

LM336-2.5/LM336B-2.5

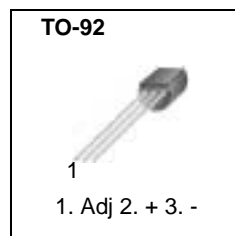
Programmable Shunt Regulator

Features

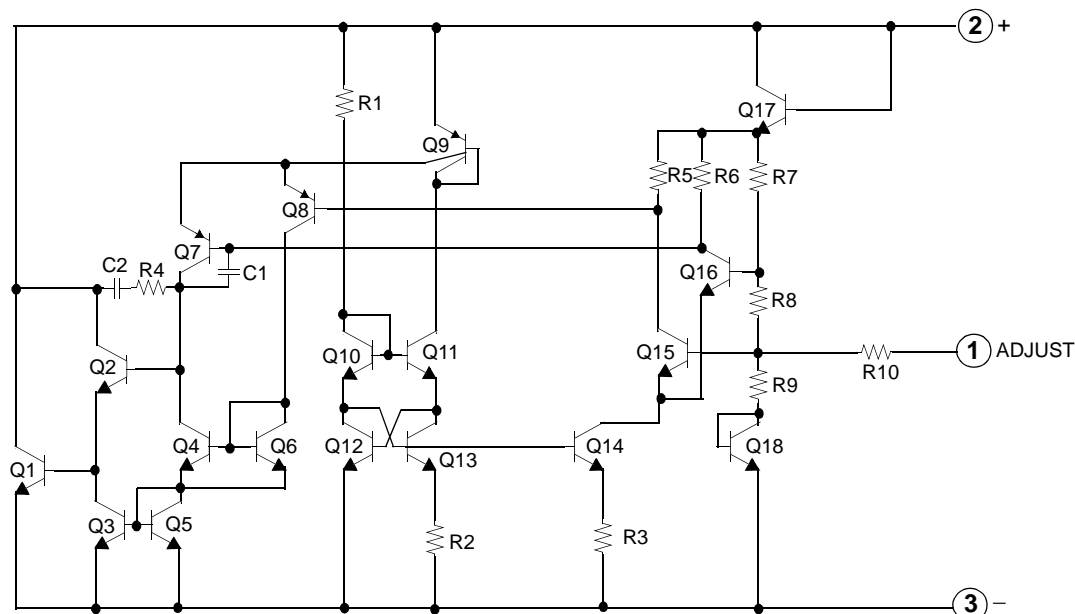
- Low Temperature Coefficient
- Guaranteed Temperature Stability 4mV Typical
- 0.2Ω Dynamic Impedance
- ±1.0% Initial Tolerance Available
- Easily Trimmed for Minimum Temperature Drift

Description

The LM336-2.5/LM336B-2.5 integrated circuits are precision 2.5V shunt regulators. The monolithic IC voltage reference operates as a low temperature coefficient 2.5V zener with 0.2W dynamic impedance. A third terminal on the LM336-2.5/LM336B-2.5 allows the reference voltage and temperature coefficient to be trimmed easily. LM336-2.5/LM336B-2.5 are useful as a precision 2.5V low voltage reference for digital voltmeters, power supplies or OP-AMP circuitry. The 2.5V makes it convenient to obtain a stable reference from low voltage supplies. Further, since the LM336-2.5/LM336B-2.5 operate as shunt regulators, they can be used as either a positive or negative voltage reference.



Internal Block Diagram



Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|--|-----------|-------------|------|
| Reverse Current | I_R | 15 | mA |
| Forward Current | I_F | 10 | mA |
| Operating Temperature Range LM336-2.5/LM336B-2.5 | T_{OPR} | 0 ~ +70 | °C |
| Storage Temperature Range | T_{STG} | - 60 ~ +150 | °C |

Electrical Characteristics

(0°C < T_A < +70°C, unless otherwise specified)

| Parameter | Symbol | Conditions | LM336-2.5 | | | LM336B-2.5 | | | Unit |
|--|-------------------------|---|-----------|------|------|------------|------|-------|----------|
| | | | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| Reverse Breakdown Voltage | V_R | $T_A = +25^\circ\text{C}$ $I_R = 1\text{mA}$ | 2.44 | 2.49 | 2.54 | 2.465 | 2.49 | 2.515 | V |
| Reverse Breakdown Change with Current | $\Delta V_R/\Delta I_R$ | $T_A = +25^\circ\text{C}$ $400\mu\text{A} \leq I_R \leq 10\text{mA}$ | - | 2.6 | 10 | - | 2.6 | 6 | mV |
| Reverse Dynamic Impedance | Z_D | $T_A = +25^\circ\text{C}$ $I_R = 1\text{mA}$ | - | 0.2 | 1 | - | 0.2 | 0.6 | Ω |
| Temperature Stability | ST_T | $I_R = 1\text{mA}$ | - | 1.8 | 6 | - | 1.8 | 6 | mV |
| Reverse Breakdown Change with Current | $\Delta V_R/\Delta I_R$ | $400\mu\text{A} \leq I_R \leq 10\text{mA}$ | - | 3 | 12 | - | 3 | 10 | mV |
| Reverse Dynamic Impedance | Z_D | $I_R = 1\text{mA}$ | - | 0.4 | 1.4 | - | 0.4 | 1.0 | Ω |
| Long Term Stability In Reference Voltage | ST | $I_R = 1\text{mA}$ | - | 20 | - | - | 20 | - | ppm/Khr |

Typical Performance Characteristics

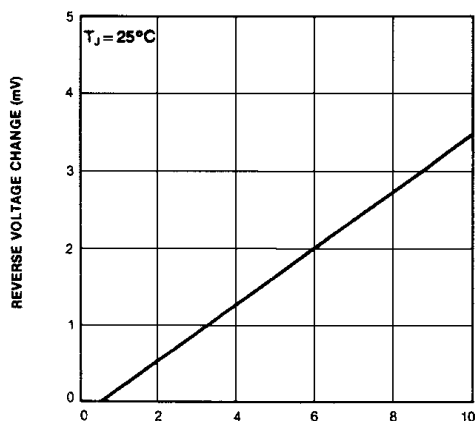


Figure 1. Reverse Voltage Change

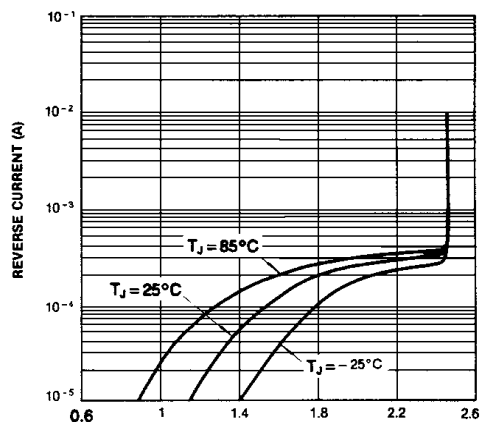


Figure 2. Reverse Characteristics

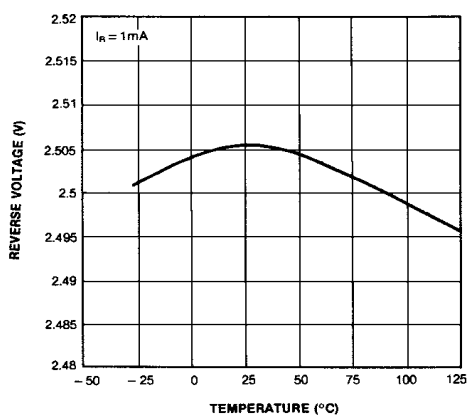


Figure 3. Temperature Drift

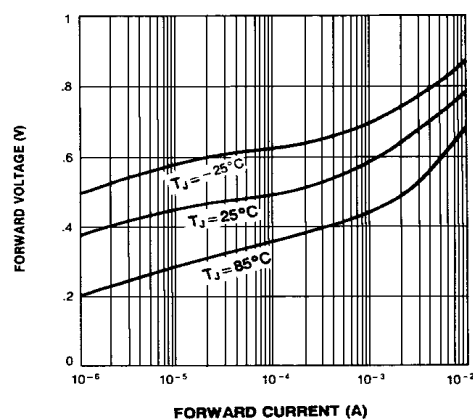


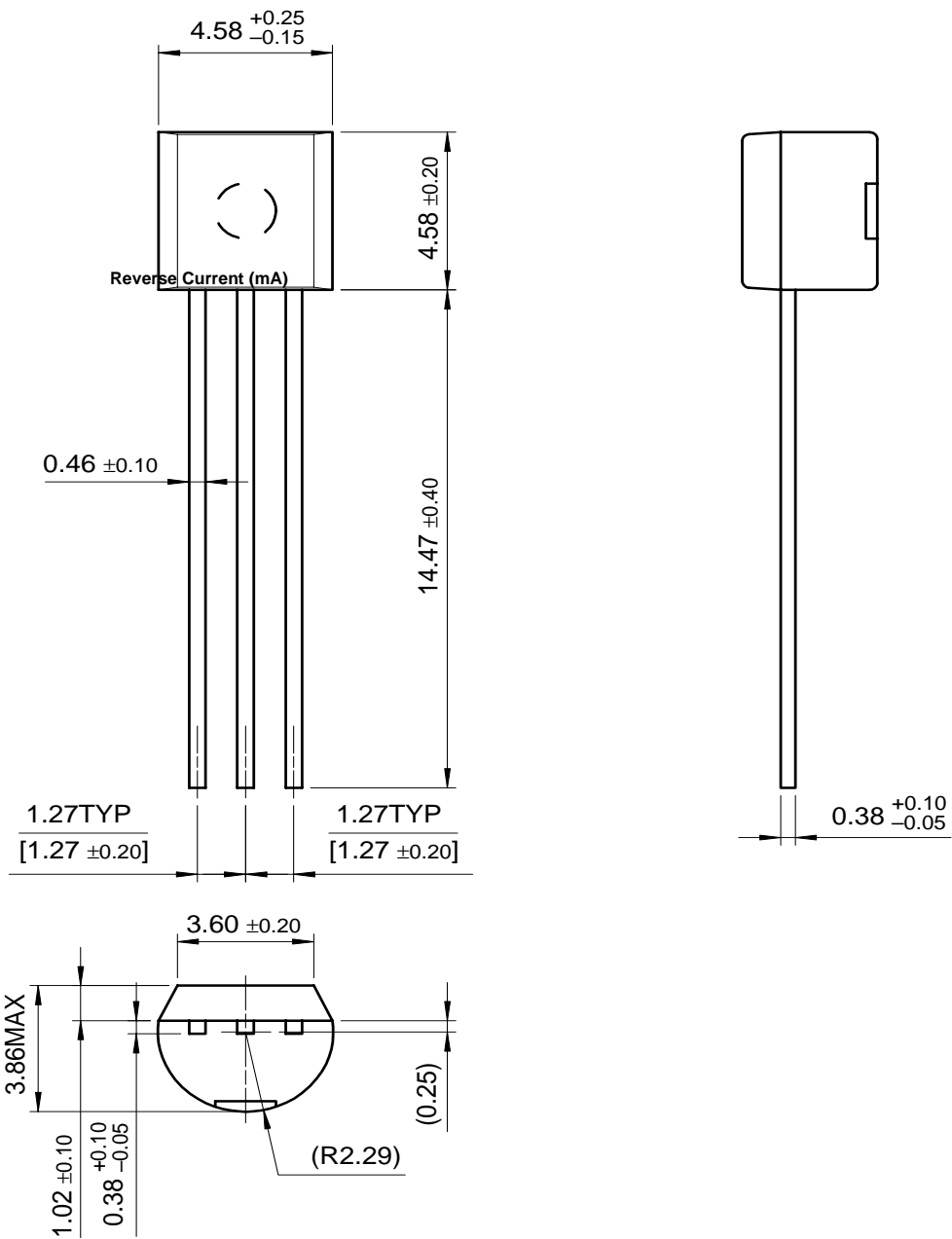
Figure 4. Forward Characteristics

Mechanical Dimensions

Package

Dimensions in millimeters

TO-92



Ordering Information

| Product Number | Package | Operating Temperature |
|----------------|---------|-----------------------|
| LM336Z2.5 | TO-92 | 0°C to +70°C |
| LM336BZ2.5 | | |

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