

## VERTICAL DEFLECTION BOOSTER

### FEATURES SUMMARY

- POWER AMPLIFIER
- THERMAL PROTECTION
- OUTPUT CURRENT UP TO 3.0A<sub>PP</sub>
- FLYBACK VOLTAGE UP TO 70V (on Pin 5)
- SUITABLE FOR DC COUPLING PPLICATION
- EXTERNAL FLYBACK SUPPLY

### DESCRIPTION

Designed for monitors and high performance TVs, the TDA8177F vertical deflection booster can handle flyback voltages of up to 70V. In addition, it is possible to have a flyback voltage which is more than the double that of the supply (Pin 2). This allows decreasing power consumption or decreasing the flyback time for a given supply voltage.

The TDA8177F operates with supplies of up to 35V and outputs up to 3A<sub>PP</sub> to drive the yoke. The TDA8177F is offered in HEPTAWATT package.

Figure 1. Package

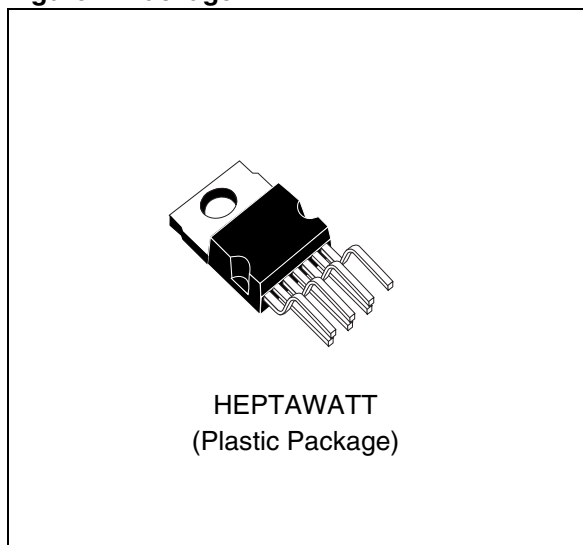


Figure 2. Pin Connections

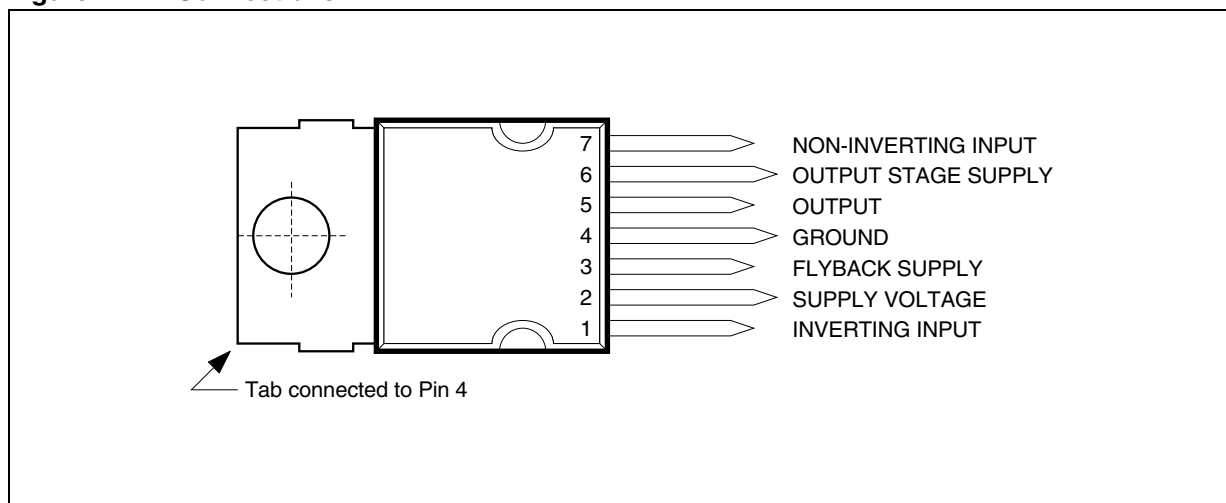


Figure 3. Block Diagram

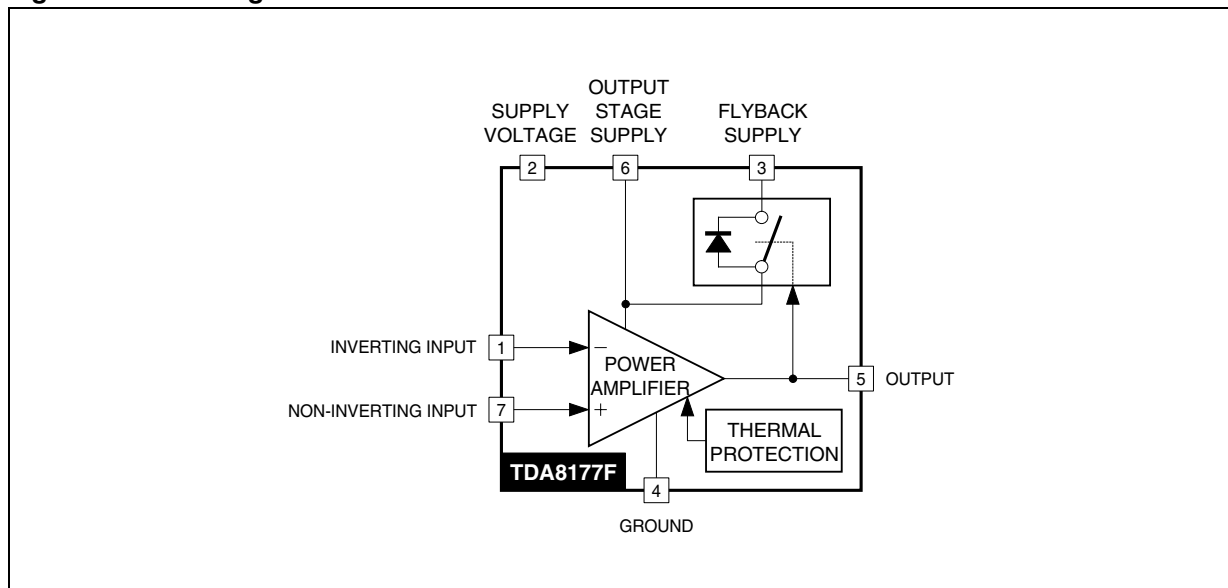


Table 1. Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
$V_S$	Supply Voltage (Pin 2) (see note 1)	40	V
$V_6$	Flyback Peak Voltage (Pin 6) (see note 1)	75	V
$V_1, V_7$	Amplifier Input Voltage (Pins 1-7) (see note 1)	$-0.3, +V_S$	V
$I_O$	Maximum Output Peak Current (see notes 2 and 3)	2.5	A
$I_3$	Maximum Sink Current ( $t < 1$ ms)	2.5	A
$I_3$	Maximum Source Current ( $t < 1$ ms) (in the diode, see Block Diagram)	2.5	A
$V_{ESD1}$	ESD Susceptibility Tool Model (see note 4)	300	V
$V_{ESD2}$	Human Model (see note 5)	2	kV
$V_3 - V_2$	Voltage Difference between Flyback Supply and Supply Voltage	50	V
$V_3, V_5, V_6$	Min. Voltage (see note 1)	-0.4	V
$T_{OPER}$	Operating Ambient Temperature	-20, +75	°C
$T_{STG}$	Storage Temperature	-40, +150	°C
$T_j$	Junction Temperature	+150	°C

- Note: 1. Versus Pin 4.  
 2. The output current can reach 4A peak for  $t \leq 10\mu s$  (up to 120Hz).  
 3. Provided SOAR is respected (see Figures 6 and 7).  
 4. Equivalent to discharging a 200pF capacitor through a 0kΩ series resistor.  
 5. Equivalent to discharging a 150pF capacitor through a 1.5kΩ series resistor.

**Table 2. Thermal Data**

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case Thermal Resistance Max	3	°C/W
$T_t$	Temperature for Thermal Shutdown	150	°C
$\Delta T_t$	Hysteresis on $T_t$	10	°C
$T_{jr}$	Recommended Max. Junction Temperature	120	°C

**Table 3. Electrical Characteristics**(V<sub>S</sub> = 35V, T<sub>A</sub> = 25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V <sub>S</sub>	Operating Supply Voltage Range		10		35	V
V <sub>3M</sub>	Operating Flyback Supply Voltage		V <sub>S</sub>		70	V
I <sub>2</sub>	Pin 2 Quiescent Current	I <sub>3</sub> = 0, I <sub>5</sub> = 0		10	20	mA
I <sub>6</sub>	Pin 6 Quiescent Current	I <sub>3</sub> = 0, I <sub>5</sub> = 0		25	35	mA
I <sub>O</sub>	Max. Scanning Peak Output Current				1.5	A
I <sub>1</sub>	Amplifier Bias Current	V <sub>1</sub> = 20V, V <sub>7</sub> = 21V		- 0.4	- 2	μA
I <sub>7</sub>	Amplifier Bias Current	V <sub>1</sub> = 21V, V <sub>7</sub> = 20V		- 0.4	- 2	μA
V <sub>IO</sub>	Offset Voltage			0	7	mV
$\Delta V_{IO}/dt$	Offset Drift versus Temperature			- 10		μV/°C
GV	Voltage Gain		80			dB
V <sub>5L</sub>	Output Saturation Voltage to GND (Pin 4)	I <sub>5</sub> = 1.5A		1.0	2	V
V <sub>5H</sub>	Output Saturation Voltage to Supply (Pin 6)	I <sub>5</sub> = - 1.5A		1.7	2.5	V
V <sub>D5 - 6</sub>	Diode Forward Voltage between Pins 5-6	I <sub>5</sub> = 1.5A		1.5	2.1	V
V <sub>D3 - 6</sub>	Diode Forward Voltage between Pins 3-6	I <sub>3</sub> = 1.5A		2.3	3	V
V <sub>3-6</sub>	Voltage Drop between Pins 3-6 (2nd part of flyback)	I <sub>3</sub> = - 1.A		4	5	V

APPLICATION CIRCUITS

Figure 4. AC Coupling

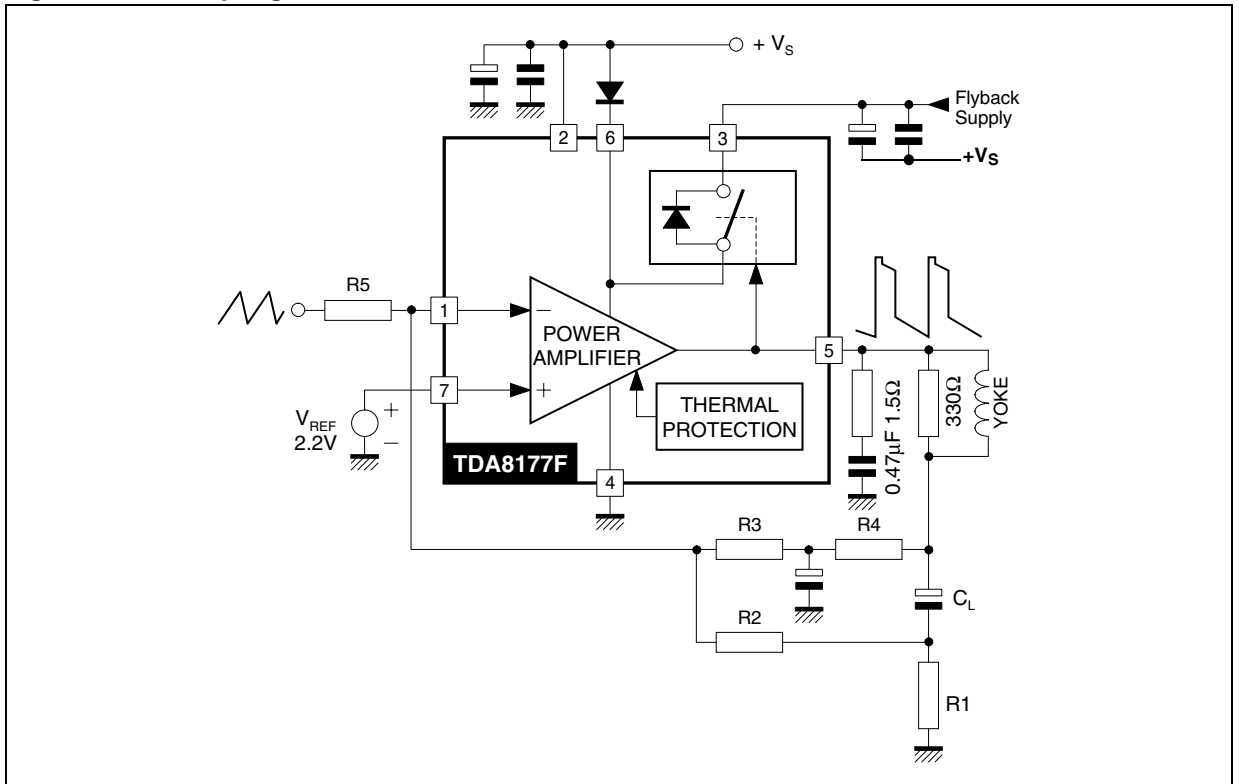


Figure 5. DC Coupling

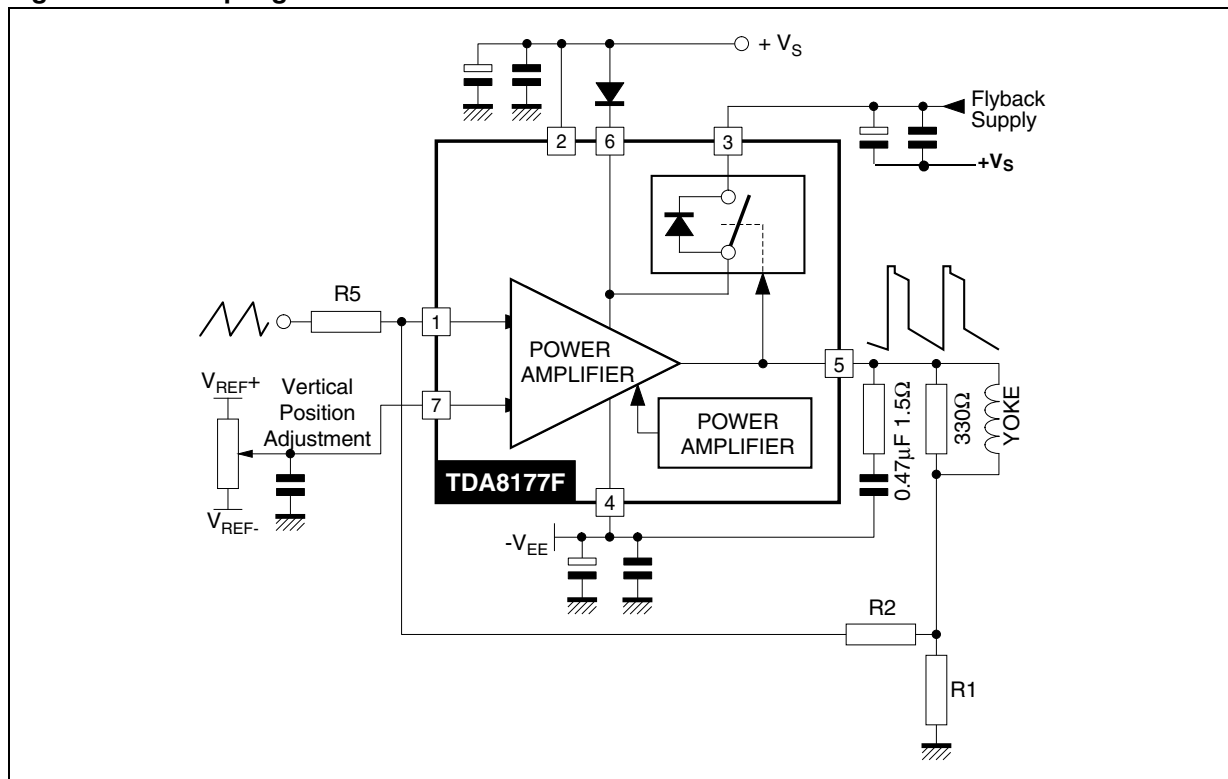


Figure 6. Output Transistors SOA (for secondary breakdown)

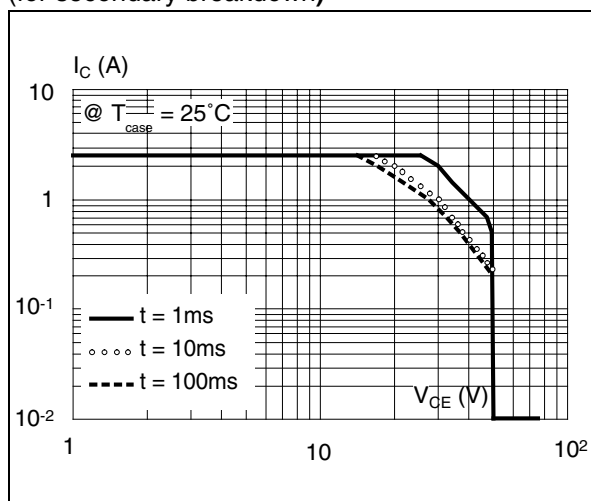
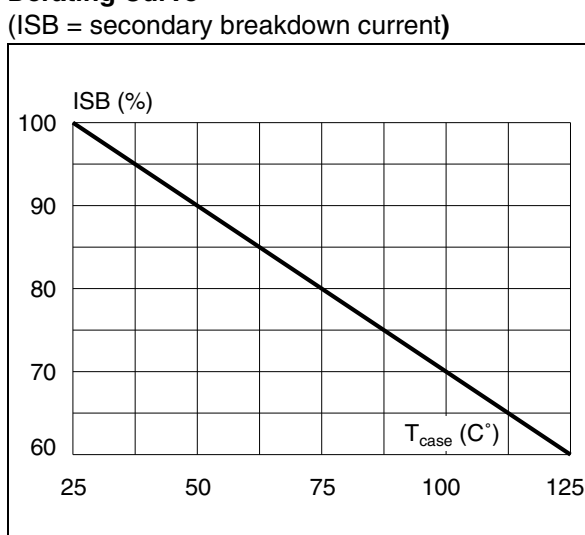


Figure 7. Secondary Breakdown Temperature Derating Curve



**PART NUMBERING****Table 4. Order Codes**

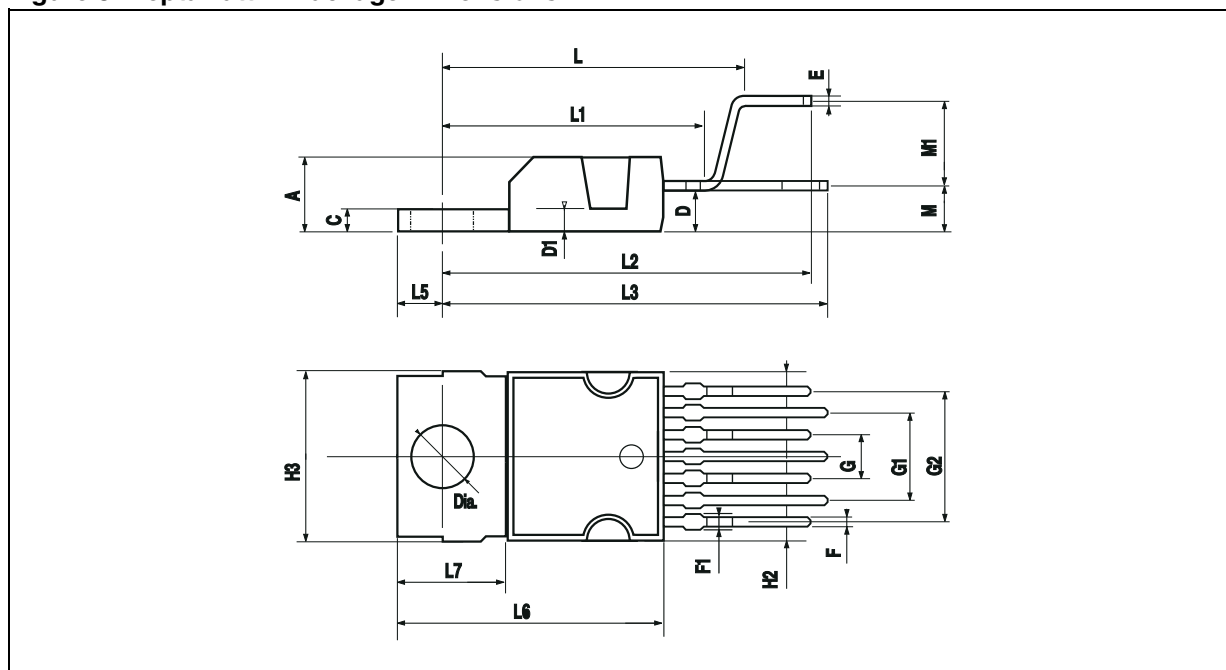
<b>Part Number</b>	<b>Package</b>	<b>Temperature Range</b>
TDA8177F	HEPTAWATT7	-25 to 85°C

## PACKAGE MECHANICAL DATA

Table 5. Heptawatt7 - Mechanical Data

Symbol	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

Figure 8. Heptawatt7 - Package Dimensions



Note: Drawing is not to scale

**REVISION HISTORY****Table 6. Revision History**

<b>Date</b>	<b>Revision</b>	<b>Description of Changes</b>
December-1998	1	First Issue
29-Mar-2005	2	Stylesheet update. No content change.



Information furnished is believed to be accurate and reliable. However, STMicroelectronics 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 license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics.  
All other names are the property of their respective owners.

© 2005 STMicroelectronics - All rights reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan -  
Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States

[www.st.com](http://www.st.com)