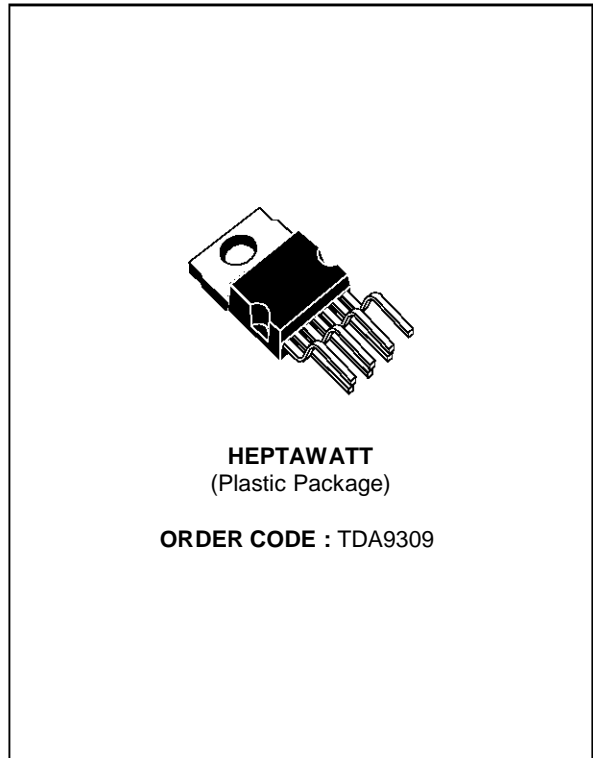


**VERTICAL DEFLECTION BOOSTER**

- POWER AMPLIFIER
- FLYBACK GENERATOR
- THERMAL PROTECTION
- OUTPUT CURRENT UP TO 2.0A<sub>PP</sub>
- FLYBACK VOLTAGE UP TO 70V (on Pin 5)
- SUITABLE FOR DC COUPLING APPLICATION



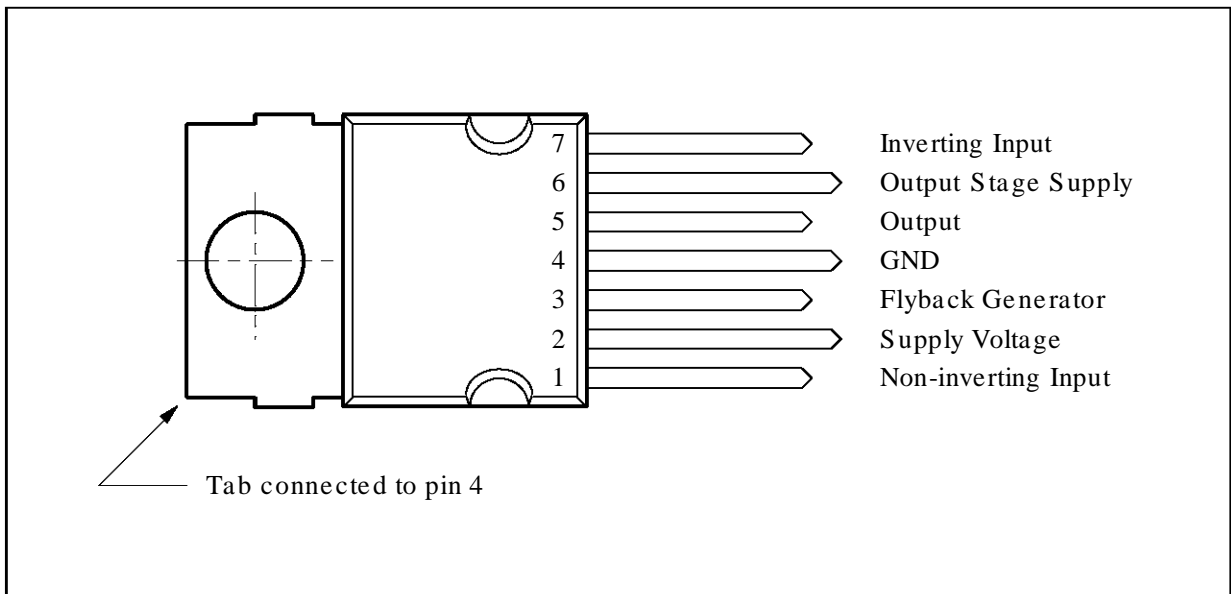
**DESCRIPTION**

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 2A<sub>pp</sub> output current to drive the yoke.

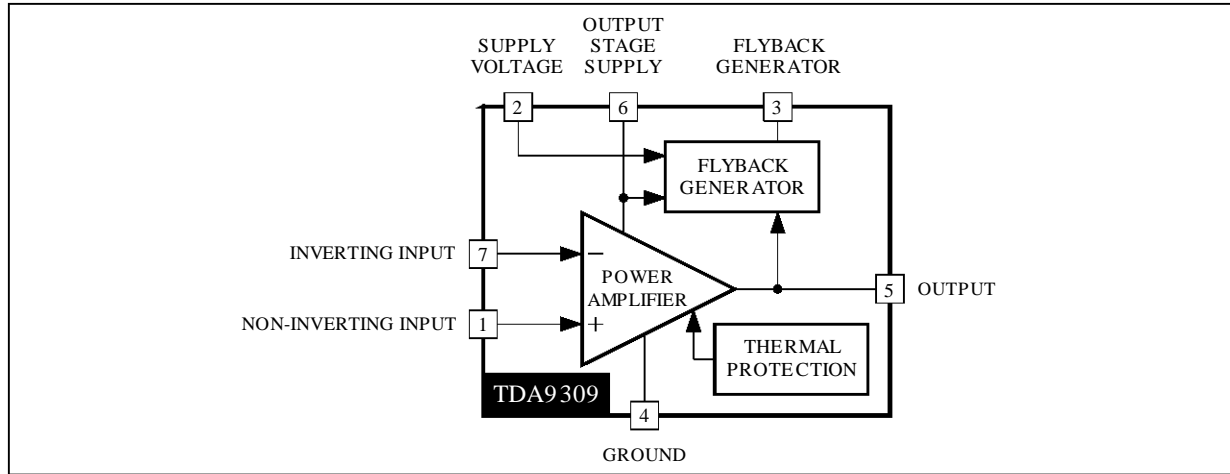
The TDA9309 is offered in HEPTAWATT package.

**PIN CONNECTIONS**



9309-01.EPS

**BLOCK DIAGRAM**



9309-02.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)	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) ( $t < 1\text{ms}$ )	1.5	A
$I_3$	Maximum Source Current ( $t < 1\text{ms}$ ) (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	°C
$T_{stg}$	Storage Temperature	- 40, + 150	°C
$T_j$	Junction Temperature	+150	°C

9309-01.TBL

- 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 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
$R_{th(j-c)}$	Junction-case Thermal Resistance	Max. 3	°C/W
$T_t$	Temperature for Thermal Shutdown	150	°C
$T_{jr}$	Recommended Max. Junction Temperature	120	°C

9309-02.TBL

**ELECTRICAL CHARACTERISTICS**

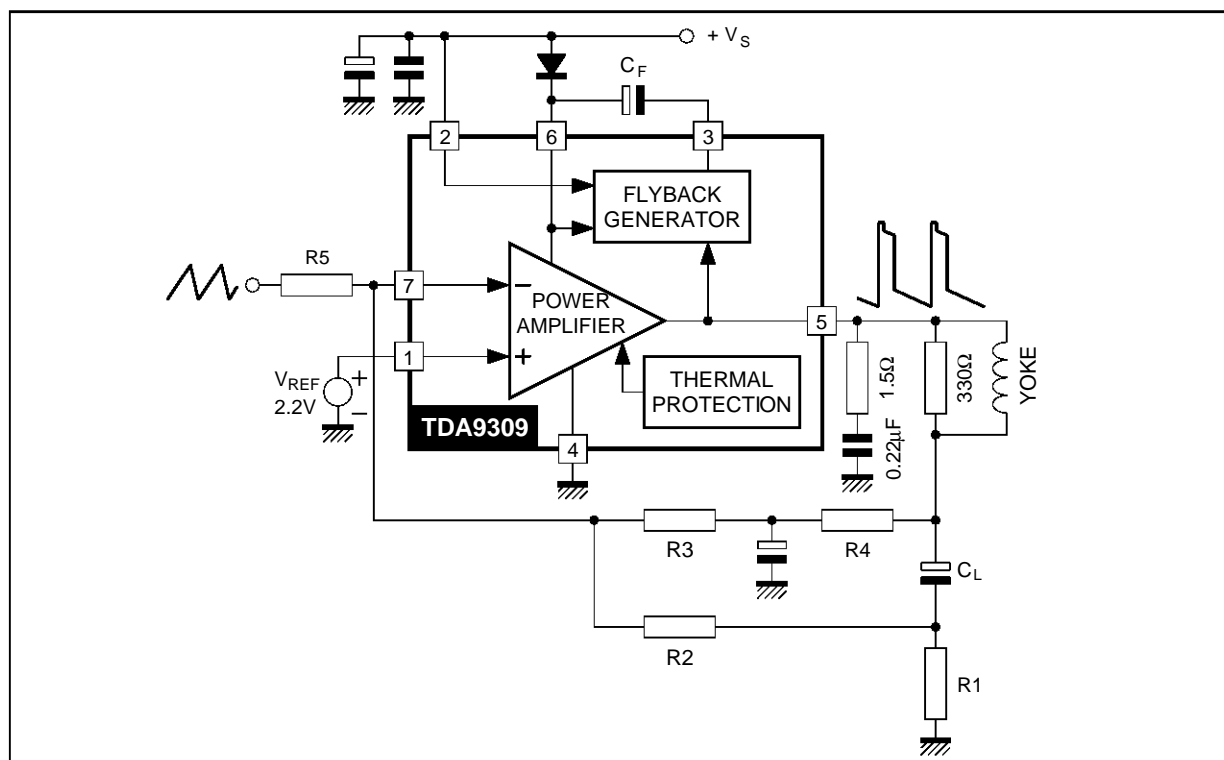
( $V_S = 35V$ ,  $T_A = 25^\circ C$ , unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_S$	Operating Supply Voltage Range		10		35	V
$I_2$	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				$\pm 1$	A
$I_1$	Amplifier Bias Current	$V_1 = 1V, V_7 = 2.2V$		- 0.6	- 1.5	$\mu A$
$I_7$	Amplifier Bias Current	$V_1 = 2.2V, V_7 = 1V$		- 0.6	- 1.5	$\mu A$
$V_{IO}$	Offset Voltage			3		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)	$I_5 = 1A$		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

9309-03.TBL

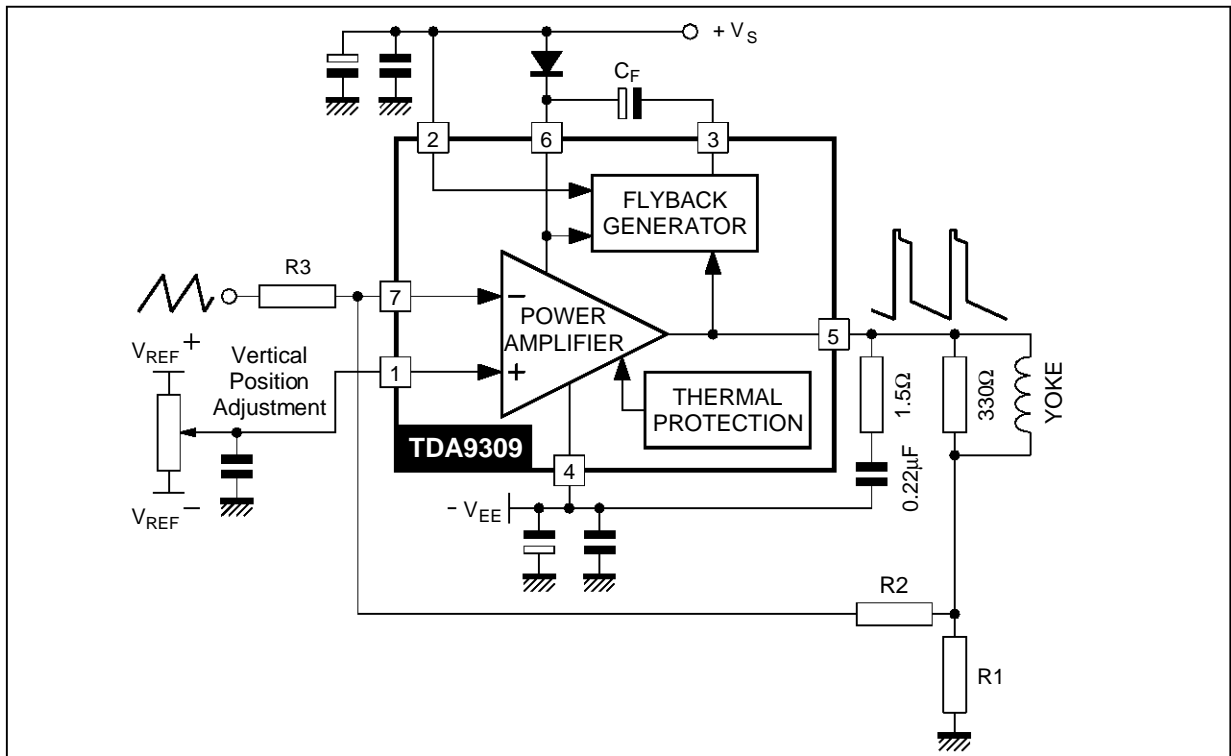
**APPLICATION CIRCUITS**

**AC COUPLING**



9309-03.EPS

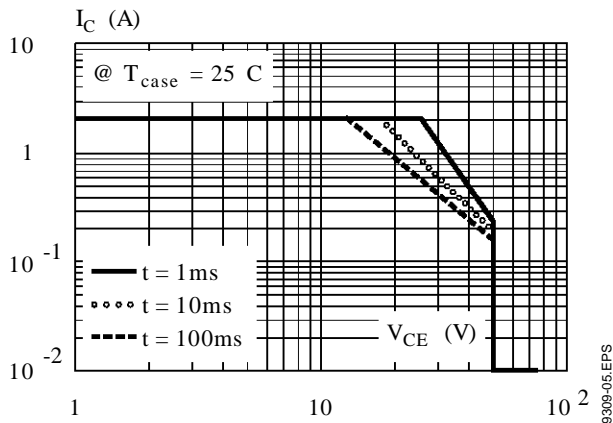
APPLICATION CIRCUITS (continued)  
DC COUPLING



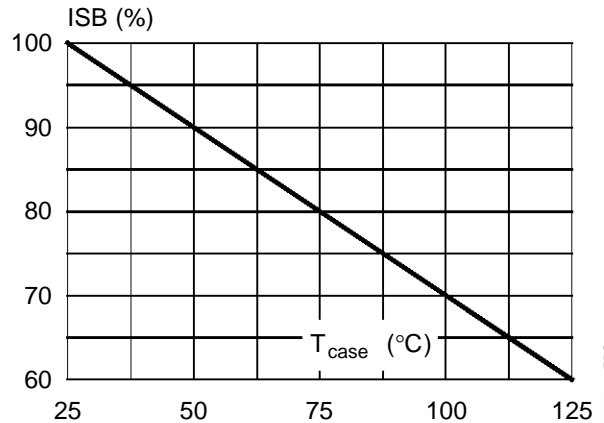
9309-04.EPS

Figure 1 : Output Transistors SOA  
(for secondary breakdown)

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



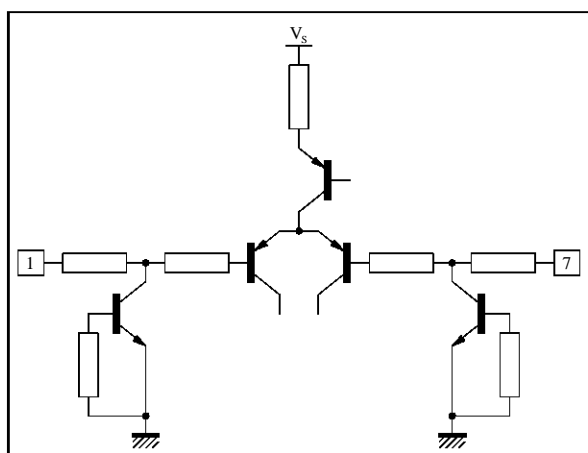
9309-05.EPS



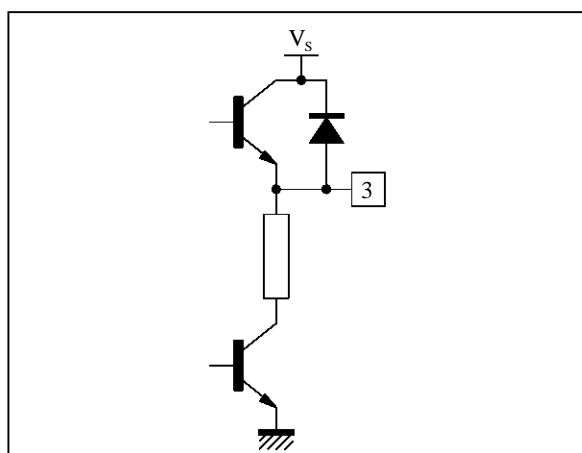
9309-06.EPS

**PIN CONFIGURATION**

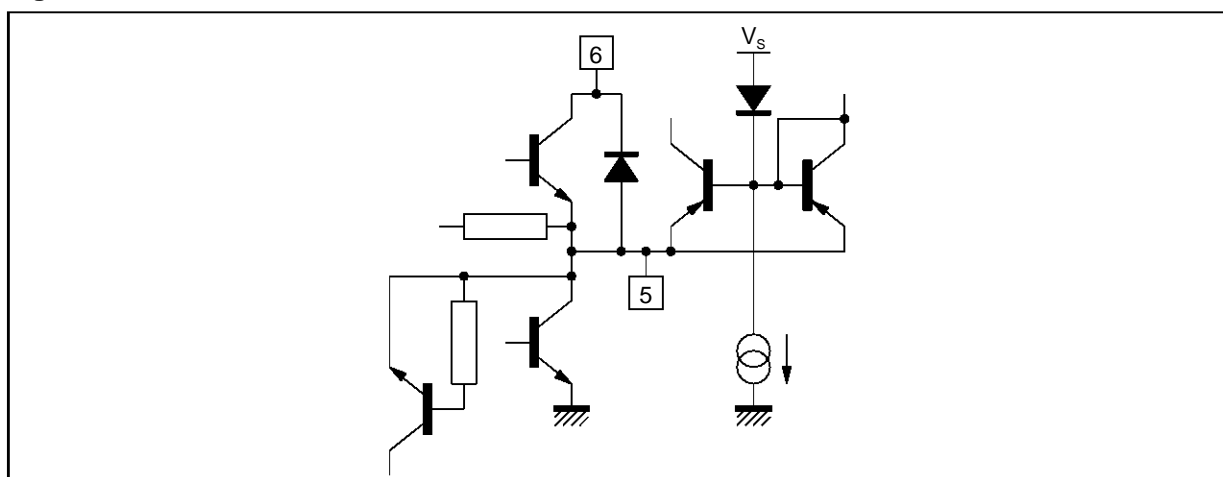
**Figure 3 : Pins 1-7**



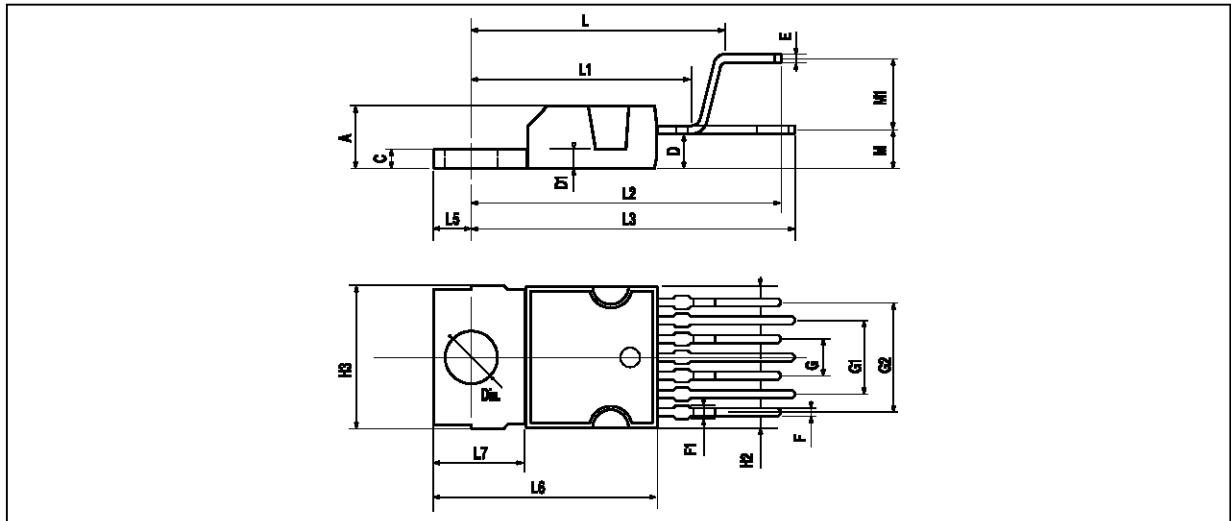
**Figure 4 : Pin 3**



**Figure 5 : Pins 5-6**



PACKAGE MECHANICAL DATA : HEPTAWATT



PM-HEPTVEPS

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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