

KA317L

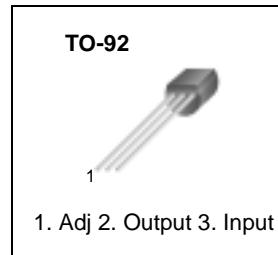
3-Terminal 0.1A Positive Adjustable Regulator

Features

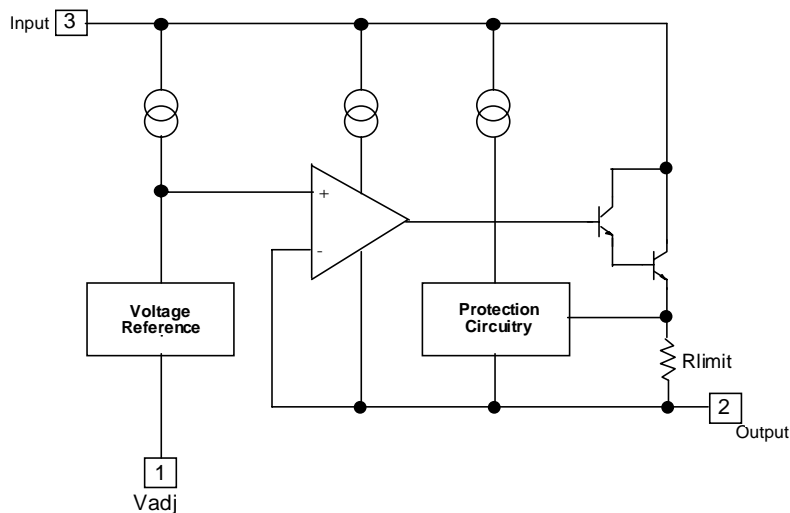
- Output Current in Excess of 100mA
- Output Adjustable Between 1.2V and 37V
- Internal Thermal Overload Protection
- Internal Short Circuit Current-Limiting
- Output Transistor Safe Area Compensation
- Floating Operation For High Voltage Applications

Description

The KA317L is a 3-terminal adjustable positive voltage regulator capable of supplying in excess of 100mA over an output voltage range of 1.2V to 37V. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage.



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 Junction Temperature Range | T_J | 0 ~ +125 | °C |
| Storage Temperature Range | T_{STG} | -65 ~ +125 | °C |

Electrical Characteristics

($V_I - V_O = 5V$, $I_O = 40mA$, $0^\circ C \leq T_J \leq +125^\circ C$, $P_{DMAX} = 625mW$, unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|------------------|---|------|-----------|-----------|----------------|
| *Line Regulation | 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 | R_{load} | $T_A = +25^\circ C$ $10mA \leq I_O \leq 100mA$ $V_O \leq 5V$ $V_O \geq 5V$ | - | 5 0.1 | 25 0.5 | mV %/ V_O |
| | | $10mA \leq I_O \leq 100mA$ $V_O \leq 5V$ $V_O \geq 5V$ | - | 20 0.3 | 70 1.5 | mV %/ V_O |
| Adjustment Pin Current | I_{ADJ} | - | - | 50 | 100 | μA |
| Adjustment Pin Current Change | ΔI_{ADJ} | $3V \leq V_I - V_O \leq 40V$ $10mA \leq I_O \leq 100mA$ $P_D < P_{DMAX}$ | - | 0.2 | 5 | μA |
| Reference Voltage | V_{REF} | $3V < V_I - V_O < 40V$ $10mA \leq I_O \leq 100mA$ $P_D \leq P_{DMAX}$ | 1.20 | 1.25 | 1.30 | V |
| Temperature Stability | STT | - | - | 0.7 | - | % |
| Minimum Load Current to Maintain Regulation | $I_{L(MIN)}$ | $V_I - V_O = 40V$ | - | 3.5 | 10 | mA |
| Maximum Output Current | $I_{O(MAX)}$ | $V_I - V_O \leq 15V$ $P_D < P_{DMAX}$ | 100 | 200 | - | mA |
| | | $V_I - V_O \leq 40V$ $P_D < P_{DMAX}$, $T_A = +25^\circ C$ | 25 | 50 | - | |
| RMS Noise, % of V_{OUT} | e_N | $T_A = +25^\circ C$ $10Hz < f < 10KHz$ | - | 0.003 | - | %/ V_O |
| Ripple Rejection | RR | $V_O = 10V$, $f = 120Hz$ without C_{ADJ} $C_{ADJ} = 10\mu F$ | 66 | 65 80 | - | dB |
| Long-Term Stability | ST | $T_J = +125^\circ C$, 1000 Hours | - | 0.3 | - | % |

- 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 cycle is used.

Typical Application

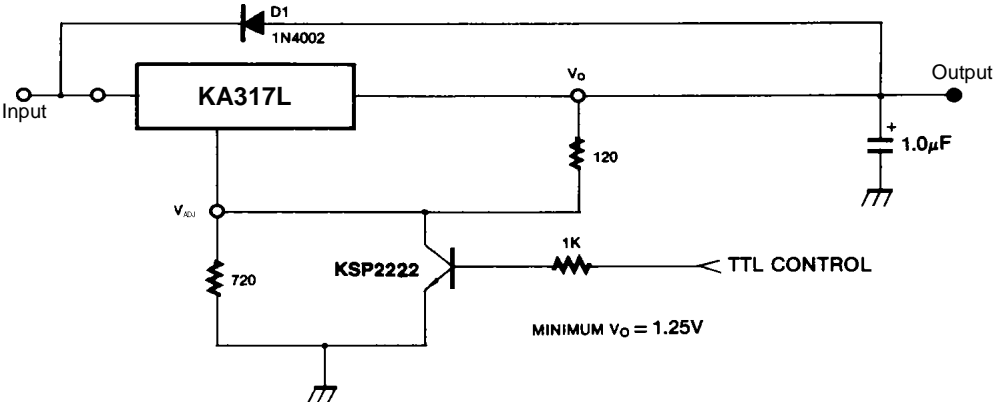


Figure 1. 5V Electronic Shutdown Regulator

D1 protects the device during an input short circuit.

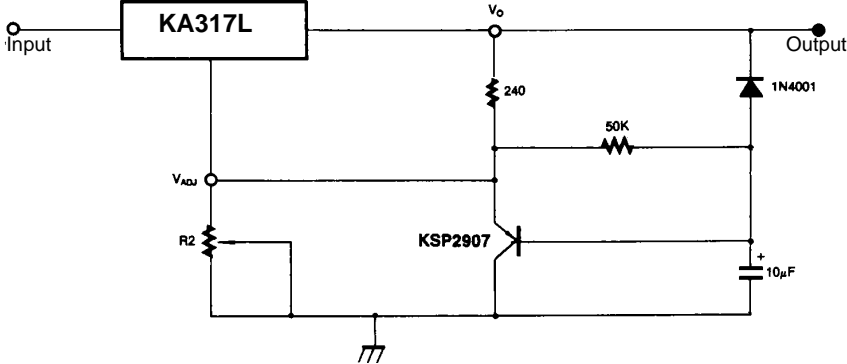


Figure 2. Slow Turn-On Regulator

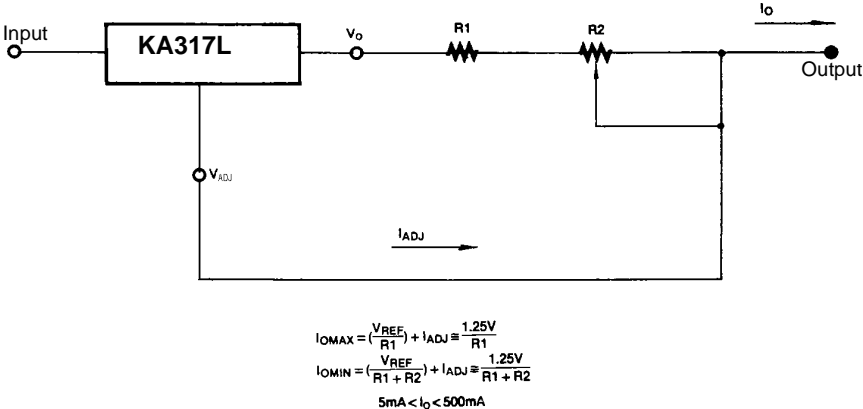
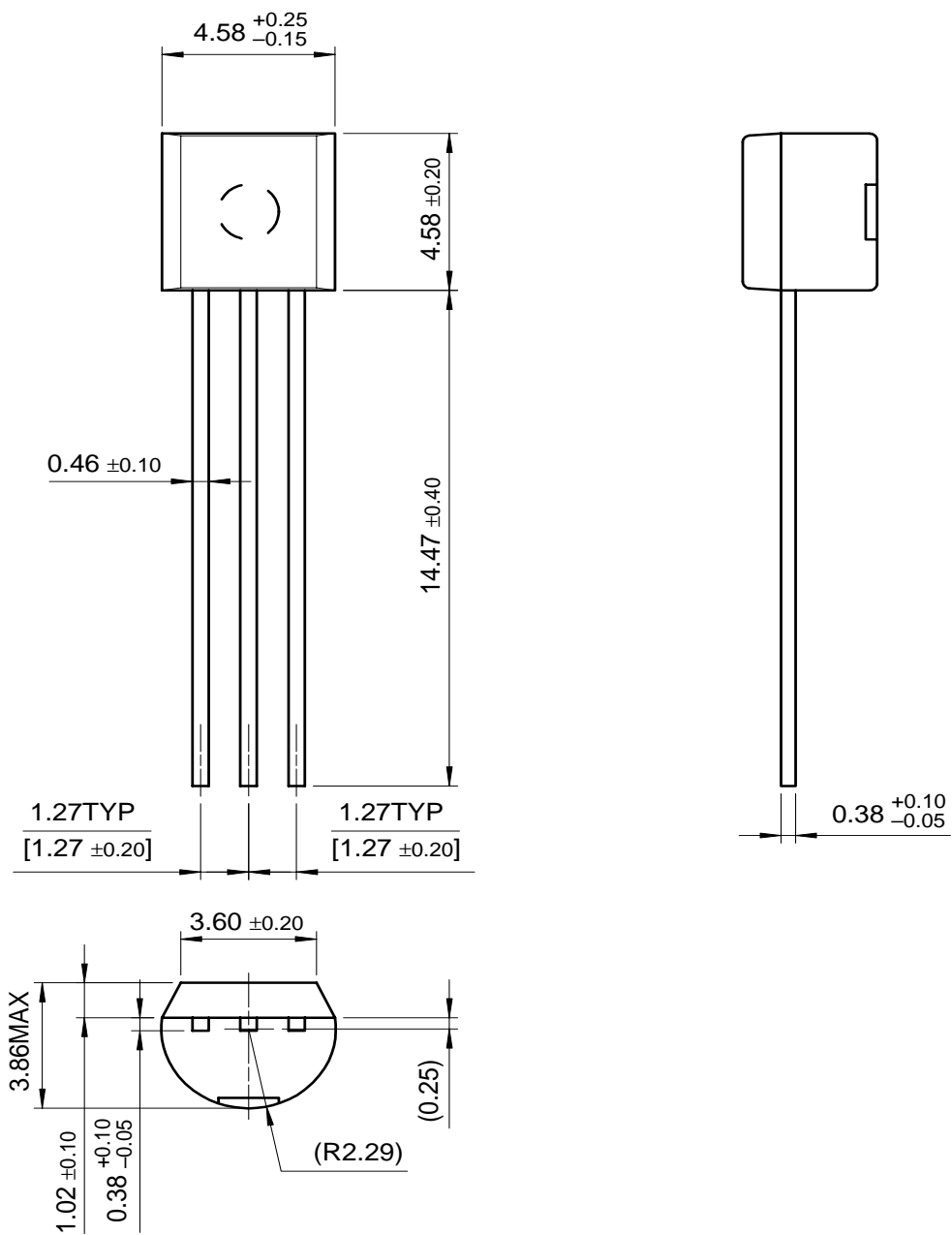


Figure 3. Current Regulator

Mechanical Dimensions

Package

TO-92



Ordering Information

| Product Number | Package | Operating Temperature |
|----------------|---------|-----------------------|
| KA317LZ | TO-92 | 0°C to + 125°C |

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