FAIRCHILD SEMICONDUCTOR®

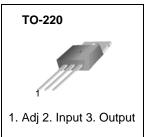
LM337 3-Terminal 1.5A Negative Adjustable Regulator

Features

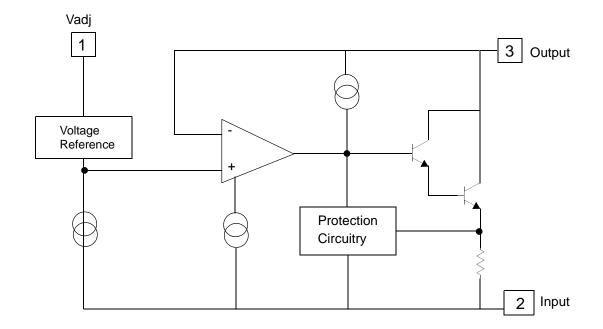
- Output Current in Excess of 1.5A
- Output Voltage Adjustable Between -1.2V and -37V
- Internal Thermal Overload Protection
- Internal Short Circuit Current Limiting
- Output Transistor Safe Area Compensation
- Floating Operation for High Voltage Applications
- Standard 3-Pin TO-220 Package

Description

The LM337 is a 3-terminal negative adjustable regulator. It supplies in excess of 1.5A over an output voltage range of -1.2V to -37V. This regulator requires only two external resistor to set the output voltage. Included on the chip are current limiting, thermal overload protection and safe area compensation.



Internal Block Diagram



Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|-----------------------------------|---------|--------------------|------|
| Input-Output Voltage Differential | VI - VO | 40 | V |
| Power Dissipation | PD | Internally limited | W |
| Operating Temperature Range | TOPR | 0 ~ +125 | °C |
| Storage Temperature Range | TSTG | -65 ~ +125 | °C |

Electrical Characteristics

(VI - VO = 5V, IO = 40mA, $0^{\circ}C \le T_J \le +125^{\circ}C$, PDMAX = 20W, unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Тур. | Max. | Unit | |
|---|-------------------|--|--------|--------|--------|------|--|
| Line Regulation (Note1) | R _{line} | $\begin{array}{l} T_A = +25^\circ C \\ 3V \leq I \ V_I - V_O \ I \leq 40V \end{array}$ | - | 0.01 | 0.04 | %/ V | |
| | | $3V \le I VI - VO I \le 40V$ | - | 0.02 | 0.07 | | |
| Load Regulation (Note1) | Rload | $ \begin{array}{c c} T_{A} = +25^{\circ}C & & \\ 10mA \leq I_{O} \leq 0.5A & & \\ \end{array} $ | | 50 | mV | | |
| | | $10mA \le IO \le 1.5A$ | - | 15 | 150 | | |
| Adjustable Pin Current | IADJ | - | - | 50 | 100 | μA | |
| Adjustable Pin Current Change | ΔIADJ | $ \begin{array}{l} T_A = +25^{\circ}C \\ 10mA \leq I_O \leq 1.5A \\ 3V \leq I \; V_I - V_O \; I \leq 40V \end{array} $ | - | 2 | 5 | μA | |
| Reference Voltage | Vref | T _A = +25°C | -1.213 | -1.250 | -1.287 | V | |
| | | $3V \le I VI - VO I \le 40V$ $10mA \le IO \le 1.5A$ | -1.200 | -1.250 | -1.300 | | |
| Temperature Stability | STT | $0^{\circ}C \leq TJ \leq +125^{\circ}C$ | - | 0.6 | - | % | |
| Minimum Load Current to Maintain Regulation | IL(MIN) | 3V ≤I VI - VO I ≤ 40V | - | 2.5 | 10 | - mA | |
| | | 3V ≤I VI - VO I ≤ 10V | - | 1.5 | 6 | | |
| RMS Noise, % of VOUT | eN | $T_A = +25^{\circ}C \ 10Hz \le f \le 10kHz$ | - | 0.003 | - | % | |
| Ripple Rejection Ratio | RR | Vo = -10V, f = 120Hz | - | 60 | - | dB | |
| | | CADJ = 10µF (Note2) | 66 | 77 | - | ub | |
| Long Term Stability | ST | TJ = 125°C ,1000Hours | - | 0.3 | 1 | % | |
| Thermal Resistance Junction to Case | R _θ JC | - | - | 4 | - | °C/W | |

Note:

1. Load and line regulation are specified at constant junction temperature. Change in VO due to heating effects must be taken into account separately. Pulse testing with low duty is used.

2. CADJ, when used, is connected between the adjustment pin and ground.

Typical Application

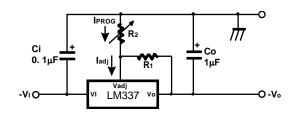


Figure 1. Programmable Regulator

 Ci is required if regulator is located more then 4 inches from power supply filter. A 1.0µF solid tantalum or 10µF aluminum electrolytic is recommended. Co is necessary for stability. A 1.0µF solid tantalum or 10µF aluminum electrolytic is recommended.

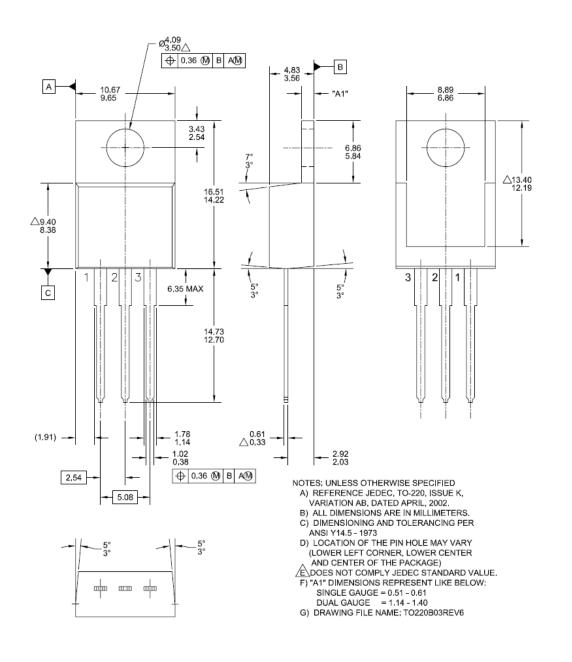
[•] V_{O} = -1.25V (1+R₂/R₁)

Mechanical Dimensions

Package

Dimensions in millimeters

TO-220 [SINGLE GAUGE]



Ordering Information

| Product Number | Package | Operating Temperature |
|----------------|---------|-----------------------|
| LM337T | TO-220 | 0°C to +125°C |

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