

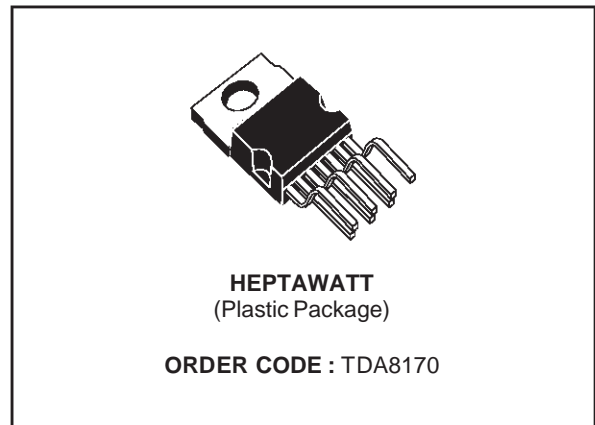
TV VERTICAL DEFLECTION OUTPUT CIRCUIT

The functions incorporated are :

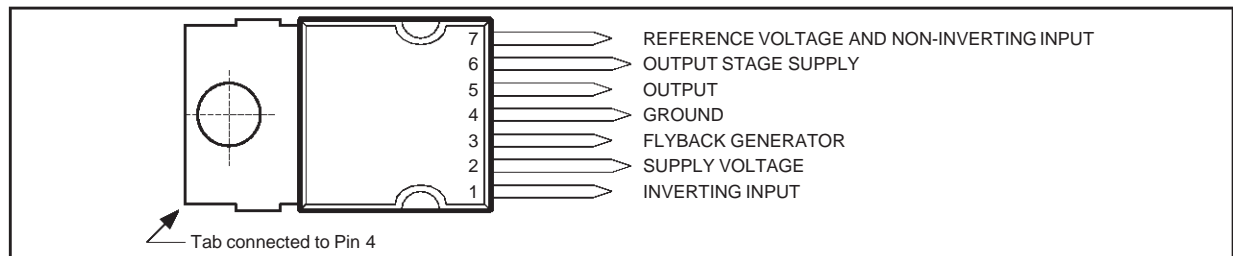
- POWER AMPLIFIER
- FLYBACK GENERATOR
- REFERENCE VOLTAGE
- THERMAL PROTECTION

DESCRIPTION

The TDA8170 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 Colour and B & W television receivers as well as in monitors and displays.

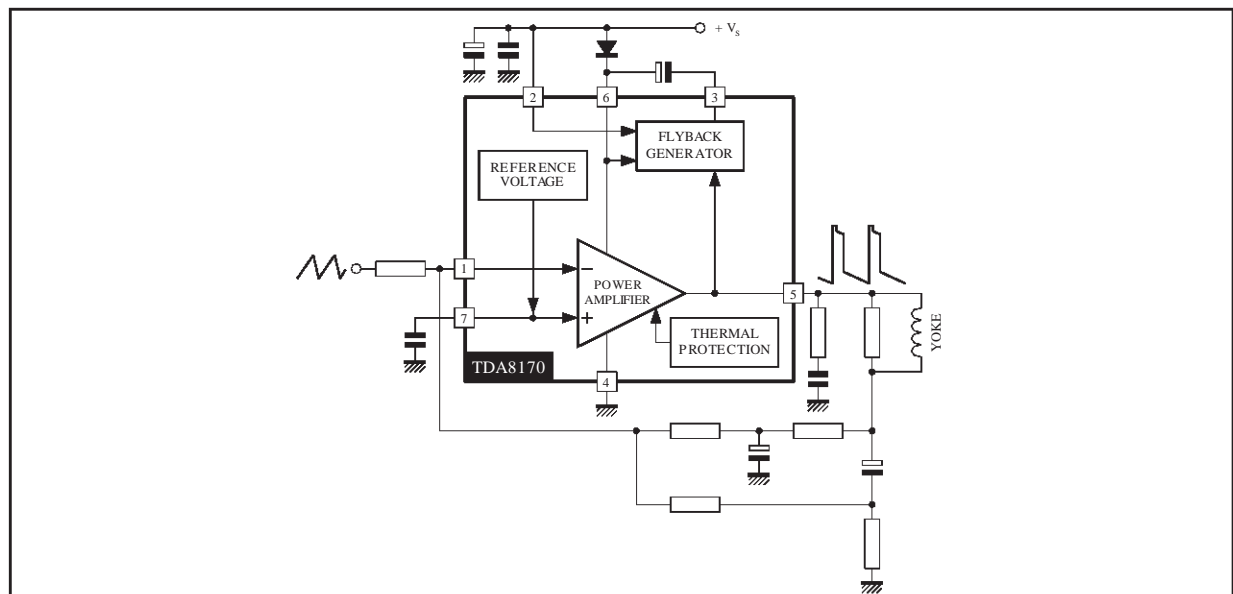


PIN CONNECTIONS



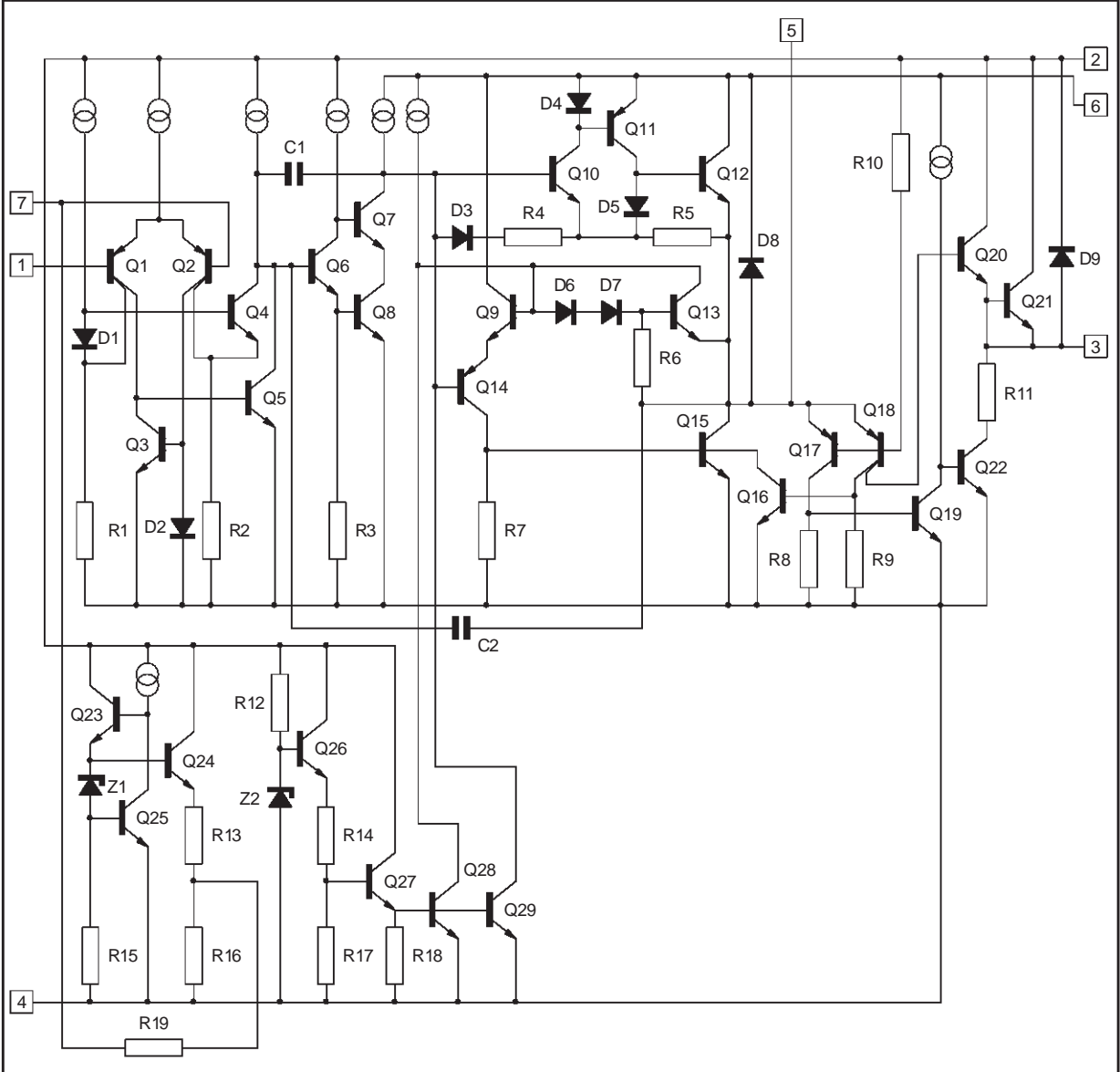
8170-01.EPS

BLOCK DIAGRAM



8170-02.EPS

SCHEMATIC DIAGRAM



8170-03-EPS

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	+ V_S	
V_1, V_7	Amplifier Input Voltage	+ $V_S, -0.5$	V
I_o	Output Peak Current (non repetitive, $t = 2$ msec)	2.5	A
I_o	Output Peak Current at $f = 50$ or 60 Hz, $t \leq 10$ μ sec	3	A
I_o	Output Peak Current at $f = 50$ or 60 Hz, $t > 10$ μ sec	2	A
I_3	Pin 3 DC Current at $V_5 < V_2$	100	mA
I_3	Pin 3 Peak to Peak Flyback Current at $f = 50$ or 60 Hz, $t_{fly} \leq 1.5$ msec	3	A
P_{tot}	Total Power Dissipation at $T_{case} = 90$ °C	20	W
T_{stg}, T_j	Storage and Junction Temperature	- 40, +150	°C

8170-01.TBL

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ j-case}$	Thermal Resistance Junction-case	Max. 3	°C/W

8170-02.TBL

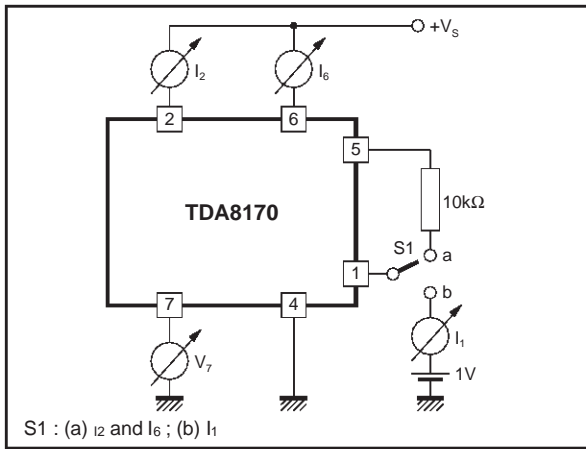
ELECTRICAL CHARACTERISTICS

(refer to the test circuits, $V_S = 35V$, $T_{amb} = 25^\circ C$ 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	1a
I_6	Pin 6 Quiescent Current	$I_3 = 0, I_5 = 0$		16	36	mA	1a
I_1	Amplifier Input Bias Current	$V_1 = 1$ V		- 0.1	- 1	μ A	1a
V_7	Reference Voltage			2.2		V	1a
$\frac{\Delta V_7}{\Delta V_S}$	Reference Voltage Drift versus Supply Voltage	$V_S = 15$ to 30 V		1	2	mV/V	1a
V_{3L}	Pin 3 Saturation Voltage to GND	$I_3 = 20$ mA		1		V	1c
V_5	Quiescent Output Voltage	$V_S = 35$ V, $R_a = 39$ k Ω		18		V	1d
		$V_S = 15$ V, $R_a = 13$ k Ω		7.5		V	1d
V_{5L}	Output Saturation Voltage to GND	$I_5 = 1.2$ A		1	1.4	V	1c
		$I_5 = 0.7$ A		0.7	1	V	1c
V_{5H}	Output Saturation Voltage to Supply	- $I_5 = 1.2$ A		1.6	2.2	V	1b
		- $I_5 = 0.7$ A		1.3	1.8	V	1b
T_j	Junction Temperature for Thermal Shut Down			140		°C	

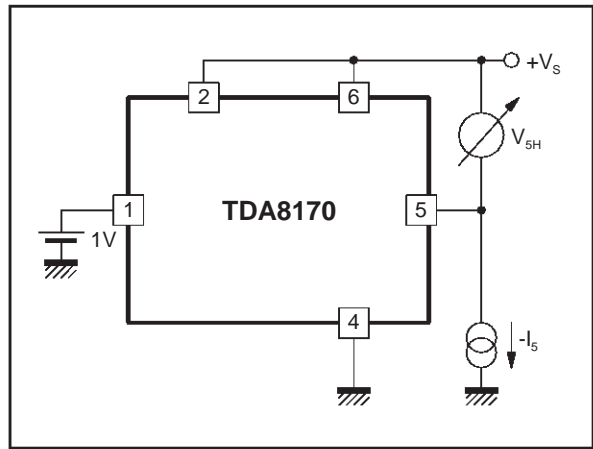
8170-03.TBL

Figure 1a : Measurement of I_1 , I_2 , I_6 , V_7 , $\Delta V_7/\Delta V_S$



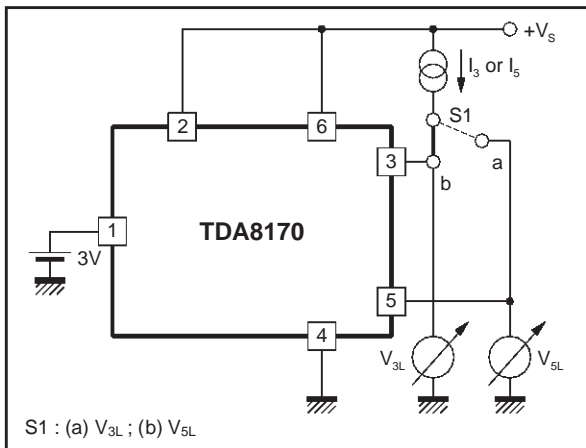
8170-04.EPS

Figure 1b : Measurement of V_{5H}



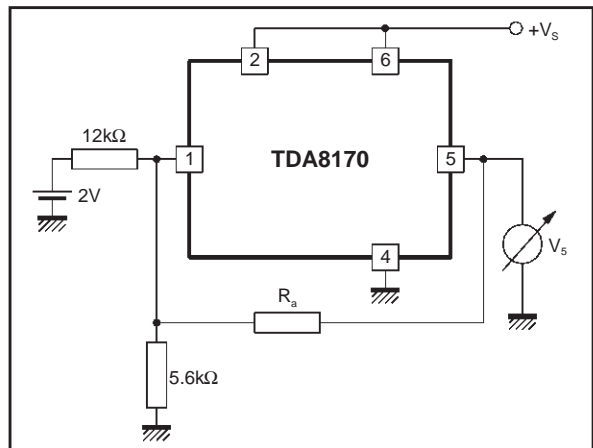
8170-05.EPS

Figure 1c : Measurement of V_{3L} , V_{5L}



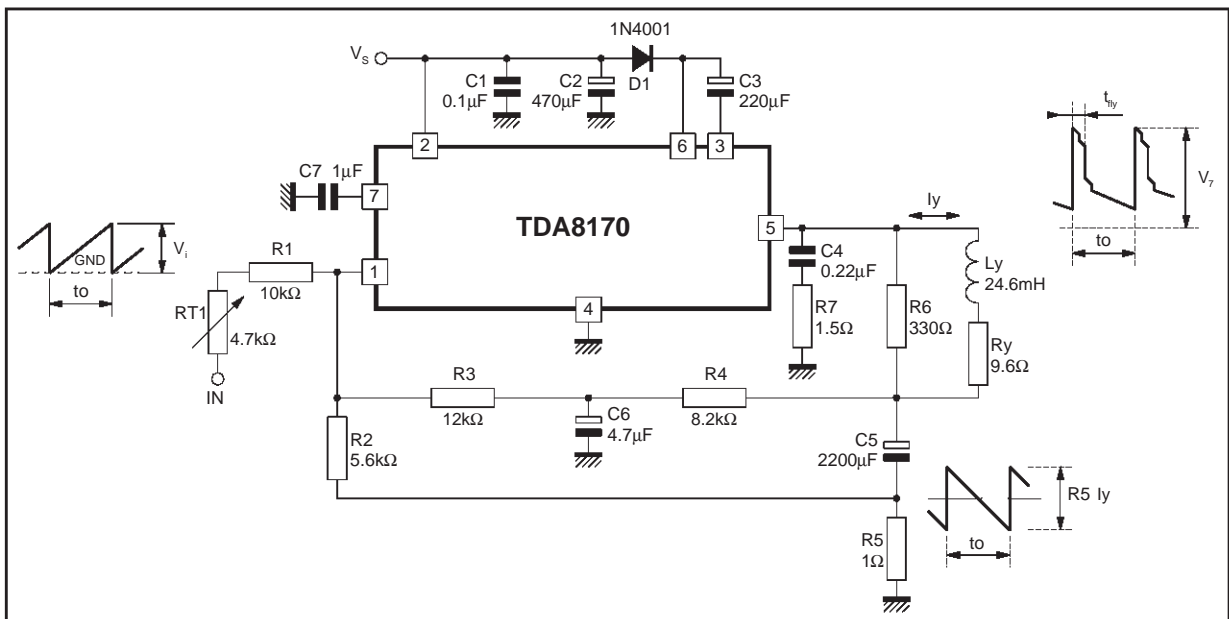
8170-06.EPS

Figure 1d : Measurement of V_5



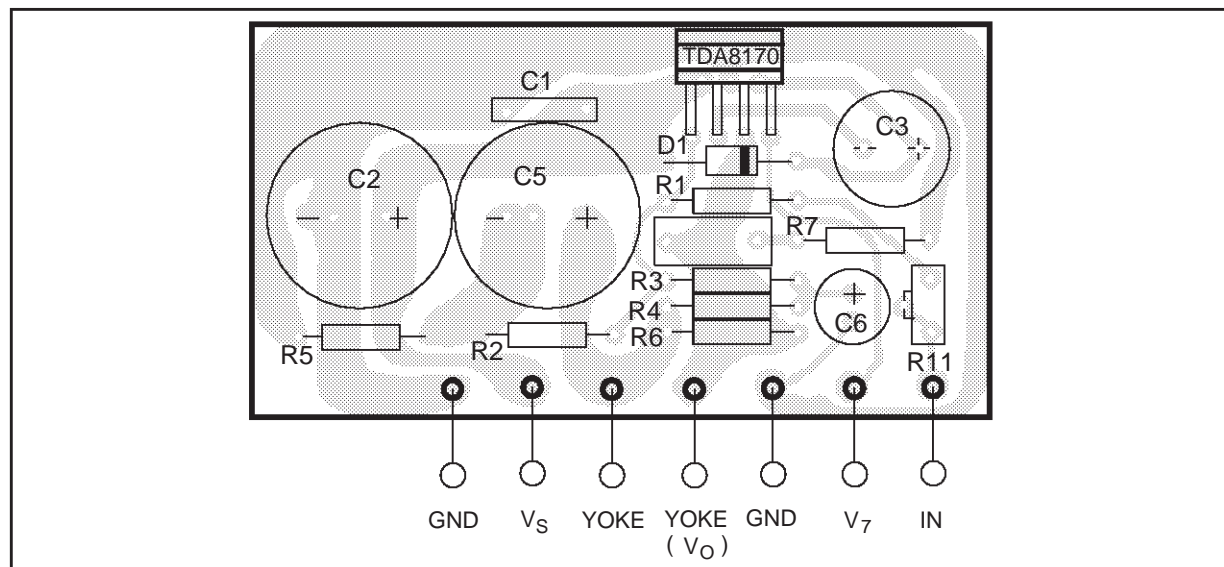
8170-07.EPS

Figure 2 : Application Schematic



8170-08.EPS

Figure 3 : PC Board and Component layout of the Circuit of fig. 2(1 : 1 scale)



8170-09/EPS

COMPONENTS LIST FOR TYPICAL APPLICATIONS

Component	110 ° TVC 5.9 Ω/10 mH 1.95 App	110 ° TVC 9.6 Ω/24.6 mH 1.2 App	90 ° TVC 15 Ω/30 mH 0.82 App	Unit
RT1	10	4.7	10	kΩ
R1	12	10	12	kΩ
R2	10	5.6	5.6	kΩ
R3	27	12	18	kΩ
R4	12	8.2	5.6	kΩ
R5	0.82	1	1	Ω
R6	270	330	330	Ω
R7	1.5	1.5	1.5	Ω
D1	1N 4001	1N 4001	1N 4001	–
C1	0.1	0.1	0.1	μF
C2 el.	1000/25 V	470/25 V	470/25 V	μF
C3 el.	220/25 V	220/25 V	220/25 V	μF
C4	0.22	0.22	0.22	μF
C5 el.	200/25 V	2200/25 V	1000/16 V	μF
C6 el.	4.7/16 V	4.7/16 V	10/16 V	μF
C7	1.0/16V	1.0/16V	1.0/16V	μF

8170-04_TBL

TYPICAL PERFORMANCES

Parameter	110 ° TVC 5.9 Ω/10 mH	110 ° TVC 9.6 Ω/27 mH	90 ° TVC 15 Ω/30 mH	Unit
V _s - Supply Voltage	24	22.5	25	V
I _s - Current	280	175	125	mA
t _{fly} - Flyback Time	0.6	1	0.7	ms
P _{tot} - Power Dissip.	4.2	2.5	2.05	W
R _{th o-a} - Heatsink	7	13	16	°C/W
T _{amb}	60	60	60	°C
T _{j max}	110	110	110	°C
T _o	20	20	20	ms
V _I	2.5	2.5	2.5	V _{pp}
V ₇	2.5	2.5	2.5	V _p

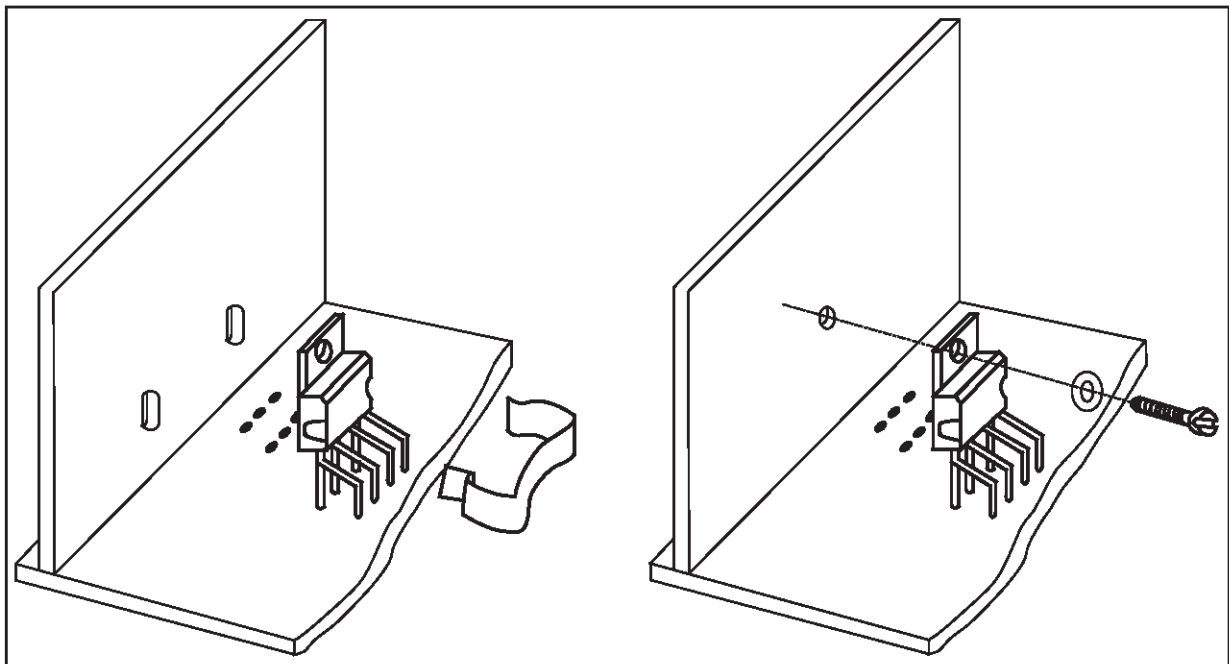
8170-05.TBL

MOUNTING INSTRUCTIONS

The power dissipated in the circuit must be removed by adding an external heatsink. Thanks to the HEPTAWATT™ package attaching the heatsink is very simple, a screw a compression

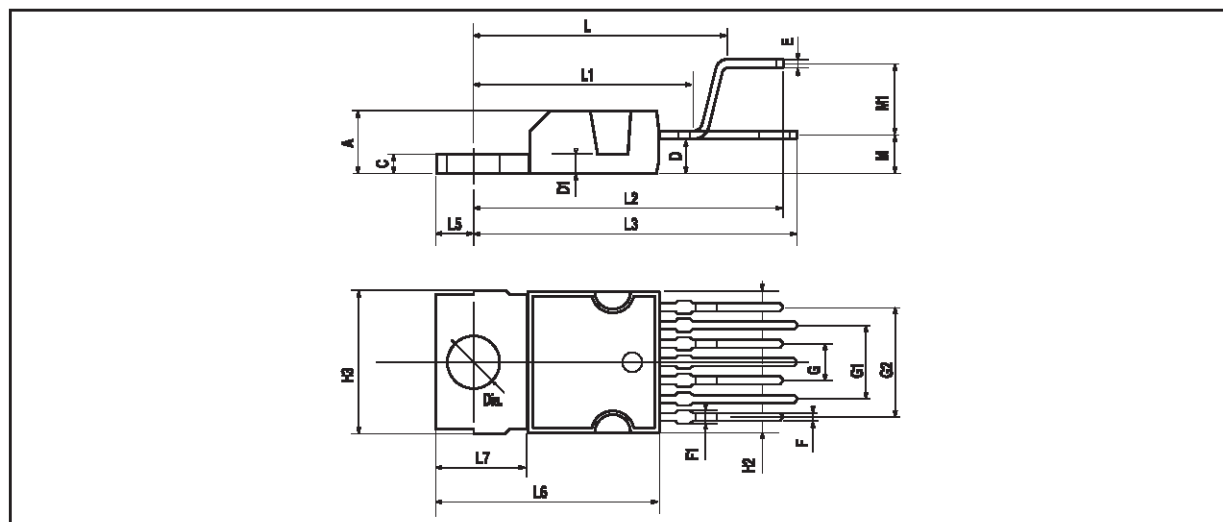
spring (clip) being sufficient. Between the heatsink and the package it is better to insert a layer of silicon grease, to optimize the thermal contact ; no electrical isolation is needed between the two surfaces.

Figure 4 : Mounting Examples



8170-10.EPS

PACKAGE MECHANICAL DATA : 7 PINS - PLASTIC HEPTAWATT



PM-HEPTV/PS

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

HEPTV/TBL

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No licence is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1997 SGS-THOMSON Microelectronics - All Rights Reserved

Purchase of I²C Components of SGS-THOMSON Microelectronics, conveys a license under the Philips I²C Patent. Rights to use these components in a I²C system, is granted provided that the system conforms to the I²C Standard Specifications as defined by Philips.

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Morocco
The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

This datasheet has been download from:

www.datasheetcatalog.com

Datasheets for electronics components.