

KA337

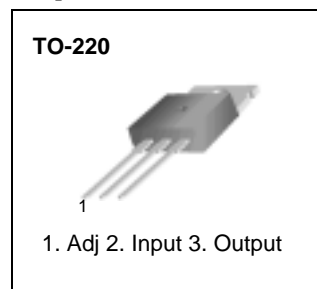
3-Terminal 1.5A Negative Adjustable Regulator

Features

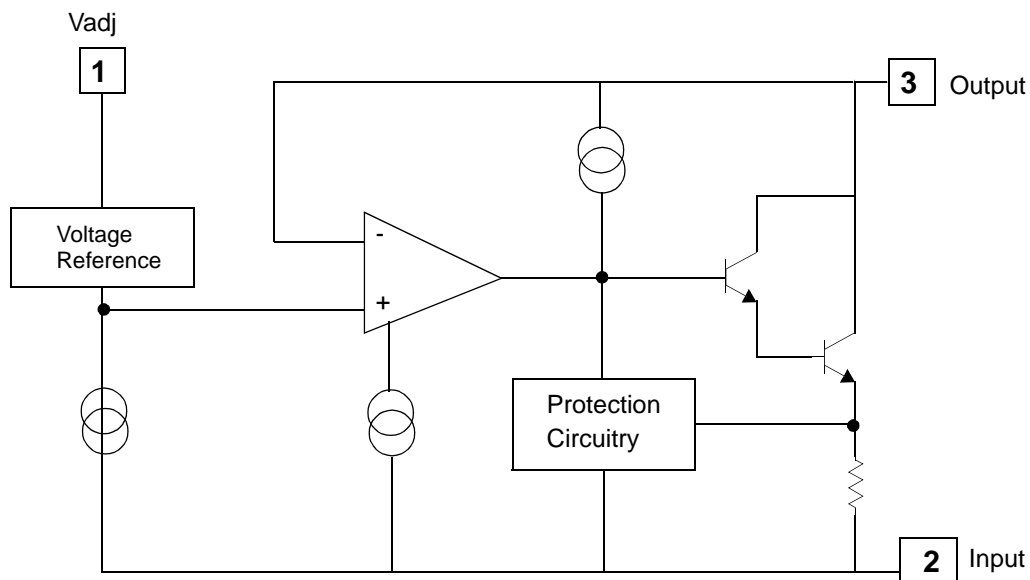
- Output current in excess of 1.5A
- Output voltage adjustable between -1.2V and -37V
- Internal thermal overload protection
- Internal short circuit current limiting
- Output transistor safe area compensation
- Floating operation for high voltage applications
- Standard 3-pin TO-220 package

Description

The KA337 is a 3-terminal negative adjustable regulator. It supply 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 | $ V_I - V_O $ | 40 | V |
| Power Dissipation | P_D | Internally limited | W |
| Operating Temperature Range | T_{OPR} | 0 ~ +125 | °C |
| Storage Temperature Range | T_{STG} | -65 ~ +125 | °C |

Electrical Characteristics

($V_I - V_O = 5V$, $I_O = 40mA$, $0^\circ C \leq T_J \leq +125^\circ C$, $P_{D_{MAX}} = 20W$, unless otherwise specified)

| Parameter | Symbol | Conditions | Min | Typ. | Max. | Unit |
|---|------------------|--|--------|--------------------|--------|----------|
| Line Regulation (Note1) | R_{line} | $T_A = +25^\circ C$ $3V \leq V_I - V_O \leq 40V$ | - | 0.01 | 0.04 | % / V |
| | | $3V \leq V_I - V_O \leq 40V$ | - | 0.02 | 0.07 | |
| Load Regulation (Note1) | R_{load} | $T_A = +25^\circ C$ $10mA \leq I_O \leq 0.5A$ | - | 15 | 50 | mV |
| | | $10mA \leq I_O \leq 1.5A$ | - | 15 | 150 | |
| Adjustable Pin Current | I_{ADJ} | - | - | 50 | 100 | μA |
| Adjustable Pin Current | ΔI_{ADJ} | $T_A = +25^\circ C$ $10mA \leq I_O \leq 1.5A$ $3V \leq V_I - V_O \leq 40V$ | - | 2 | 5 | μA |
| Reference Voltage | V_{REF} | $T_A = +25^\circ C$ | -1.213 | -1.250 | -1.287 | V |
| | | $3V \leq V_I - V_O \leq 40V$ $10mA \leq I_O \leq 1.5A$ | -1.200 | -1.250 | -1.300 | |
| Temperature Stability | ST_T | $0^\circ C \leq T_J \leq +125^\circ C$ | - | 0.6 | - | % |
| Minimum Load Current to Maintain Regulation | $I_{L(MIN)}$ | $3V \leq V_I - V_O \leq 40V$ | - | 2.5 | 10 | mA |
| | | $3V \leq V_I - V_O \leq 10V$ | - | 1.5 | 6 | |
| Output Noise | e_N | $T_A = +25^\circ C$ $10Hz \leq f \leq 10KHz$ | - | $3 \times V_{OUT}$ | - | $V/10^6$ |
| Ripple Rejection Ratio | RR | $V_O = -10V$, $f = 120Hz$ | - | 60 | - | dB |
| | | CADJ = $10\mu F$ (Note2) | 66 | 77 | - | |
| Long Term Stability | ST | $T_J = 125^\circ C$, 1000Hours | - | 0.3 | 1 | % |
| Thermal Resistance Junction to Case | $R_{\theta JC}$ | - | - | 4 | - | °C / W |

Note:

1. Load and line regulation are specified at constant junction temperature. Change in V_O 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

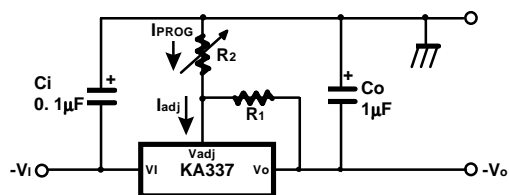


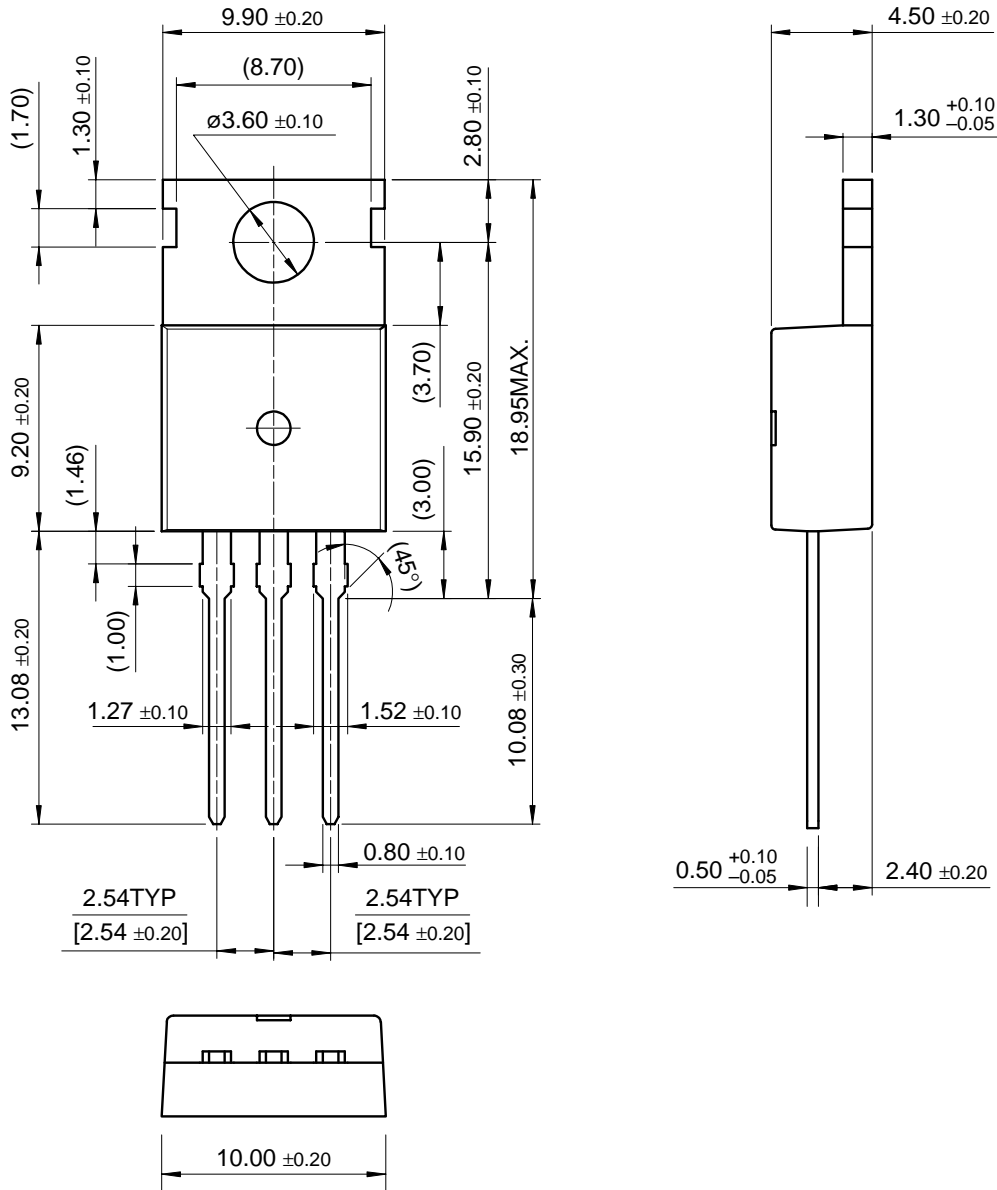
Figure 1. Programmable Regulator

- C_i is required if regulator is located more than 4 inches from power supply filter. A $1.0\mu\text{F}$ solid tantalum or $10\mu\text{F}$ aluminum electrolytic is recommended.
- C_o is necessary for stability. A $1.0\mu\text{F}$ solid tantalum or $10\mu\text{F}$ aluminum electrolytic is recommended.
- $V_O = -1.25\text{V} (1 + R_2/R_1)$

Mechanical Dimensions

Package

TO-220



Ordering Information

| Product Number | Package | Operating Temperature |
|----------------|---------|-----------------------|
| KA337 | TO-220 | 0°C to + 125°C |

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.