

**VERTICAL DEFLECTION BOOSTER**

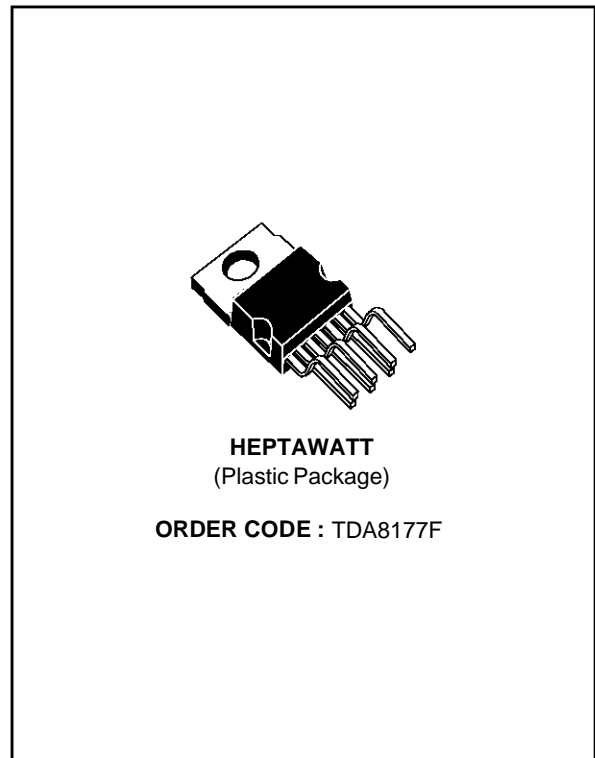
- POWER AMPLIFIER
- THERMAL PROTECTION
- OUTPUT CURRENT UP TO 3.0A<sub>PP</sub>
- FLYBACK VOLTAGE UP TO 70V (on Pin 5)
- SUITABLE FOR DC COUPLING APPLICATION
- EXTERNAL FLYBACK SUPPLY

**DESCRIPTION**

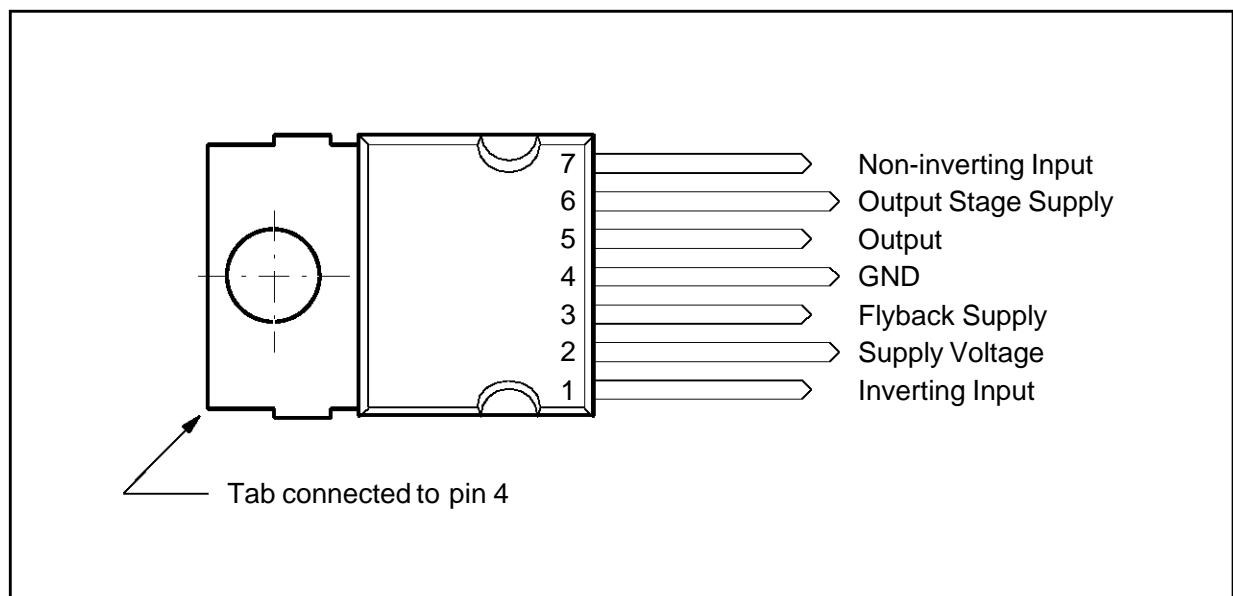
Designed for monitors and high performance TVs, the TDA8177F vertical deflection booster can handle flyback voltage up to 70V. More than this it is possible to have a flyback voltage which is more than the double of the supply (Pin 2). This allows to decrease the power consumption or to decrease the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

The TDA8177F operates with supplies up to 35V and provides up to 3A<sub>pp</sub> output current to drive the yoke.

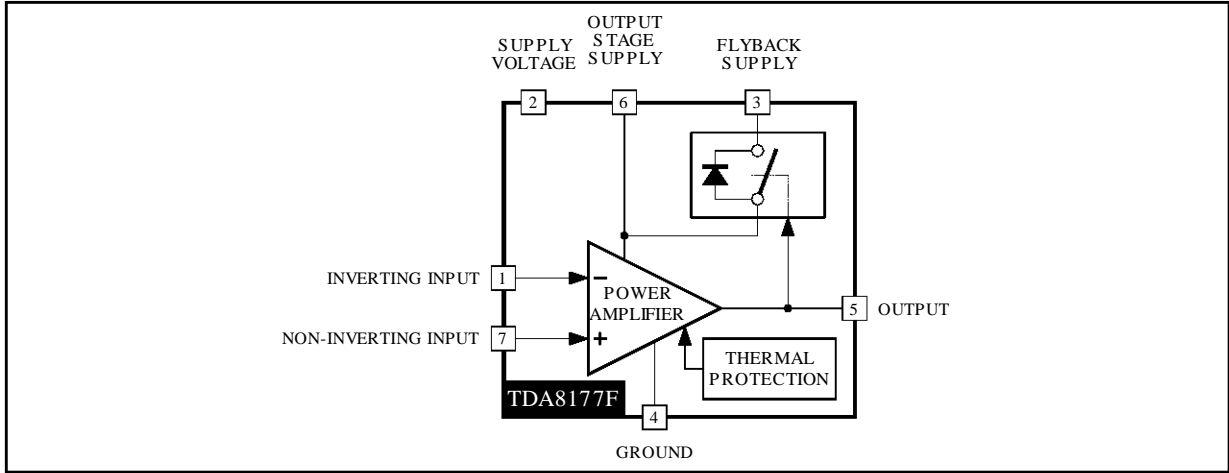
The TDA8177F is offered in HEPTAWATT package.



**PIN CONNECTIONS**



**BLOCK DIAGRAM**



8177F-02.EPS

**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 ( $t < 1\text{ms}$ )                                     | 2.5            | A       |
| $I_3$                    | Maximum Source Current ( $t < 1\text{ms}$ ) (in the diode, see Block Diagram) | 2.5            | A       |
| $V_{ESD1}$<br>$V_{ESD2}$ | ESD Susceptibility<br>Tool Model (see note 4)<br>Human Model (see note 5)     | 300<br>2       | V<br>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      |

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

**THERMAL DATA**

| Symbol        | Parameter                                | Value | Unit |
|---------------|--|-------|------|
| $R_{th(j-c)}$ | Junction-case Thermal Resistance<br>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   |

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**ELECTRICAL CHARACTERISTICS**

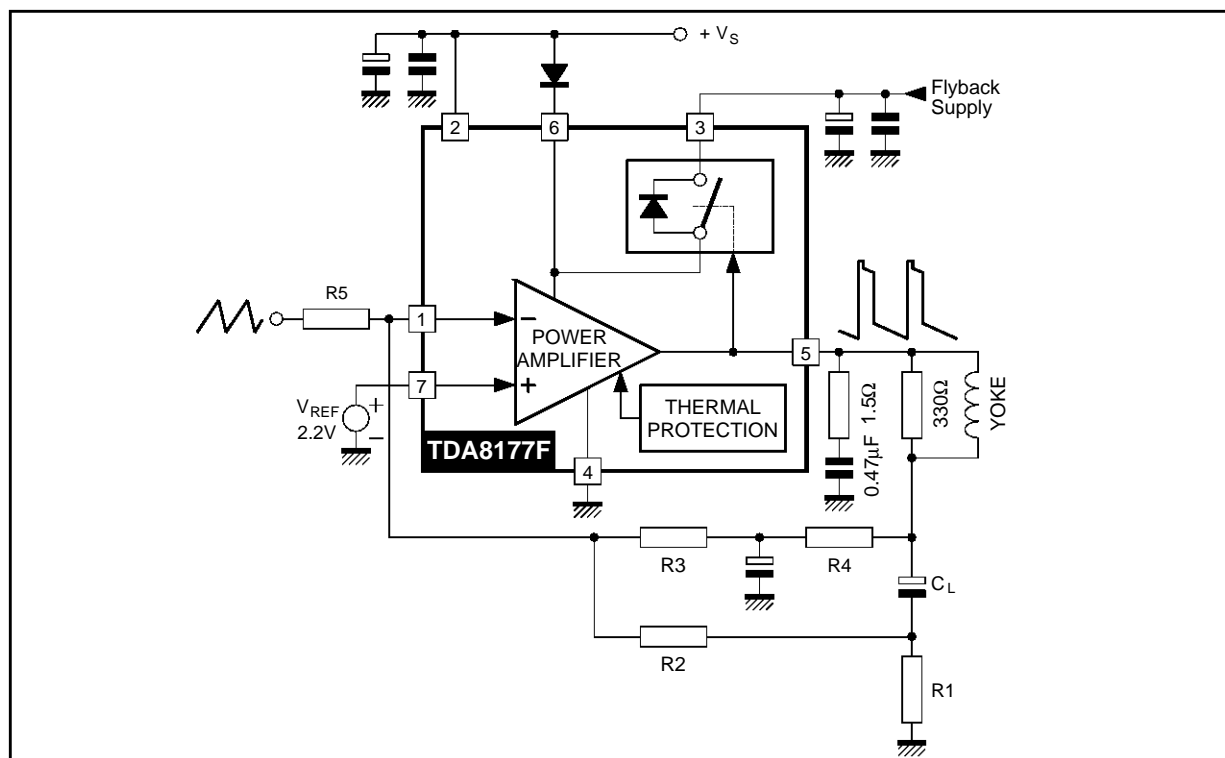
( $V_S = 35V$ ,  $T_A = 25^\circ C$ , unless otherwise specified)

| Symbol             | Parameter   | Test Conditions        | Min.  | Typ.  | Max. | Unit             |
|--------------------|---|------------------------|-------|-------|------|------------------|
| $V_S$              | Operating Supply Voltage Range                      |                        | 10    |       | 35   | V                |
| $V_{3M}$           | Operating Flyback Supply Voltage                    |                        | $V_S$ |       | 70   | V                |
| $I_2$              | Pin 2 Quiescent Current                             | $I_3 = 0, I_5 = 0$     |       | 10    | 20   | mA               |
| $I_6$              | Pin 6 Quiescent Current                             | $I_3 = 0, I_5 = 0$     |       | 25    | 35   | mA               |
| $I_O$              | Max. Scanning Peak Output Current                   |                        |       |       | 1.5  | A                |
| $I_1$              | Amplifier Bias Current                              | $V_1 = 20V, V_7 = 21V$ |       | - 0.4 | - 2  | $\mu A$          |
| $I_7$              | Amplifier Bias Current                              | $V_1 = 21V, V_7 = 20V$ |       | - 0.4 | - 2  | $\mu A$          |
| $V_{IO}$           | Offset Voltage                                      |                        |       | 0     | 7    | mV               |
| $\Delta V_{IO}/dt$ | Offset Drift versus Temperature                     |                        |       | - 10  |      | $\mu V/^\circ C$ |
| GV                 | Voltage Gain  |                        | 80    |       |      | dB               |
| $V_{5L}$           | Output Saturation Voltage to GND (Pin 4)            | $I_5 = 1.5A$           |       | 1.0   | 2    | V                |
| $V_{5H}$           | Output Saturation Voltage to Supply (Pin 6)         | $I_5 = - 1.5A$         |       | 1.7   | 2.5  | V                |
| $V_{D5-6}$         | Diode Forward Voltage between Pins 5-6              | $I_5 = 1.5A$           |       | 1.5   | 2.1  | V                |
| $V_{D3-6}$         | Diode Forward Voltage between Pins 3-6              | $I_3 = 1.5A$           |       | 2.3   | 3    | V                |
| $V_{3-6}$          | Voltage Drop between Pins 3-6 (2nd part of flyback) | $I_3 = - 1.5A$         |       | 4     | 5    | V                |

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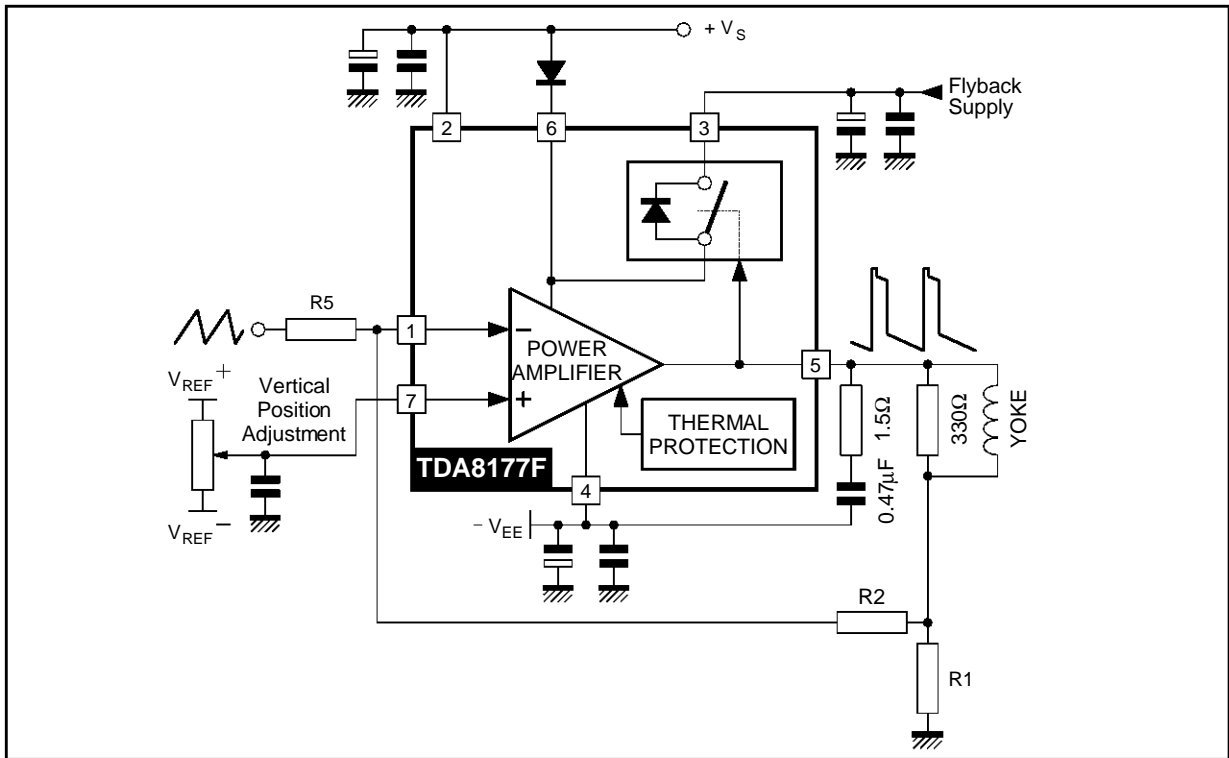
**APPLICATION CIRCUITS**

**AC COUPLING**



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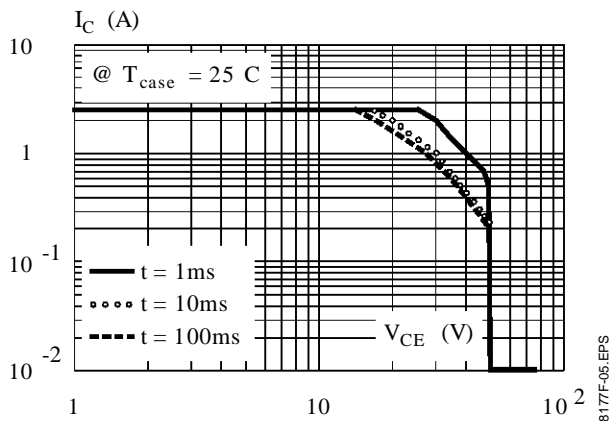
APPLICATION CIRCUITS (continued)  
DC COUPLING



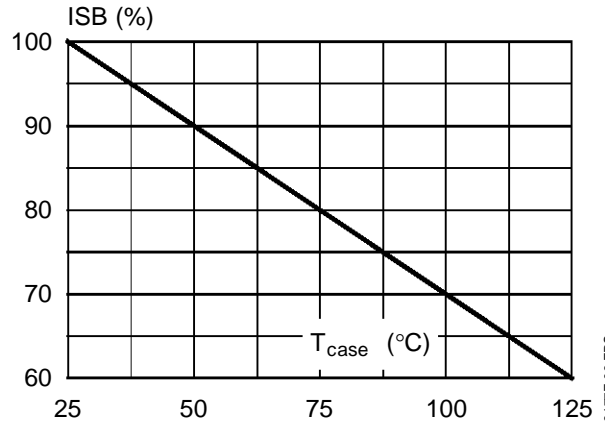
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Figure 1 : Output Transistors SOA (for secondary breakdown)

Figure 2 : Secondary Breakdown Temperature Derating Curve (ISB = secondary breakdown cur-

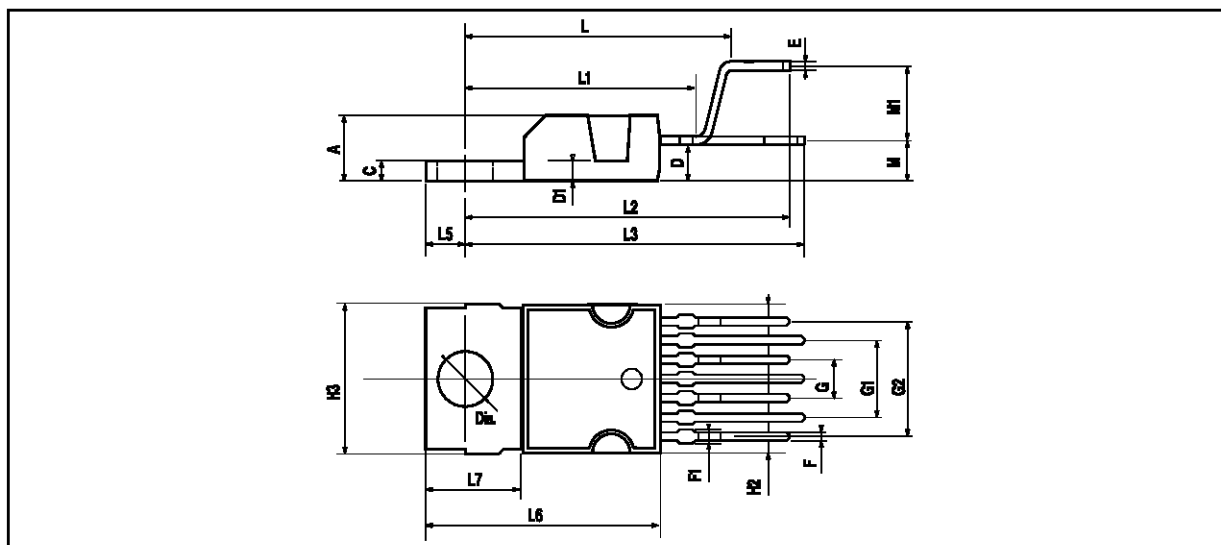


8177F-05.EPS



8177F-06.EPS

## PACKAGE MECHANICAL DATA : 7 PINS - PLASTIC HEPTAWAT



PM-HEPTV.EPS

| 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

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