5	44	46	Hz
		$R_o = 6.2K\Omega$ $C_o = 330nF$	$T_j = 75°C$		52.5		Hz
Δf	Synchronization Range	$I_5 = 100µA$	$T_j = 75°C$	19	20		Hz
V_{11}	Sync. Status Output	$f = 50Hz$ or Unsynchronized				1.5	V
		$f = 60Hz$		10.5			
T_j	Junction Temperature for Thermal Shut-down				145		°C

Figure 1 : AC Test Circuit.

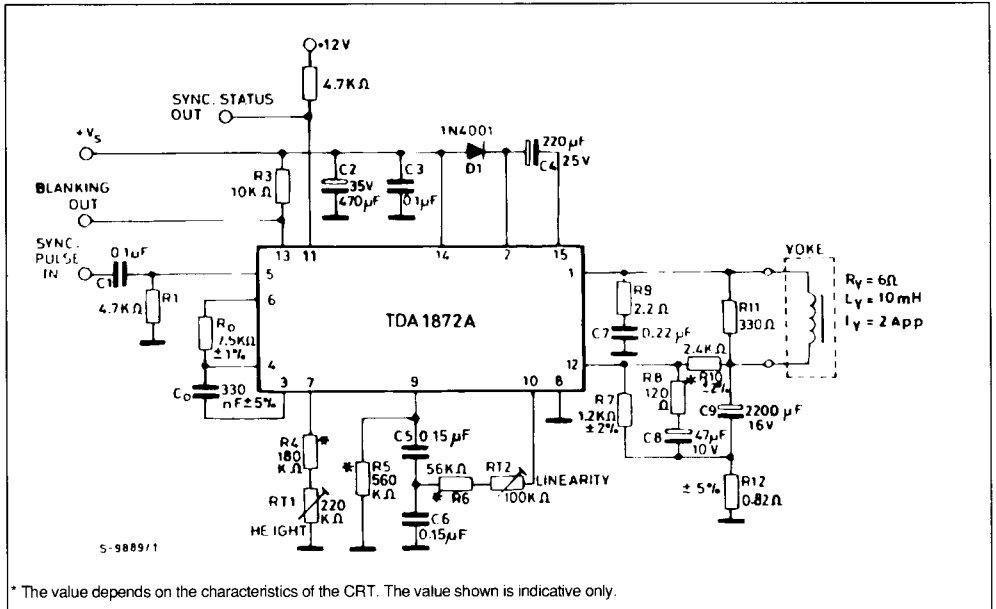* The value depends on the characteristics of the CRT. The value shown is indicative only.

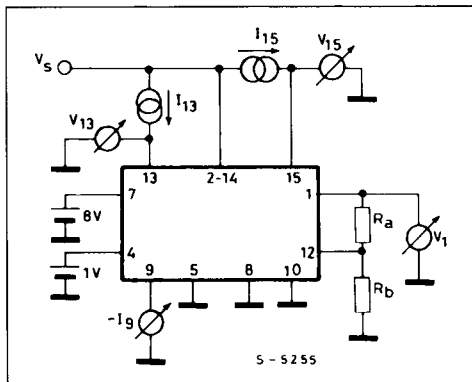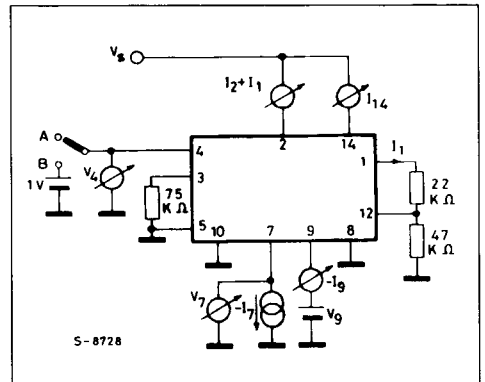**Figure 2 : DC Test Circuits.**

Figure 2a.

Figure 2b.

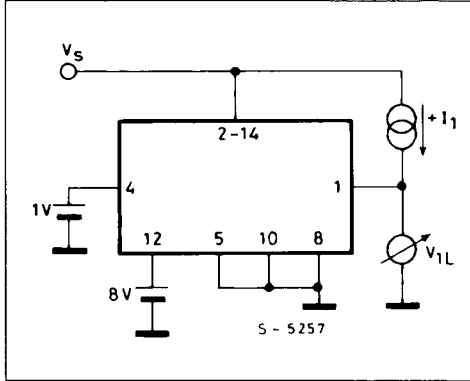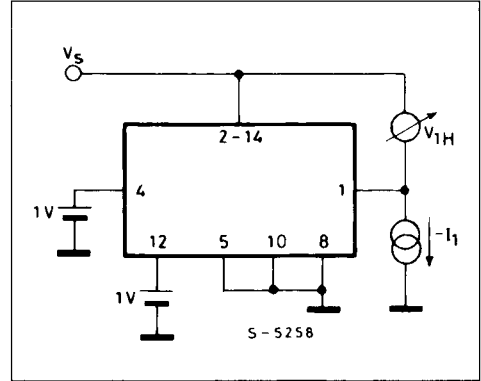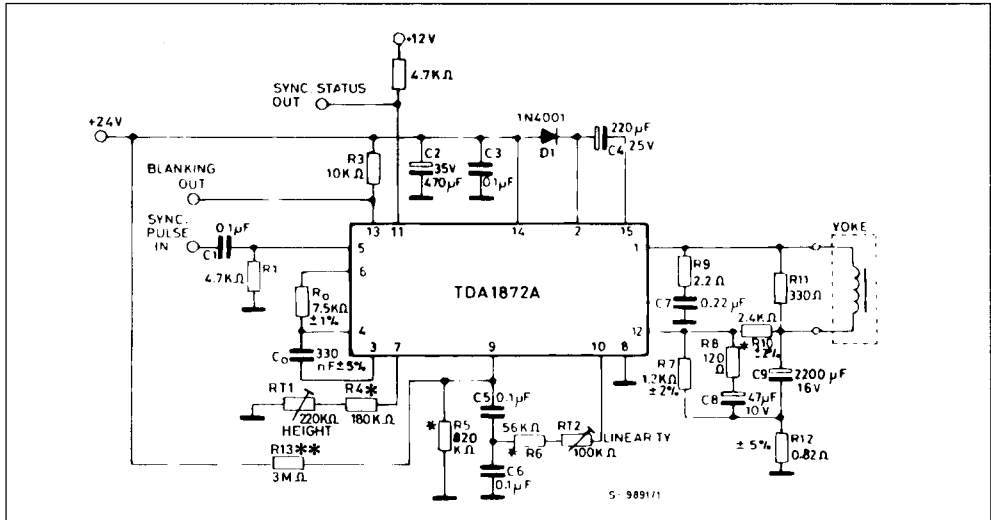**Figure 2** : DC Test Circuits (continued).

Figure 2c.

Figure 2d.

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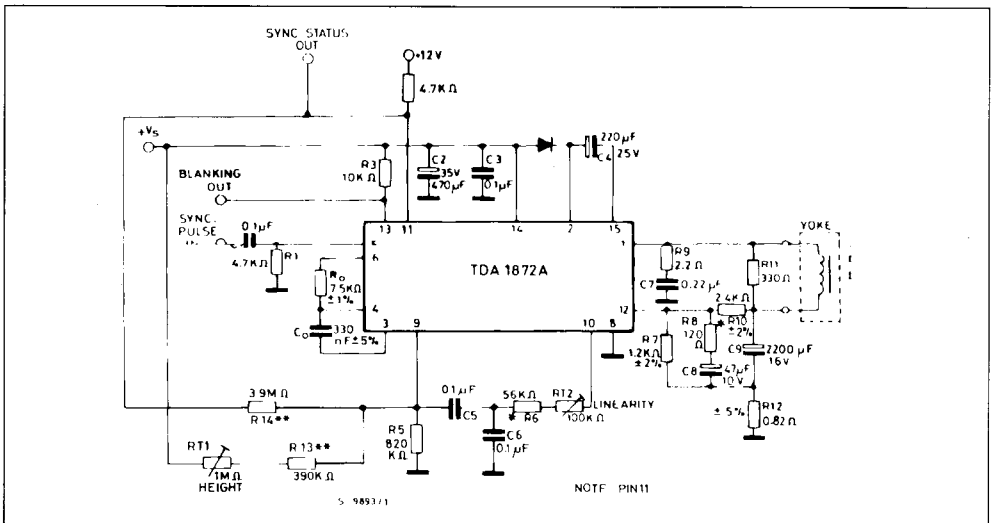

Note : Pin 11 must not be left floating.
* The value depends on the characteristics of the CRT. The value shown is indicative only.
** The value depends on the characteristics of the CRT and on the supply voltage.

Figure 4 : Applicaiton circuit (50 ÷ 60Hz ramp Compasation) for 110° RVC set (R_T = 9.6Ω ; L_y = 24.6mH ; I_y = 1.2A$_{PP}$).
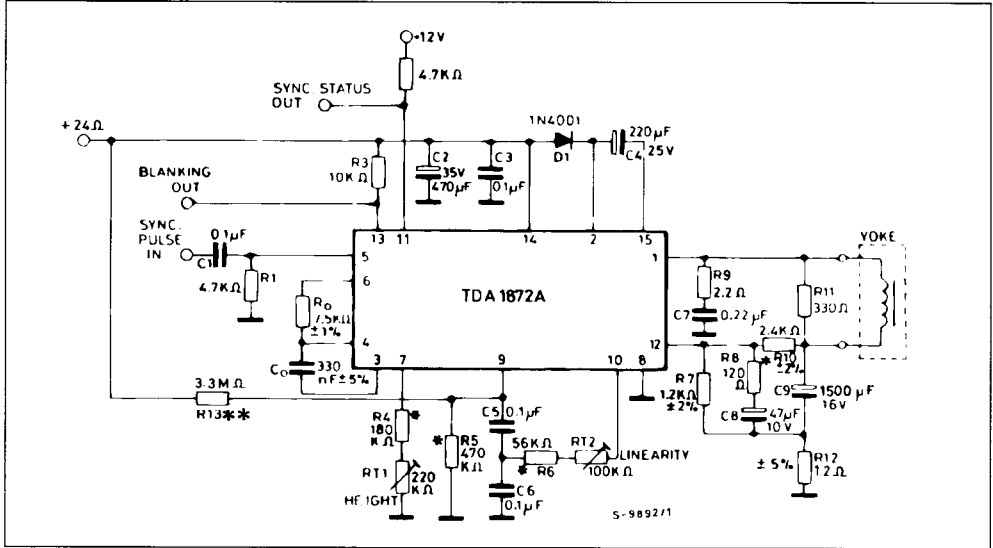
Note : Pin 11 must not be left floating.
* The value depends on the characteristics of the CRT. The value shown is indicative only.
** The value depends on the characteristics of the CRT and on the supply voltage.

Figure 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.