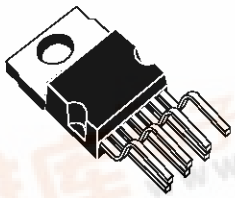
SGS-THOMSON MICROELECTRONICS

TDA9309

VERTICAL DEFLECTION BOOSTER

- POWER AMPLIFIER
- FLYBACK GENERATOR
- THERMAL PROTECTION
- OUTPUT CURRENT UP TO $2.0A_{PP}$
- FLYBACK VOLTAGE UP TO 70V (on Pin 5)
- SUITABLE FOR DC COUPLING APPLICATION



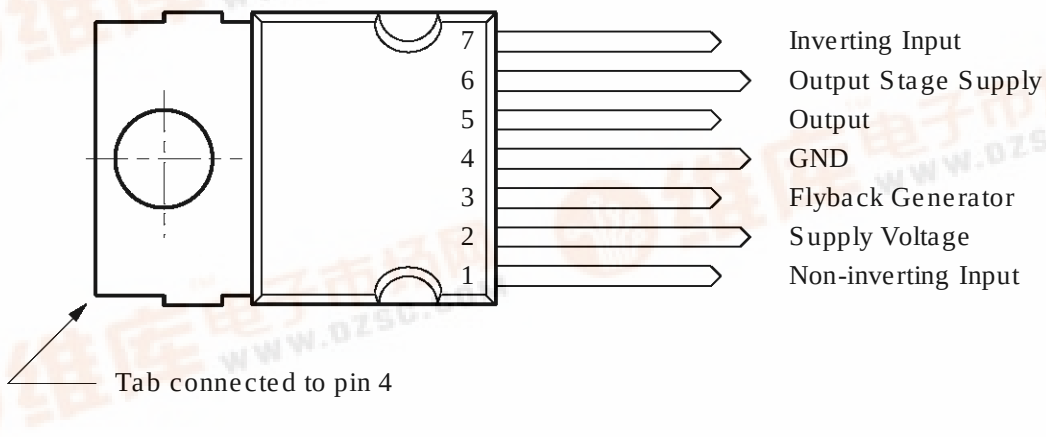
HEPTAWATT
(Plastic Package)

ORDER CODE : TDA9309

DESCRIPTION

Designed for monitors and high performance TVs, the TDA9309 vertical deflection booster delivers flyback voltages up to 70V.
The TDA9309 operates with supplies up to 35V and provides up to 2App output current to drive the yoke.
The TDA9309 is offered in HEPTAWATT package.

PIN CONNECTIONS



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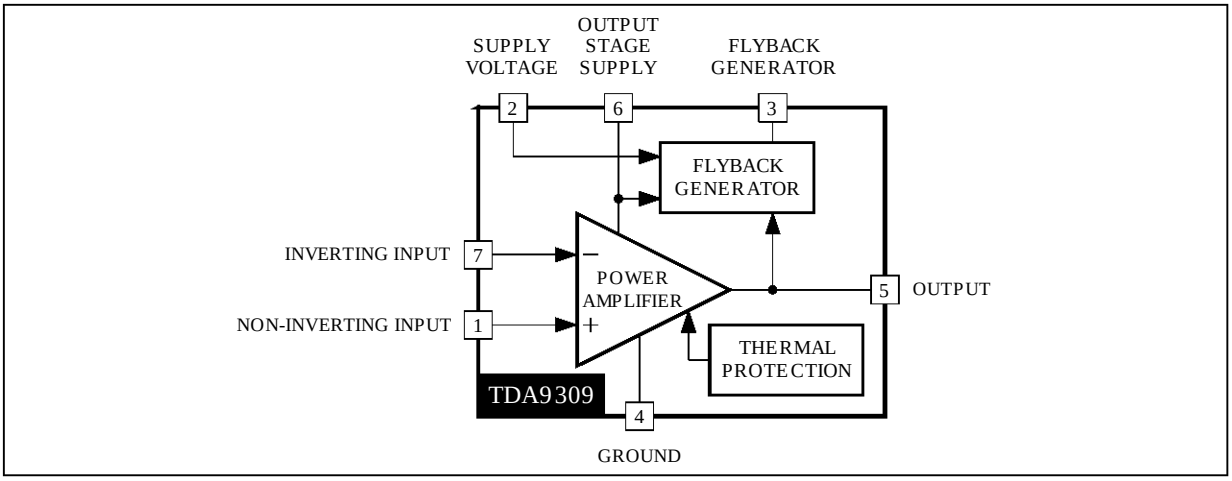
BLOCK DIAGRAM



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)	70	V
V_1 , V_7	Amplifier Input Voltage (Pins 1-7) (see note 1)	V_S	V
V_3	Voltage at Pin 3 (see note 5)	V_S + 3.0	V
I_O	Maximum Output Peak Current (see notes 2 and 3)	1.5	A
I_3	Maximum Sink Current (first part of flyback) (t < 1ms)	1.5	A
I_3	Maximum Source Current (t < 1ms) (see note 2)	1.5	A
V_{ESD}	Electrostatic Handling for all pins (see note 4)	2000/300	V
T_{oper}	Operating Ambient Temperature	- 20, + 75	^oC
T_{stg}	Storage Temperature	- 40, + 150	^oC
T_j	Junction Temperature	+150	^oC

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Notes :
1. Versus Pin 4.
2. The output current can reach 4A peak for t ≤ 10µs (up to 200Hz).
3. Provided SOAR is respected (see Figures 1 and 2).
4. Equivalent to discharging a 100pF capacitor through a 1.5kΩ serial resistor / 200pF capacitor through 0Ω resistor.
5. This will occur during 1st half of flyback pulse.

THERMAL DATA

Symbol	Parameter		Value	Unit
$R_{th\ (j\text{-}c)}$	Junction-case Thermal Resistance	Max.	3	$^oC/W$
T_t	Temperature for Thermal Shutdown		150	^oC
T_{jr}	Recommended Max. Junction Temperature		120	^oC

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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
I_2	Pin 2 Quiescent Current	I_3 = 0, I_5 = 0		9	20	mA
I_6	Pin 6 Quiescent Current	I_3 = 0, I_5 = 0, V_6 = 35V	8	19	35	mA
I_O	Max. Peak Output Current				±1	A
I_1	Amplifier Bias Current	V_1 = 1V, V_7 = 2.2V		- 0.6	- 1.5	µA
I_7	Amplifier Bias Current	V_1 = 2.2V, V_7 = 1V		- 0.6	- 1.5	µA
V_{IO}	Offset Voltage			3		mV
$\Delta V_{IO}/dt$	Offset Drift versus Temperature			- 10		µV/°C
GV	Voltage Gain		80			dB
V_{5L}	Output Saturation Voltage to GND (Pin 4)	I_5 = 1A		1	1.7	V
V_{5H}	Output Saturation Voltage to Supply (Pin 6)	I_5 = - 1A		1.8	2.3	V
V_{D5-6}	Diode Forward Voltage between Pins 5-6	I_5 = 1A		1.3	2	V
V_{D3-2}	Diode Forward Voltage between Pins 3-2	I_3 = 1A		1.2	2	V
V_{3SL}	Saturation Voltage on Pin 3	I_3 = 20mA		0.4	1	V
V_{3SH}	Saturation Voltage to Pin 2 (2nd part of flyback)	I_3 = - 1A		2.1	2.8	V

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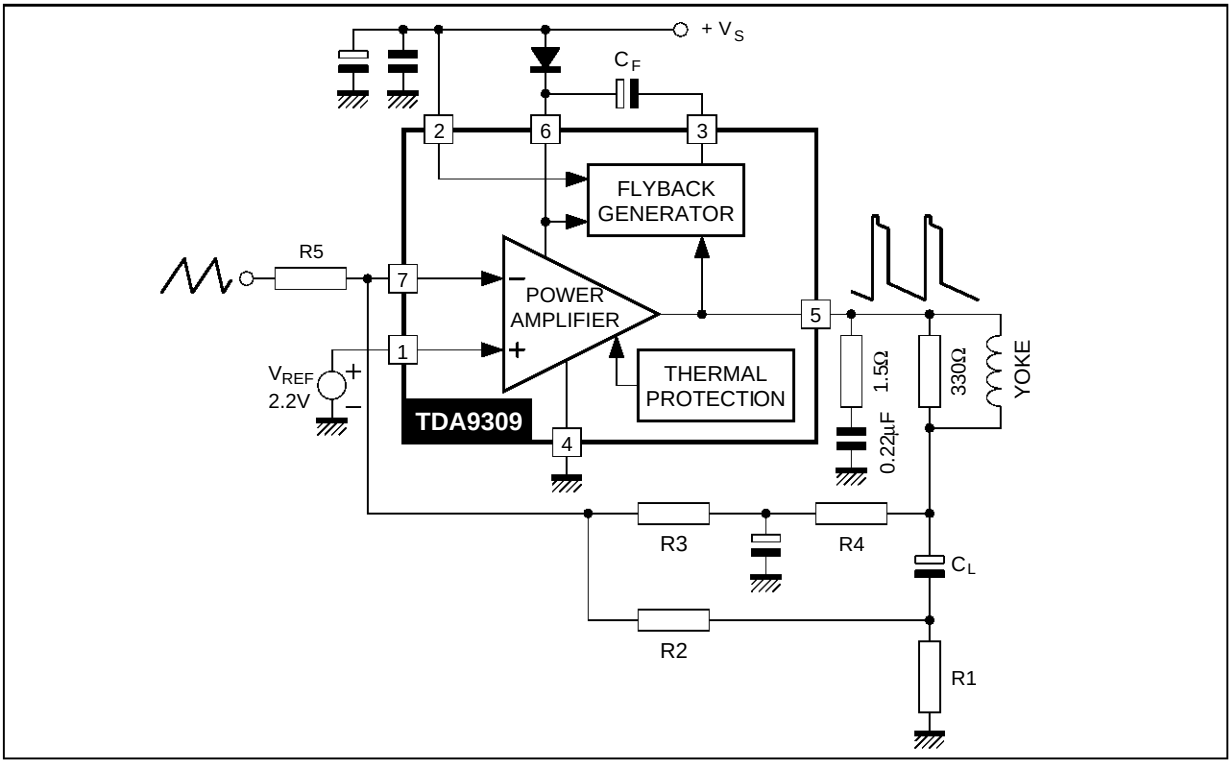
APPLICATION CIRCUITS

AC COUPLING



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APPLICATION CIRCUITS (continued)
DC COUPLING

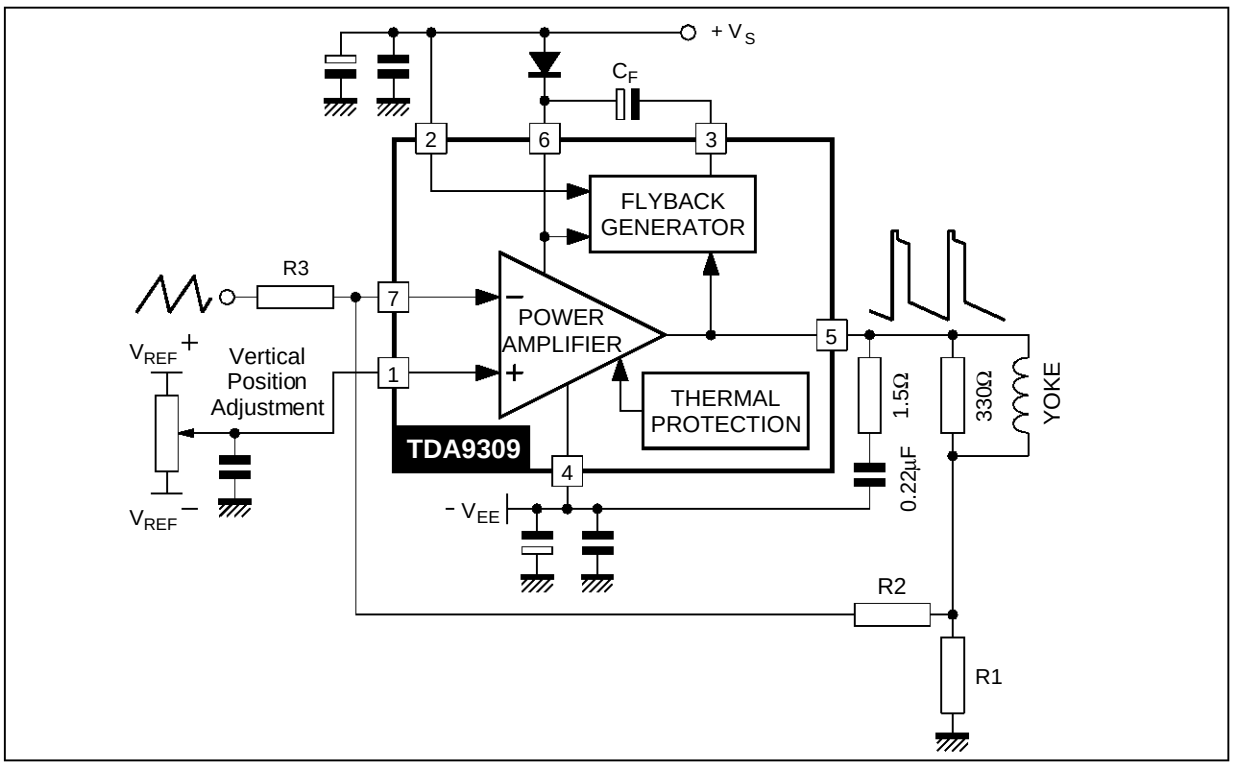


Figure 1 : Output Transistors SOA (for secondary breakdown)

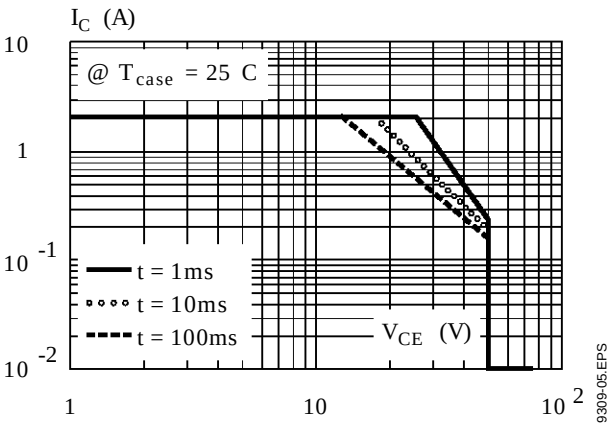
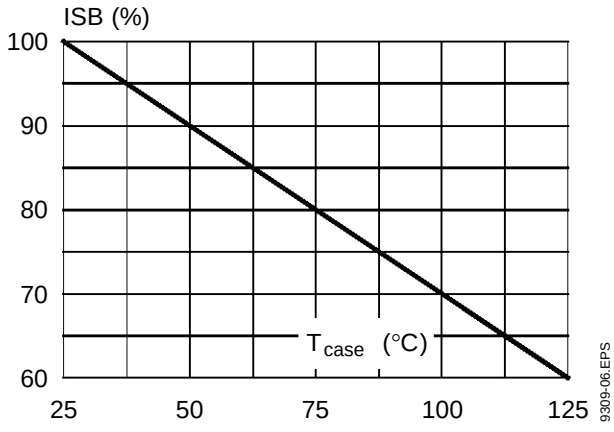


Figure 2 : Secondary Breakdown Temperature Derating Curve (ISB = secondary breakdown current)



PIN CONFIGURATION

Figure 3 : Pins 1-7

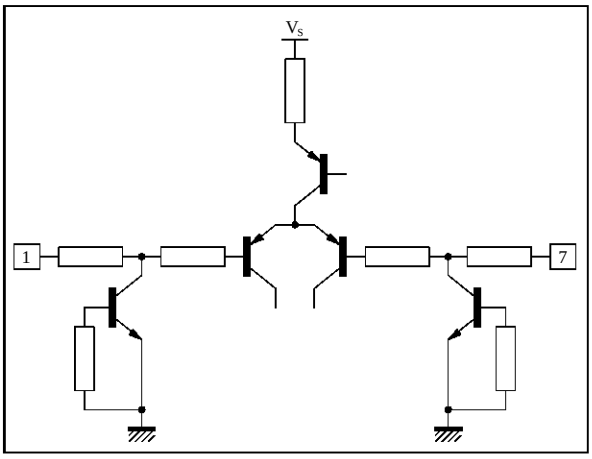


Figure 4 : Pin 3

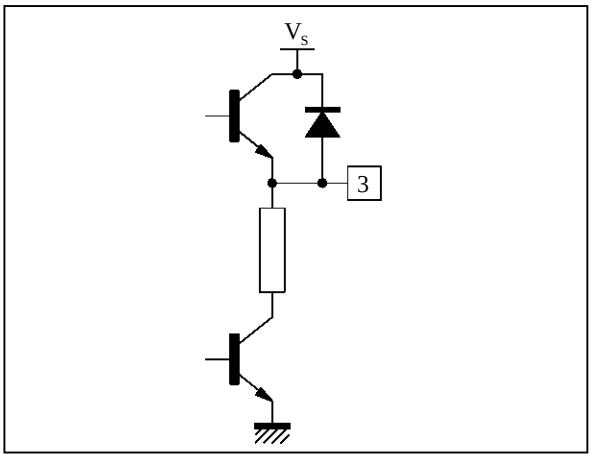
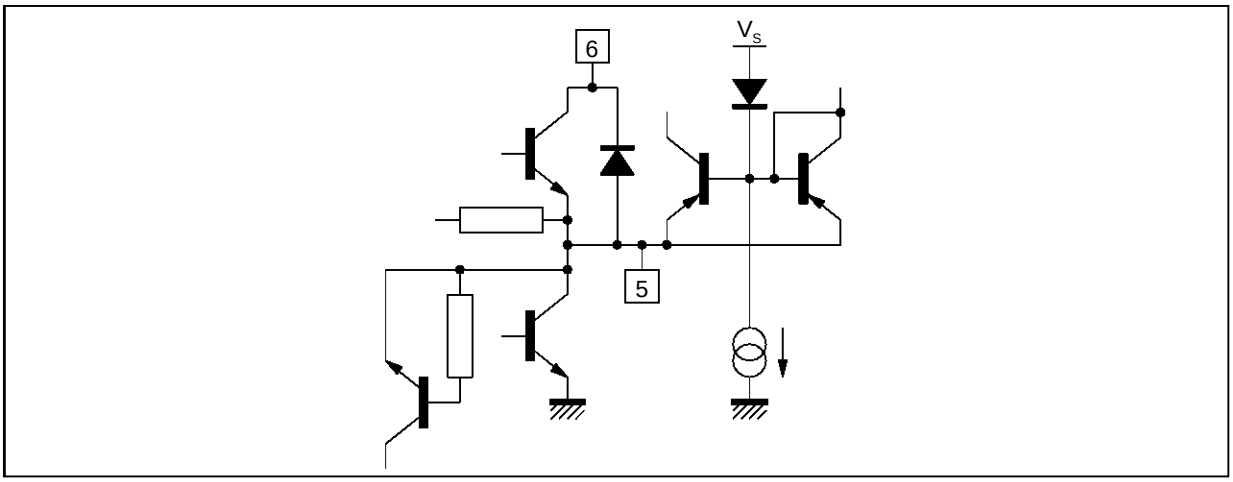
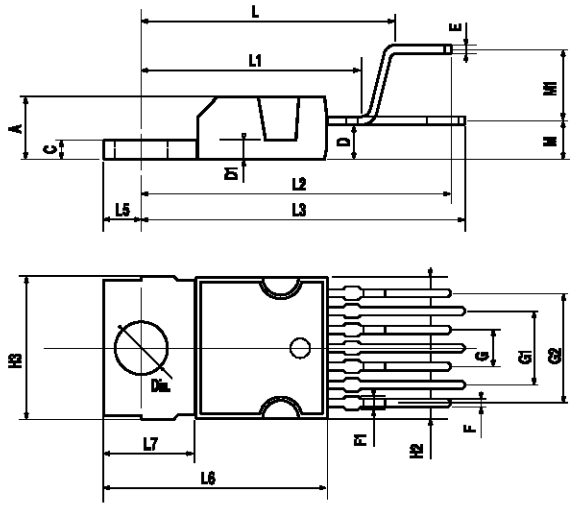


Figure 5 : Pins 5-6



PACKAGE MECHANICAL DATA : HEPTAWATT



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		08	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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