

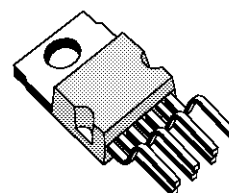
## 5V + ADJUSTABLE VOLTAGE REGULATOR WITH DISABLE

- OUTPUT CURRENTS UP TO 600mA
- FIXED PRECISION OUTPUT 1 VOLTAGE 5V  $\pm 2\%$
- OUTPUT 2 - VOLTAGE PROGRAMMABLE FROM 5V TO 14V
- OUTPUT 2 VOLTAGE DISABLED BY A TTL INPUT
- SHORT CIRCUIT PROTECTION AT BOTH OUTPUTS
- THERMAL PROTECTION
- LOW DROP OUT 1.5V AT 400mA
- HIGH SUPPLY VOLTAGE REJECTION

### DESCRIPTION

The TDA8135 is a monolithic dual positive voltage regulator designed to provide fixed precision output voltages, 5V + adjustable outputs at currents up to 600mA.

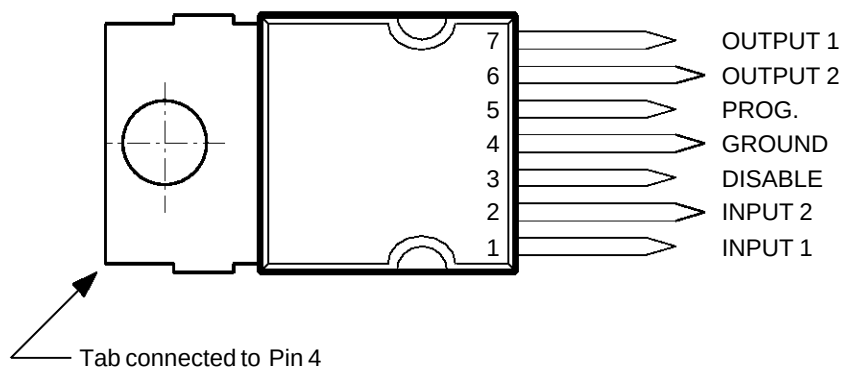
Output 2 can be disabled by a TTL input. Both output currents are limited by an internal short circuit protection.



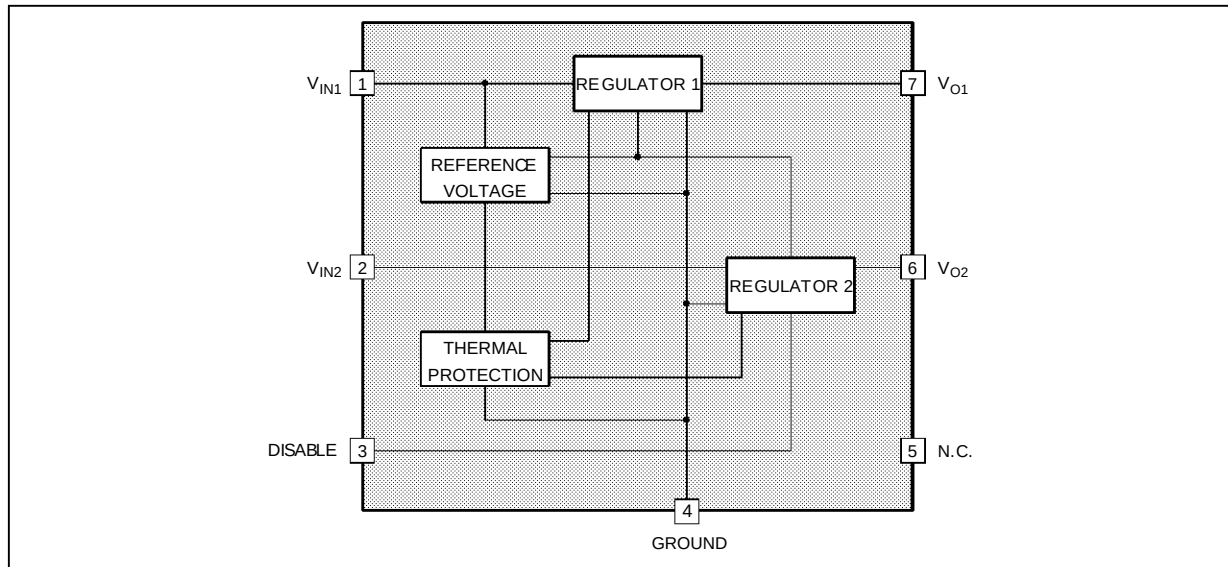
**HEPTAWATT**  
(Plastic Package)

**ORDER CODE : TDA8135**

### PIN CONNECTIONS



## BLOCK DIAGRAM



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## ABSOLUTE MAXIMUM RATINGS

| Symbol       | Parameter                   | Value              | Unit |
|--------------|-----------------------------|--------------------|------|
| $V_{IN1, 2}$ | DC Input Voltages           | 24                 | V    |
| $V_{DIS}$    | Disable Input Voltage Pin 3 | 24                 | V    |
| $I_{O1, 2}$  | Output Currents             | Internally Limited |      |
| $P_t$        | Power Dissipation           | Internally Limited |      |
| $T_{STG}$    | Storage Temperature         | - 65 to + 150      | °C   |
| $T_j$        | Junction Temperature        | 0 to + 150         | °C   |

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## THERMAL DATA

| Symbol        | Parameter                             | Value | Unit |
|---------------|---------------------------------------|-------|------|
| $R_{TH(j-c)}$ | Thermal Resistance Junction-case Max. | 3     | °C/W |

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## ELECTRICAL CHARACTERISTICS

( $V_{IN1} = 7V$  ;  $V_{IN2} = V_{O2} + 2V$  ;  $V_{DIS} = 2.5V$  ;  $I_{O1,2} = 0$  ;  $T_j = 25^{\circ}C$  unless otherwise specified)

| Symbol            | Parameter               | Test Conditions                                              | Min. | Typ. | Max. | Unit |
|-------------------|-------------------------|--------------------------------------------------------------|------|------|------|------|
| $V_{O1}$          | Output Voltage at Pin 7 |                                                              | 4.9  | 5    | 5.1  | V    |
| $V_{O2}$          | Output Voltage at Pin 6 | Adjustable                                                   | 5    |      | 14   | V    |
| $I_{Q1}$          | Quiescent Current       | $V_{IN2} = 0, V_{DIS} = 0$<br>$I_{O1} = 10mA$ , (see fig. 1) |      |      | 2    | mA   |
| $I_{Q2}$          | Quiescent Current       | $I_{O2} = 10mA$ (see fig. 1)                                 |      |      | 2    | mA   |
| $V_{IN1}-V_{O1}$  | Drop Out Voltage 1      | $I_{O1} = 400mA$                                             |      |      | 1.5  | V    |
| $V_{IN2}-V_{O2}$  | Drop Out Voltage 2      | $I_{O2} = 400mA$                                             |      |      | 1.5  | V    |
| $\Delta V_{O1LI}$ | Line Regulation 1       | $7V < V_{IN1} < 14V, I_{O1} = 200mA$                         |      |      | 90   | mV   |
| $\Delta V_{O2LI}$ | Line Regulation 2       | $12V < V_{IN2} < 20V, I_{O2} = 200mA$<br>$V_{O2} = 10V$      |      |      | 120  | mV   |
| $\Delta V_{O1LO}$ | Load Regulation 1       | $0 < I_{O1} < 600mA$                                         |      |      | 100  | mV   |
| $\Delta V_{O2LO}$ | Load Regulation 2       | $0 < I_{O2} < 600mA, V_{O2} = 10V$                           |      |      | 200  | mV   |

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**ELECTRICAL CHARACTERISTICS** (continued)

( $V_{IN1} = 7V$  ;  $V_{IN2} = V_{O2} + 2V$  ;  $V_{DIS} = 2.5V$  ;  $I_{O1,2} = 0$  ;  $T_j = 25^\circ C$  unless otherwise specified)

| Symbol     | Parameter                               | Test Conditions                                                                         | Min. | Typ. | Max. | Unit       |
|------------|-----------------------------------------|-----------------------------------------------------------------------------------------|------|------|------|------------|
| $I_{O1SC}$ | Short Circuit Current 1                 | $7V < V_{IN1} < 14V$                                                                    |      |      | 1.3  | A          |
| $I_{O2SC}$ | Short Circuit Current 2                 | $V_{O2} + 2V < V_{IN2} < 20V$                                                           |      |      | 1.3  | A          |
| $V_{DISH}$ | Disable Voltage HIGH at Pin 3           |                                                                                         | 2    |      |      | V          |
| $V_{DISL}$ | Disable Voltage LOW at Pin 3            |                                                                                         |      |      | 0.8  | V          |
| $V_{PROG}$ | Reference Voltage at Pin 5              |                                                                                         |      | 2.5  |      | V          |
| $I_{DISH}$ | Bias Current at Pin 3                   | $V_{DIS} = 5.3V$                                                                        |      |      | 10   | $\mu A$    |
| $I_{DISL}$ | Bias Current at Pin 3                   | $V_{DIS} = 0.4V$                                                                        | -80  |      |      | $\mu A$    |
| $SVR_1$    | Supply Voltage Rejection 1 (see note 1) | $V_{IN1} = 9V_{DC} + 1V_{PP} \text{ SIN}$<br>$f = 120\text{Hz}, I_{O1} = 200\text{mA}$  | 50   |      |      | dB         |
| $SVR_2$    | Supply Voltage Rejection2 (see note 1)  | $V_{IN2} = 16V_{DC} + 1V_{PP} \text{ SIN}$<br>$f = 120\text{Hz}, I_{O2} = 200\text{mA}$ | 50   |      |      | dB         |
| $I_Q$      | Quiescent Current                       | $I_{O1} = I_{O2} = 200\text{mA}$                                                        |      |      | 6    | mA         |
| $T_{JSD}$  | Thermal Shut-down Junction Temperature  |                                                                                         |      | 145  |      | $^\circ C$ |

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**Note 1 :** SVR supply voltage rejection :

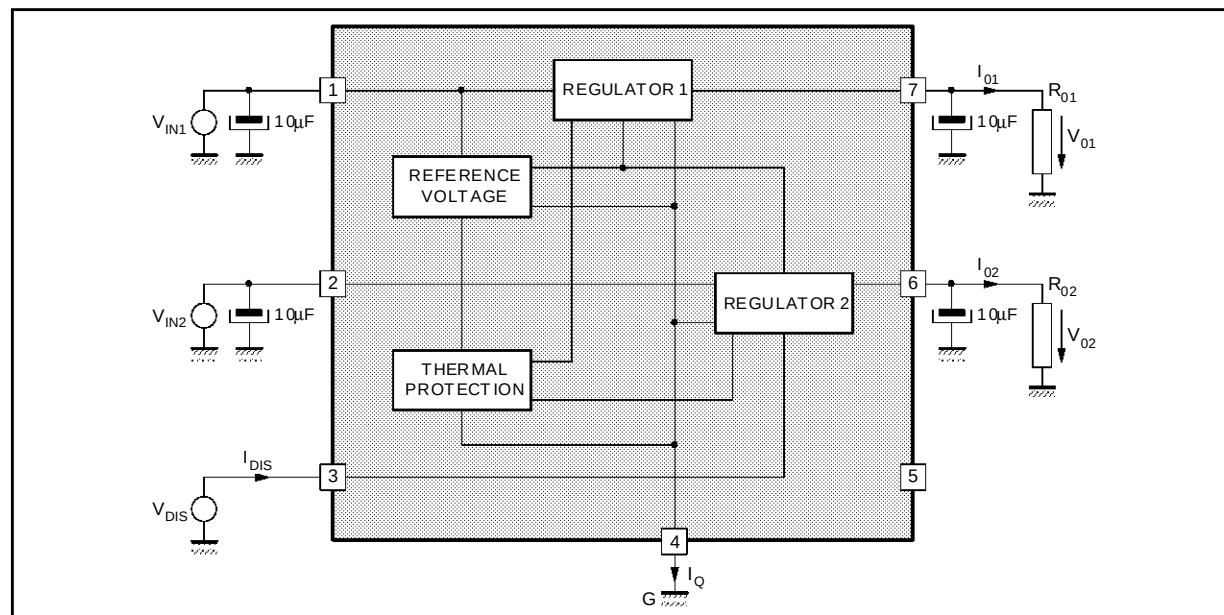
$$20 \cdot \text{LOG} \cdot \left| \frac{V_{INac}}{V_{Oac}} \right|$$

where :

$V_{INac}$  is the value of the sinusoidal signal forced at the input. (120Hz, 1V<sub>PP</sub>)

$V_{Oac}$  is the peak-peak ripple voltage present at the output

**Figure 1 : Test Circuit**



8135-03.EPS

## TDA8135

### CIRCUIT DESCRIPTION

The TDA8135 is a dual voltage regulator with disable.

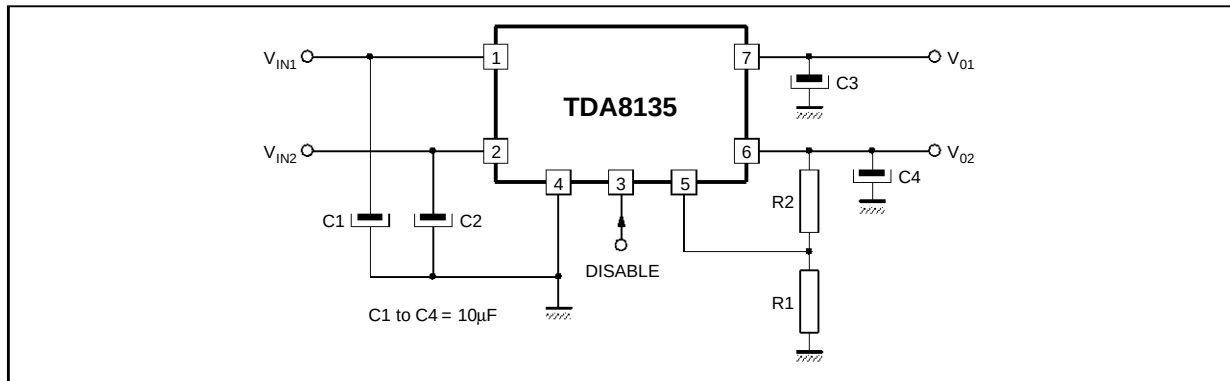
The two regulation parts are supplied from one voltage reference circuit, trimmed by zener zap during EWS test. Since the supply voltage of this last is connected at Pin 1 ( $V_{IN1}$ ), the regulator 2 will

not work if the Pin 1 is not supplied.

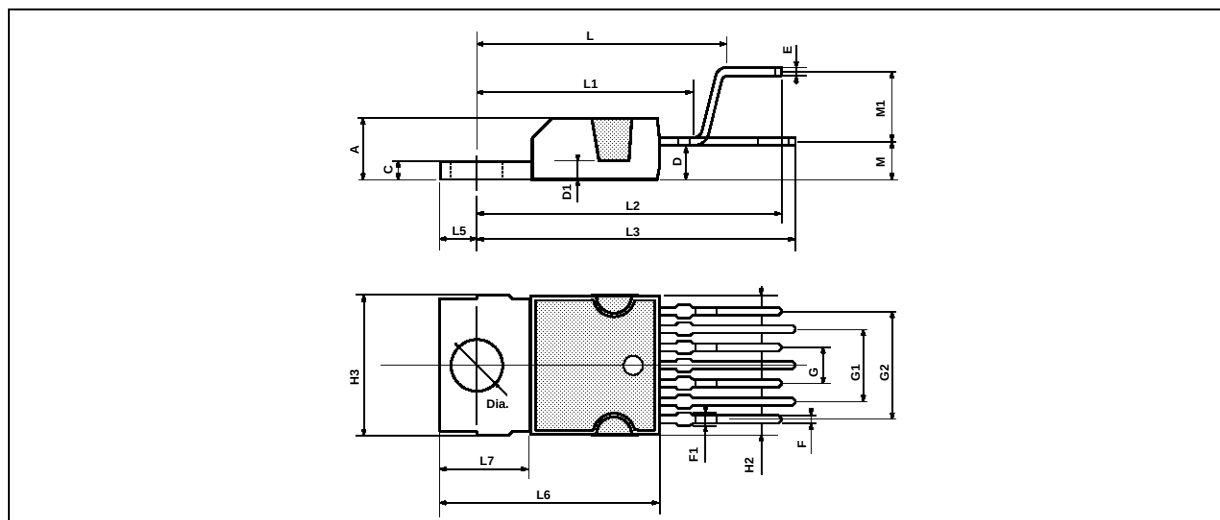
It is possible to switch-off the output voltage 2 ( $V_{O2}$ ) by applying at Pin 3 (disable input) a low TTL level.

$$V_{O2} = V_{\text{PROG}} \cdot \frac{R1 + R2}{R1}$$

### TYPICAL APPLICATION



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**PACKAGE MECHANICAL DATA****9 PINS - PLASTIC HEPTAWATT**

| 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 |

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