

# LM336Z25

## Programmable Shunt Regulator

### General Description

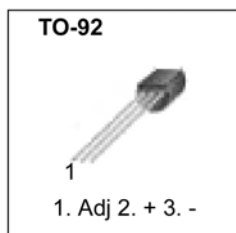
The LM336Z25 integrated circuits are precision 2.5V shunt regulators. The monolithic IC voltage reference operates as a low temperature coefficient 2.5V zener with 0.2W dynamic impedance. The monolithic IC voltage reference operates as a low temperature coefficient 2.5V zener with 0.2W dynamic impedance. A third terminal on the LM336Z25 allows the reference voltage and temperature coefficient to be trimmed easily. LM336Z25 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 LM336Z25 operate as shunt regulators, they can be used as either a positive or negative voltage reference.

### Features

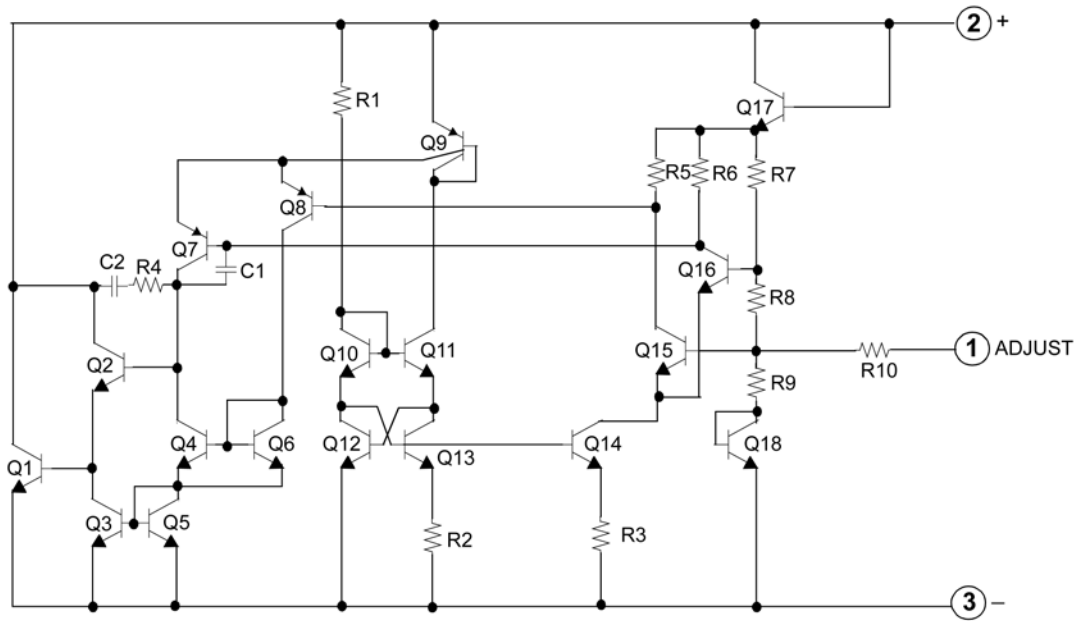
- Low Temperature Coefficient
- Guaranteed Temperature Stability 4mV Typical
- 0.2W Dynamic Impedance
- 1.0% Initial Tolerance Available
- Easily Trimmed for Minimum Temperature Drift

### Ordering Code:

Product Number	Package	Packing	Operating Temperature
LM336Z25	TO-92	Bulk	0°C to +70°C
LM336Z25X		Tape and Reel	
LM336Z25XA		Ammo	



### Internal Block Diagram



**Absolute Maximum Ratings**(Note 1)

Parameter	Symbol	Value	Unit
Reverse Current	IR	15	mA
Forward Current	IF	10	mA
Operating Temperature Range LM336Z25	TOPR	0 ~ +70	°C
Storage Temperature Range	TSTG	- 60 ~ +150	°C

**Note 1:** The Absolute Maximum Ratings are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum rating.

**Electrical Characteristics** ( $0^{\circ}\text{C} < T_A < +70^{\circ}\text{C}$ , unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Breakdown Voltage	$V_R$	$T_A = +25^{\circ}\text{C}$ , $I_R = 1\text{mA}$	2.44	2.49	2.54	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	mV
Reverse Dynamic Impedance	$Z_D$	$T_A = +25^{\circ}\text{C}$ $I_R = 1\text{mA}$	-	0.2	1	$\Omega$
Temperature Stability	$ST_T$	$I_R = 1\text{mA}$	-	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	mV
Reverse Dynamic Impedance	ZD	$I_R = 1\text{mA}$	-	0.4	1.4	$\Omega$
Long Term Stability In Reference Voltage	ST	$I_R = 1\text{mA}$	-	20	-	ppm/Khr

### Typical Performance Characteristics

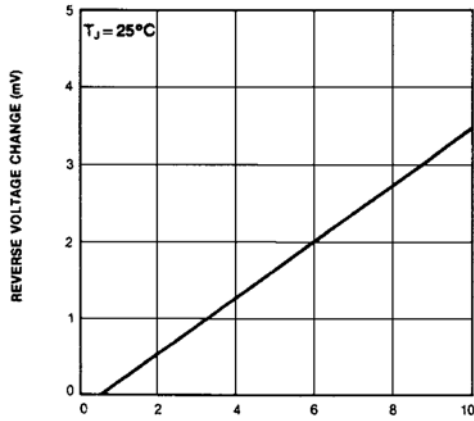


FIGURE 1. Reverse Voltage Change

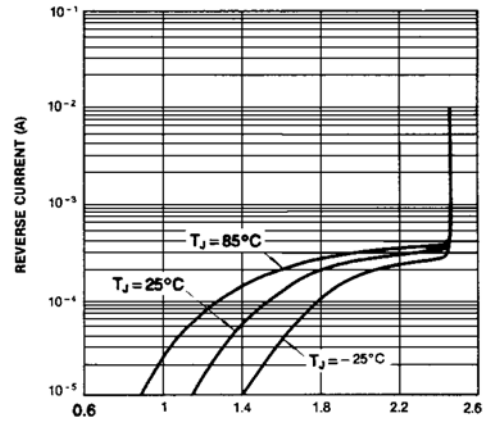


FIGURE 2. Reverse Characteristics

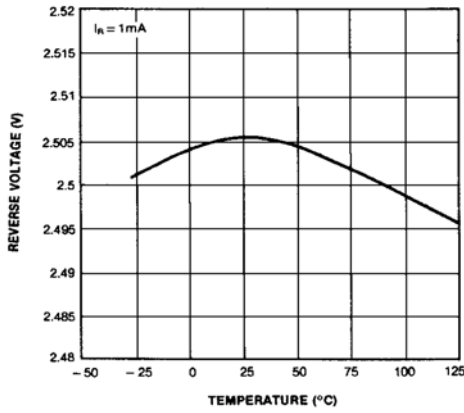


FIGURE 3. Temperature (°C)

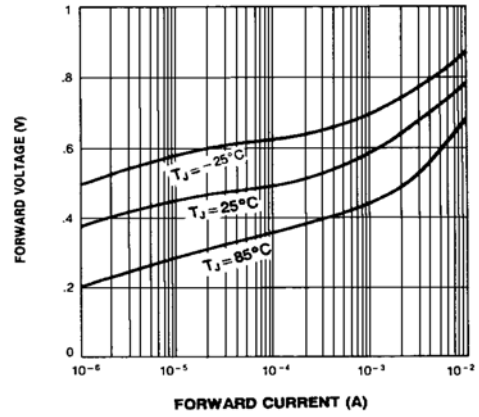


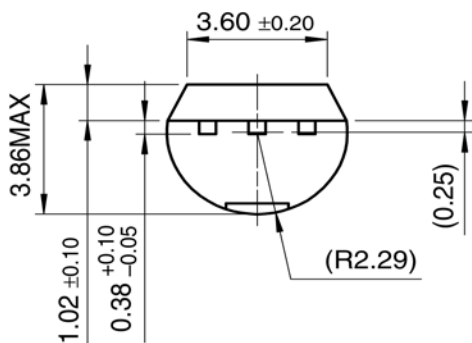
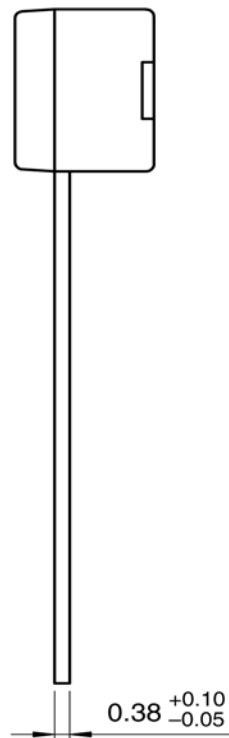
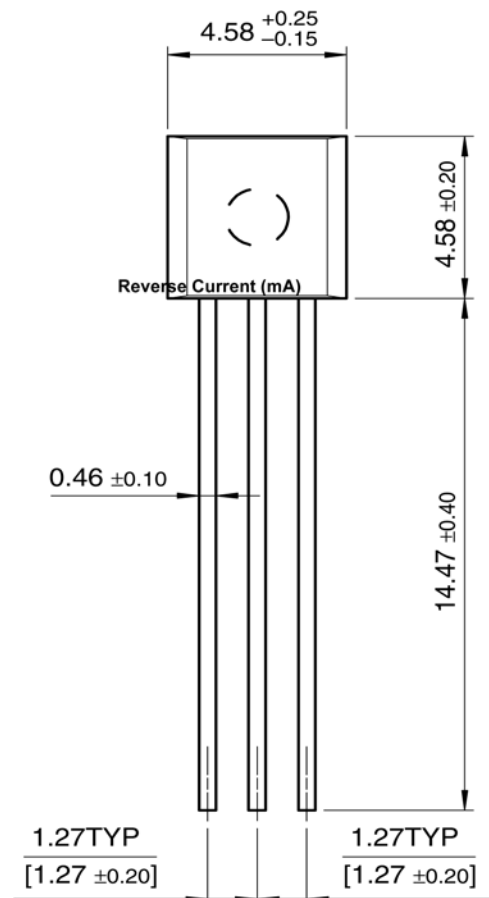
FIGURE 4. Forward Characteristics

**Physical Dimensions** inches (millimeters) unless otherwise noted

Package

Dimensions in millimeters

**TO-92**



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