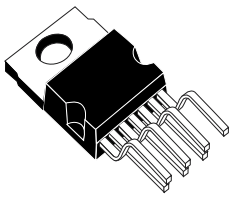
TDA8177F

VERTICAL DEFLECTION BOOSTER

FEATURES SUMMARY

- POWER AMPLIFIER
- THERMAL PROTECTION
- OUTPUT CURRENT UP TO 3.0A_{PP}
- FLYBACK VOLTAGE UP TO 70V (on Pin 5)
- SUITABLE FOR DC COUPLING PPLICATION
- EXTERNAL FLYBACK SUPPLY

Figure 1. Package



HEPTAWATT
(Plastic Package)

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 3APP output current to drive the yoke. The TDA8177F is offered in HEPTAWATT package.

Figure 2. Pin Connections

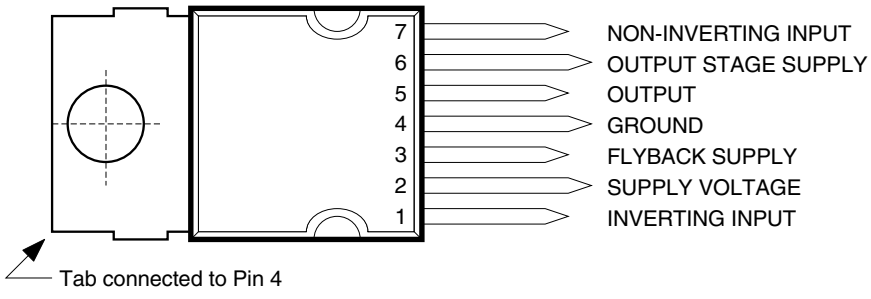


Figure 3. Block Diagram

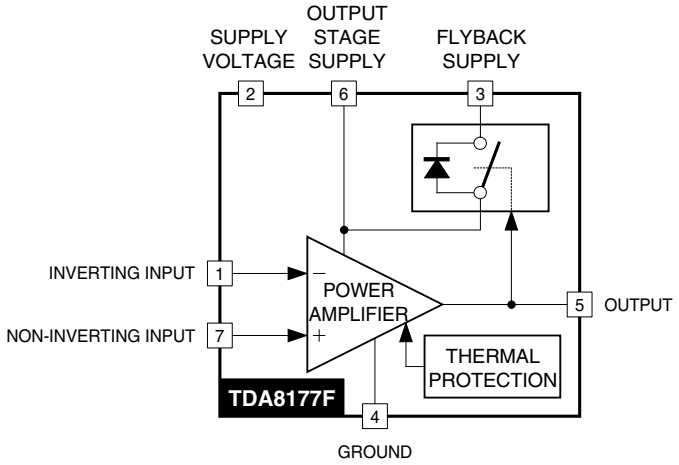


Table 1. Absolute Maximum Ratings

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 (< 1ms)	2.5	A
I_3	Maximum Source Current (t < 1ms) (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 ≤ 10µs (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
ΔT_t	Hysteresis on T_t	10	°C
T_{jr}	Recommended Max. Junction Temperature	120	°C

Table 3. ELECTRICAL CHARACTERISTICS
(V_S = 35V, T_A = 25°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	µA
I_7	Amplifier Bias Current	V_1 = 21V, V_7 = 20V		– 0.4	– 2	µA
V_{IO}	Offset Voltage			0	7	mV
ΔV_{IO} /dt	Offset Drift versus Temperature			– 10		µV/°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

APPLICATION CIRCUITS

Figure 4. AC Coupling

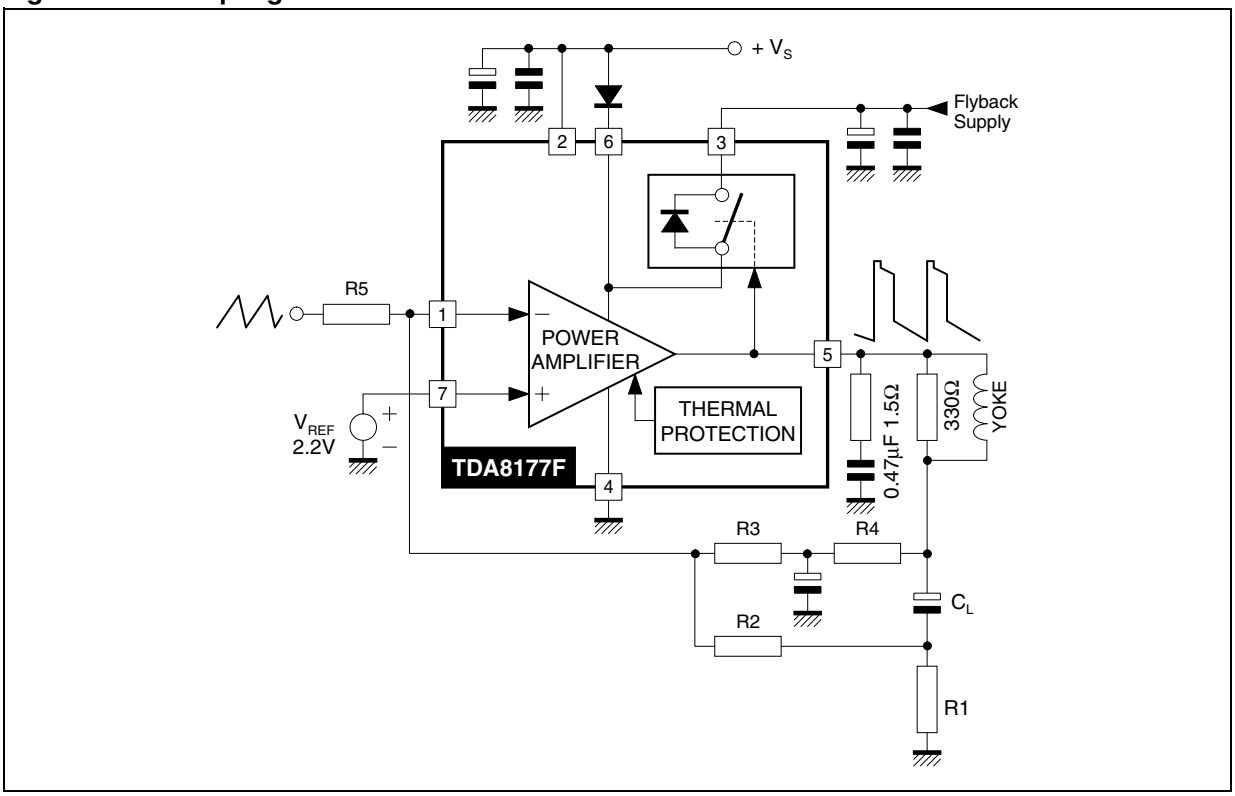


Figure 5. DC Coupling

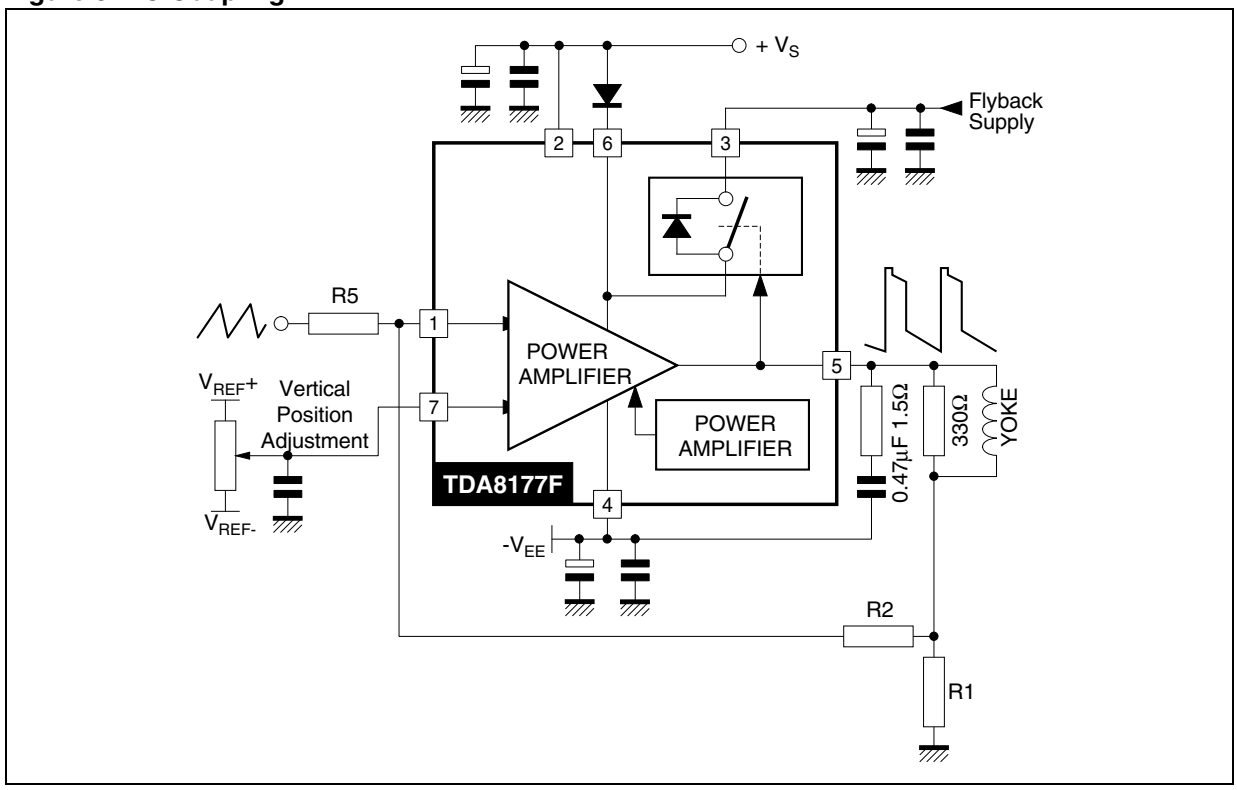


Figure 6. Output Transistors SOA
(for secondary breakdown)

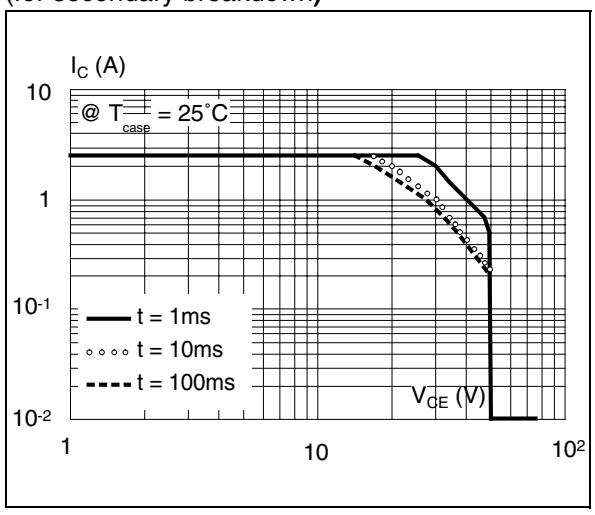
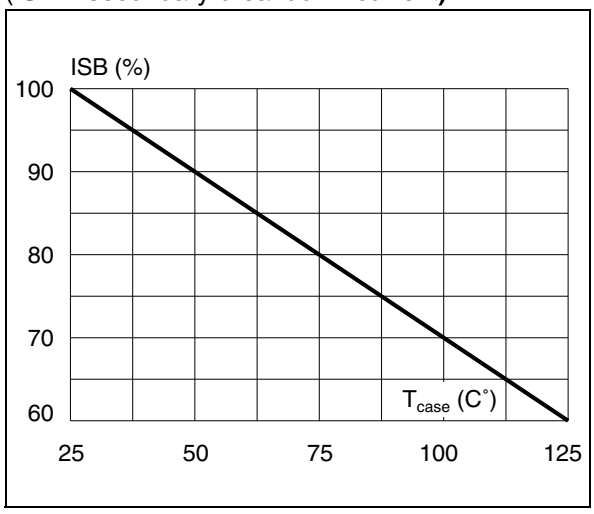


Figure 7. Secondary Breakdown Temperature Derating Curve
(ISB = secondary breakdown current)



PART NUMBERING

Table 4. Order Codes

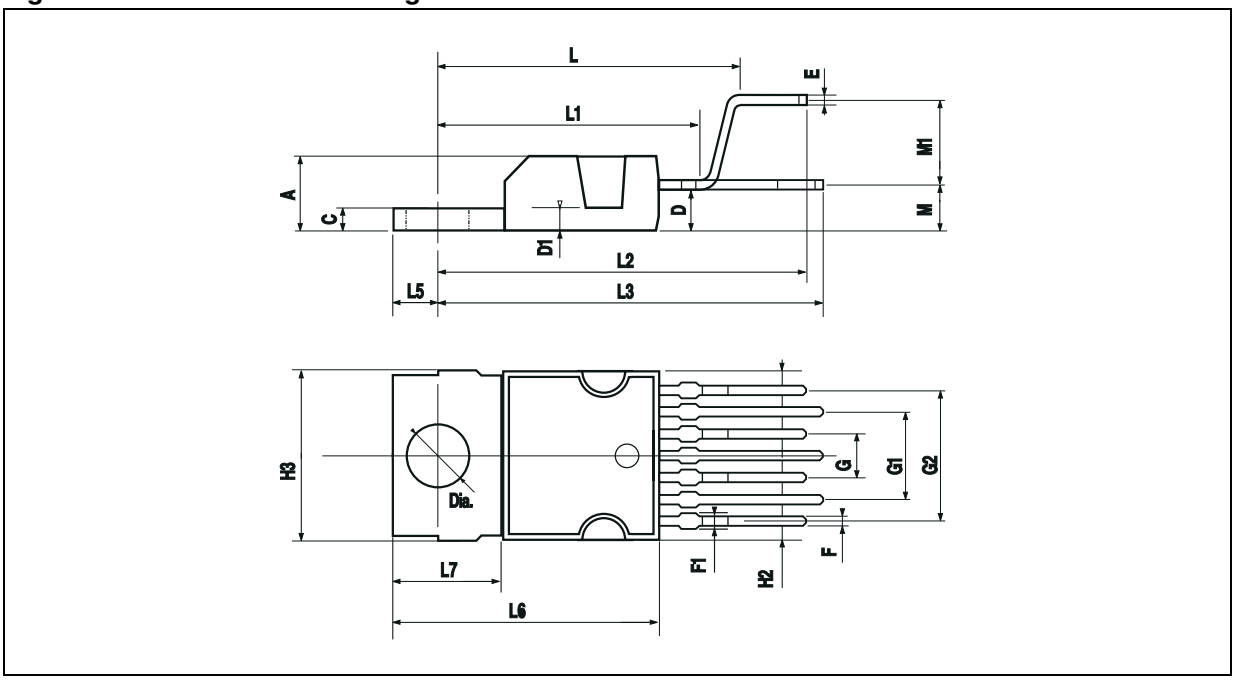
Part Number	Package	Temperature Range
TDA8177F	HEPTAWATT7	-25 to 85 °C

PACKAGE MECHANICAL

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

Date	Revision	Description of Changes
December-1998	1	First Issue
14-Apr-2004	2	Stylesheet update. No content change.