



# TDA9302H

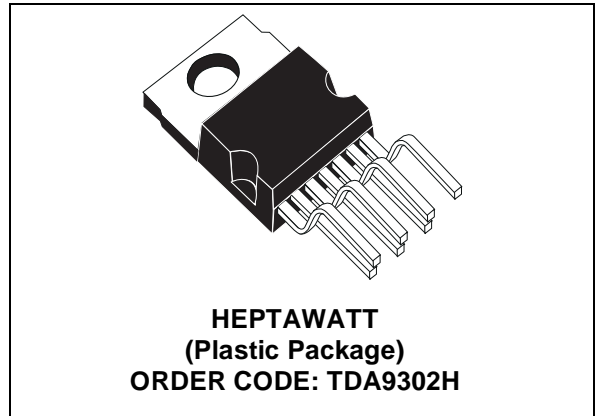
## TV VERTICAL DEFLECTION OUTPUT CIRCUIT

### FEATURES

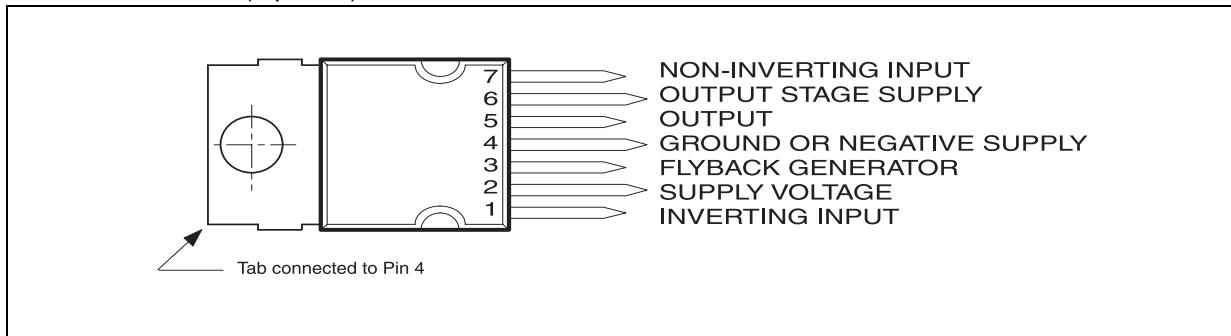
- Power Amplifier
- Flyback Generator
- Thermal Protection

### DESCRIPTION

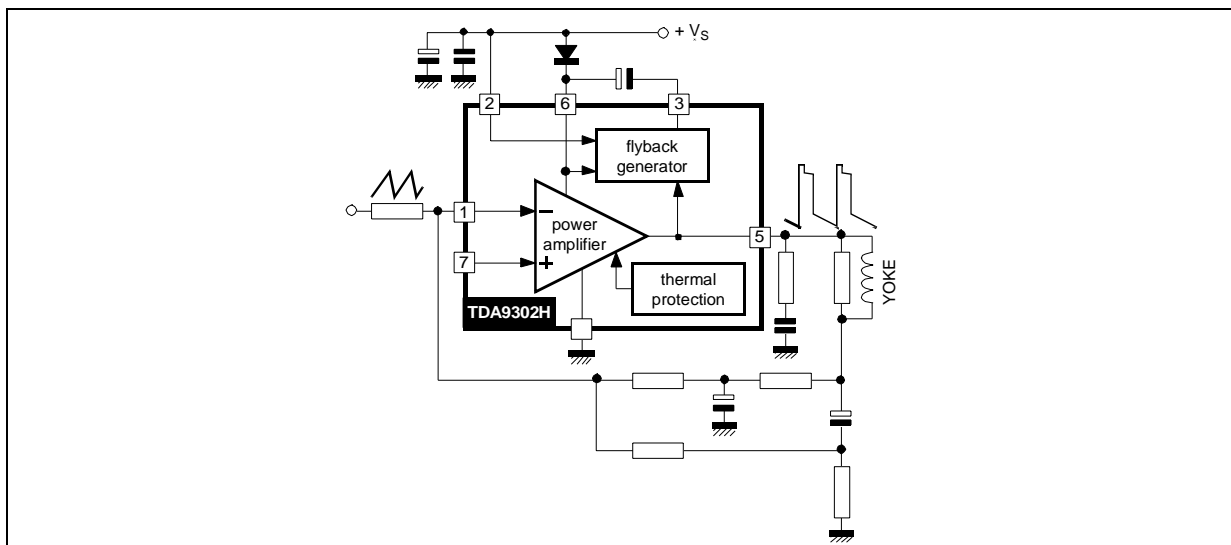
The TDA9302H is a monolithic integrated circuit in Heptawatt™ package. It is a high efficiency power booster for direct driving of vertical windings of TV yokes. It is intended for use in color and black & white television as well as in monitors and displays.



### PIN CONNECTION (top view)



### BLOCK DIAGRAM



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## 1 ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_S$	Supply Voltage (pin 2)	35	V
$V_5, V_6$	Flyback Peak Voltage	60	V
$V_3$	Voltage at Pin 3 (see Note 1)	$V_S + 3$	V
$V_1, V_7$	Amplifier Input Voltage	$V_S - 0.5$	V
$I_0$	Output Peak Current (non repetitive, $t = 2\text{ms}$ )	1.8	A
$I_0$	Output Peak Current at $f = 50$ to $200$ Hz, $t \leq 10\mu\text{s}$	$\pm 4$	A
$I_0$	Output Peak Current at $f = 50$ to $200$ Hz, $t > 10\mu\text{s}$	1.5	A
$I_3$	Pin 3 DC Current at $V_5 < V_2$	100	mA
$I_3$	Pin 3 Flyback Current at $f = 50$ to $200$ Hz, $t_{fly} \leq 1.5\text{ms}$	$\pm 1.5$	A
$I_3$	Pin 3 Sink Current at $f = 50$ to $200$ Hz, $t \leq 10\mu\text{s}$	4	A
$P_{tot}$	Total Power Dissipation at $T_{case} = 90^\circ\text{C}$	20	W
$T_{stg}, T_j$	Storage and Junction Temperature	-40, +150	$^\circ\text{C}$

**Note 1:** This occurs during the first part of flyback pulse

## 2 THERMAL DATA

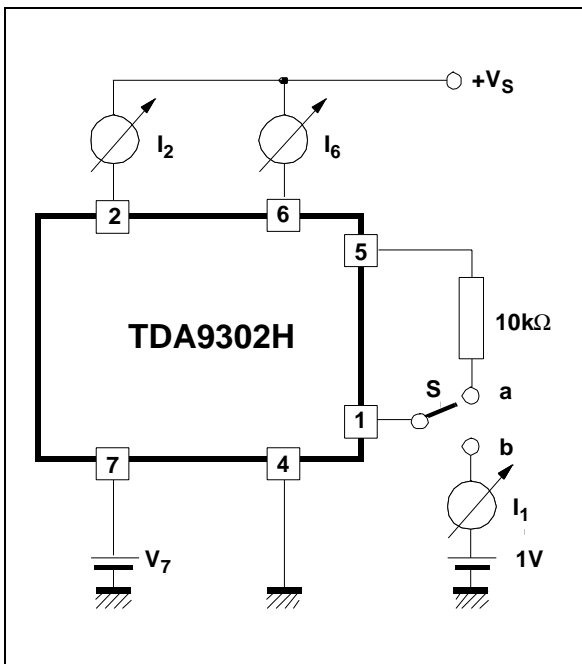
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Thermal Resistance Junction-case	3	$^\circ\text{C/W}$

## 3 ELECTRICAL CHARACTERISTICS

(refer to the test circuits,  $V_S = 35\text{V}$ ,  $T_{amb} = 25^\circ\text{C}$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	Fig.
$I_2$	Pin 2 Quiescent Current	$I_3 = 0, I_5 = 0$		8	16	mA	1
$I_6$	Pin 6 Quiescent Current	$I_3 = 0, I_5 = 0$		16	36	mA	1
$I_1$	Amplifier Input Bias Current	$V_1 = 1\text{ V}, V_7 = 2\text{ V}$		-0.1	-1	$\mu\text{A}$	1
		$V_1 = 2\text{ V}, V_7 = 1\text{ V}$		-0.1	-1	$\mu\text{A}$	1
$V_{3L}$	Pin 3 Saturation Voltage to GND	$I_3 = 20\text{ mA}$		1	1.5	V	3
$V_5$	Quiescent Output Voltage	$V_S = 35\text{V}, R_a = 39\text{ k}\Omega$		18		V	4
$V_{5L}$	Output Saturation Voltage to GND	$I_5 = 1\text{ A}$		0.9	1.3	V	3
		$I_5 = 0.7\text{ A}$		0.7	1	V	3
$V_{5H}$	Output Saturation Voltage to Supply	$-I_5 = 1\text{ A}$		1.5	2	V	2
		$-I_5 = 0.7\text{ A}$		1.3	1.8	V	2
$T_j$	Junction Temperature for Thermal Shutdown			140		$^\circ\text{C}$	

Figure 1. Measurement of  $I_1, I_2, I_6$



S1: (a)  $I_2$  and  $I_6$ ; (b)  $I_1$

Figure 2. Measurement of  $V_{5H}$

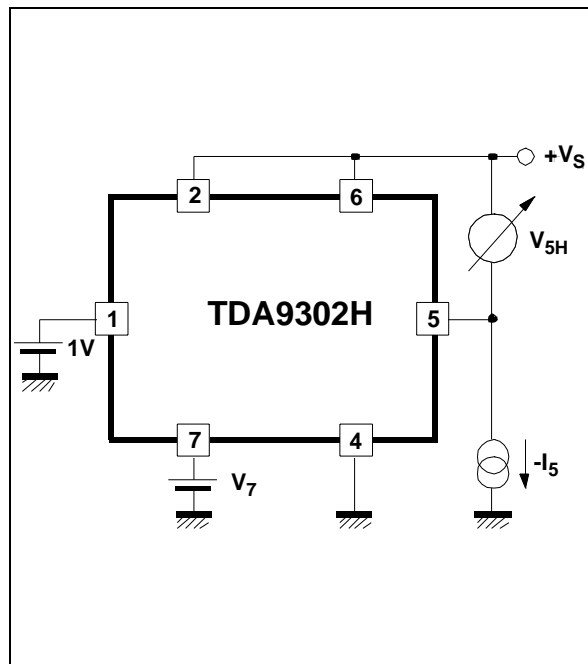
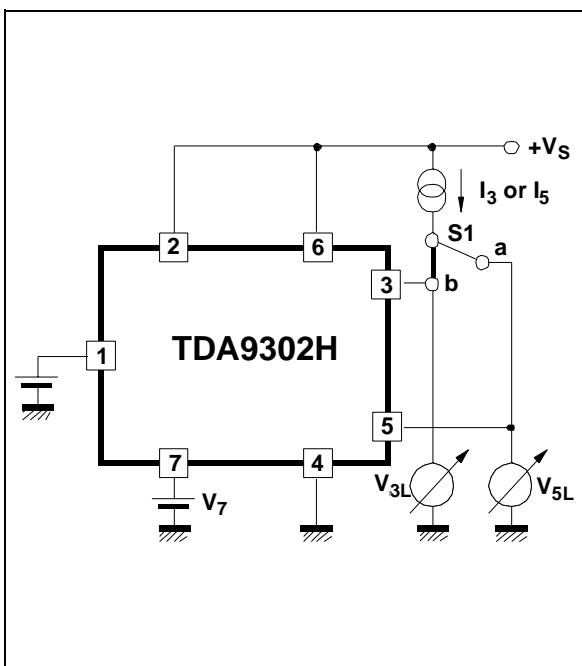


Figure 3. Measurement of  $V_{3L}, V_{5L}$



S: (a)  $V_{3L}$ ; (b)  $V_{5L}$

Figure 4. Measurement of  $V_5$

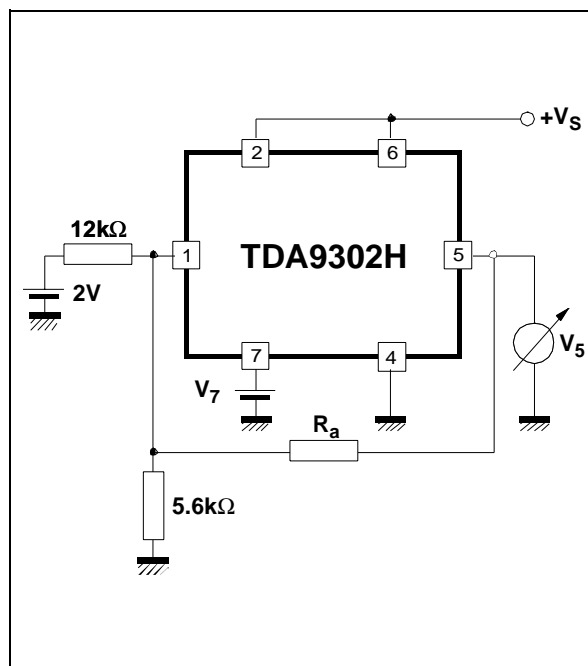
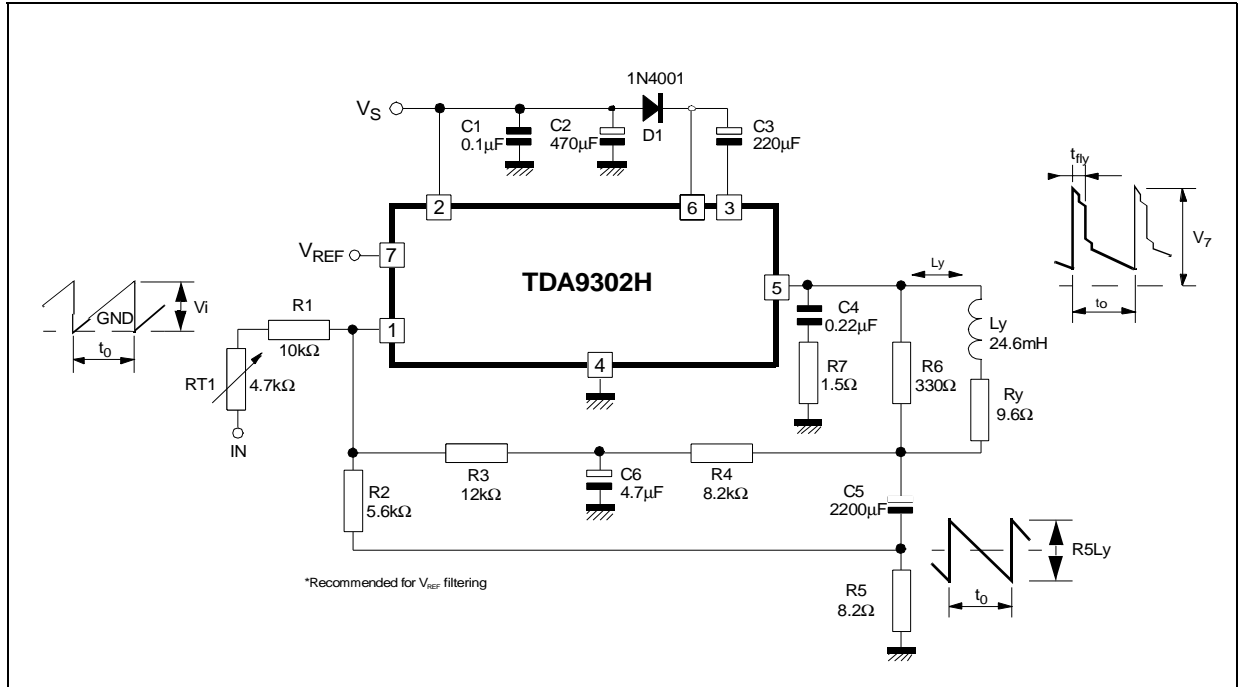


Figure 5. AC test circuit

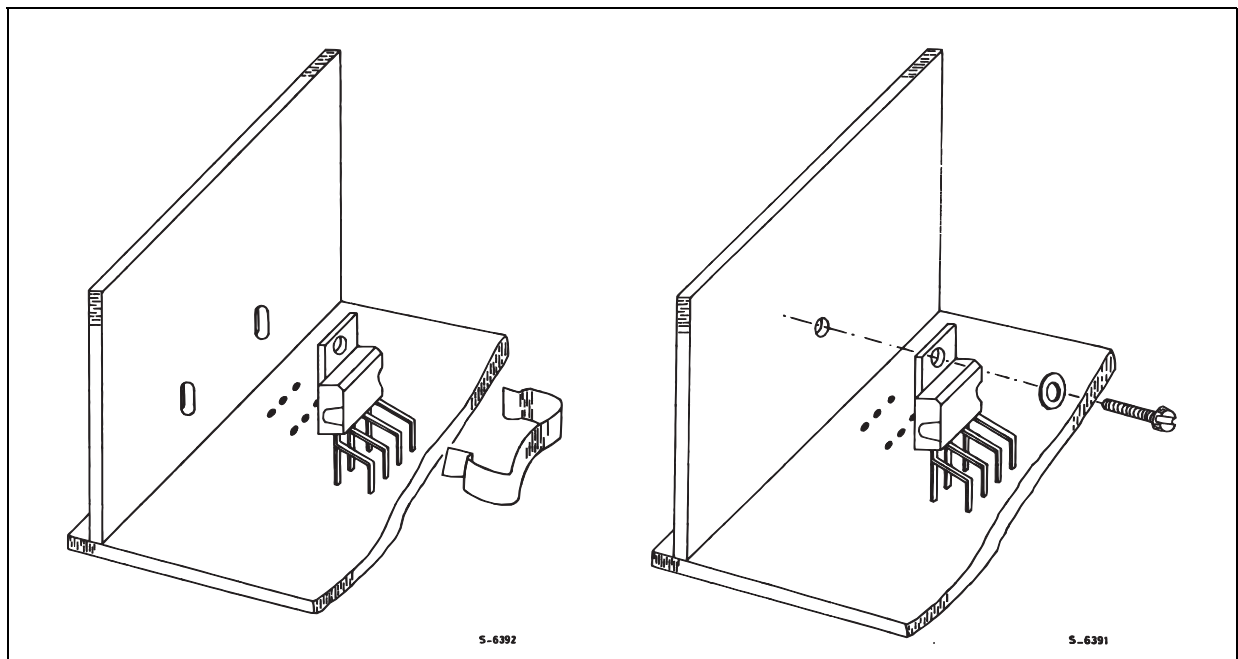


## 4 MOUNTING INSTRUCTIONS

The power dissipated in the circuit is removed by adding an external heatsink. With the HEPTAWATT™ package, the heatsink is simply attached with a screw or a compression spring (clip).

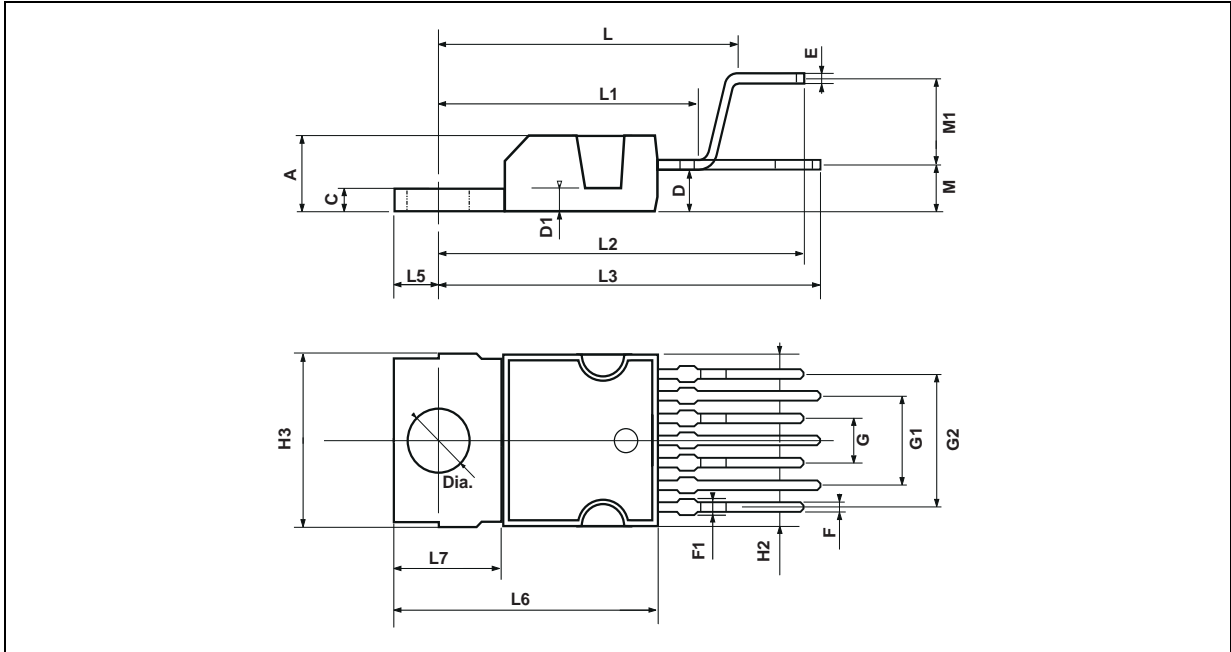
A layer of silicon grease inserted between heatsink and package optimizes thermal contact ; no electrical isolation is needed between the two surfaces since the tab is connected to Pin 4 which is ground.

Figure 6. Mounting examples



## 5 PACKAGE MECHANICAL DATA

9 PINS - plastic heptawatt



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			4.8			0.189
C			1.37			0.054
D	2.4		2.8	0.094		0.110
D1	1.2		1.35	0.047		0.053
E	0.35		0.55	0.014		0.022
F	0.6		0.8	0.024		0.031
F1			0.9			0.035
G	2.41	2.54	2.67	0.095	0.100	0.105
G1	4.91	5.08	5.21	0.193	0.200	0.205
G2	7.49	7.62	7.8	0.295	0.300	0.307
H2			10.4			0.409
H3	10.05		10.4	0.396		0.409
L		16.97			0.668	
L1		14.92			0.587	
L2		21.54			0.848	
L3		22.62			0.891	
L5	2.6		3	0.102		0.118
L6	15.1		15.8	0.594		0.622
L7	6		6.6	0.236		0.260
M		2.8			0.110	
M1		5.08			0.200	
Dia.	3.65		3.85	0.144		0.152

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