



# WS336-5.0

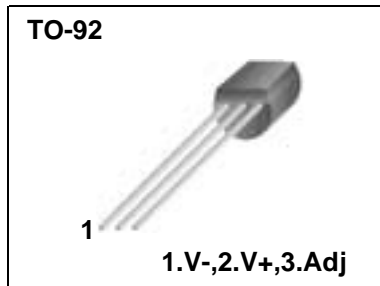
# Programmable Shunt Regulator

## Features

- Low temperature coefficient
- Guaranteed temperature stability
- 0.6Ω dynamic impedance
- ±1.0% initial tolerance available
- Easily trimmed for minimum temperature drift
- Adjustable 4V to 6V
- Wide operating range current of 400mA to 10mA
- Fast turn on

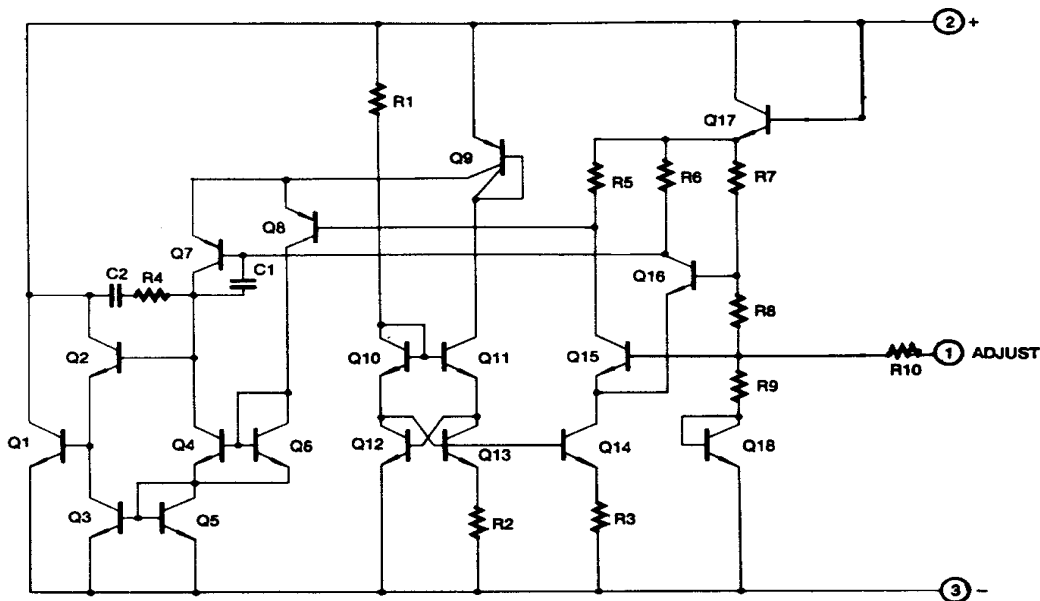
## Description

The WS336-5.0 integrated Circuits are precision 5.0V shunt regulators. The monolithic IC voltage references operate as a low temperature coefficient 5.0V zener with 0.6ohm dynamic impedance. A third terminal on the WS336-5.0 allow the reference voltage and temperature coefficient to be trimmed easily. WS336-5.0 are useful as a precision 5.0V low voltage reference for digital voltmeters, power supplies or op amp circuitry. The 5.0V make it convenient to obtain a stable reference from low voltage supplies. Further, since the WS336-5.0 operate as shunt regulators, they can be used as either a positive or negative voltage reference.



Product Number	Package	Operating Temperature
WS336Z-5.0	TO-92	0° C ~ 70° C

## Internal Block Diagram



# WS336-5.0

## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Reverse Current	$I_R$	15	mA
Forward Current	$I_F$	10	mA
Operating Temperature Range KA336-2.5/B	$T_{OPR}$	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	WS336-5.0						Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Reverse Breakdown Voltage	$V_R$	$T_A = +25^\circ\text{C}$ $I_R = 1\text{mA}$	4.85	5.0	5.15				V
Reverse Breakdown Change with Current	$\Delta V_R/\Delta I_R$	$T_A = +25^\circ\text{C}$ $600\mu\text{A} \leq I_R \leq 10\text{mA}$	-	6	20				mV
Reverse Dynamic Impedance	$Z_D$	$T_A = +25^\circ\text{C}$ $I_R = 1\text{mA}$	-	0.6	2				$\Omega$
Temperature Stability	$ST_T$	$I_R = 1\text{mA}$	-	4	12				mV
Reverse Breakdown Change with Current	$\Delta V_R/\Delta I_R$	$400\mu\text{A} \leq I_R \leq 10\text{mA}$	-	6	24				mV
Reverse Dynamic Impedance	$Z_D$	$I_R = 1\text{mA}$	-	0.8	2.5				$\Omega$
Long Term Stability In reference voltage	$ST$	$I_R = 1\text{mA}$	-	20	-				ppm/Khr

# WS336-5.0

## Typical Performance Characteristics

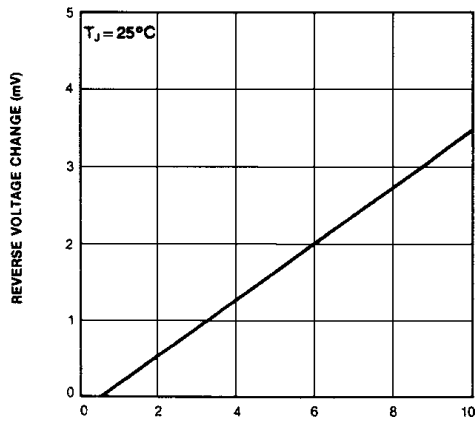


Figure 1. Reverse Voltage Change

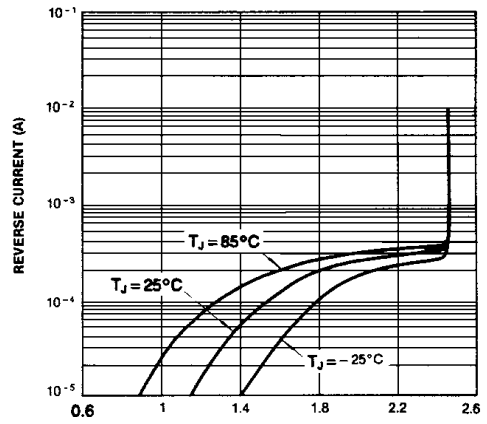


Figure 2. Reverse Characteristics

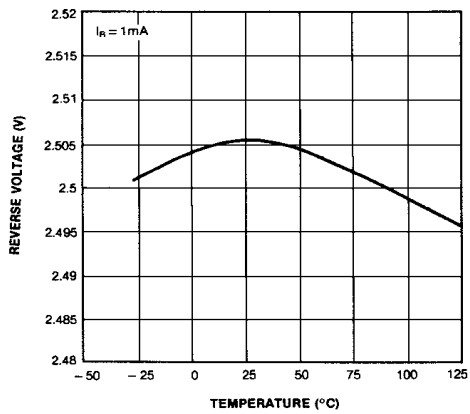


Figure 3. Temperature Drift

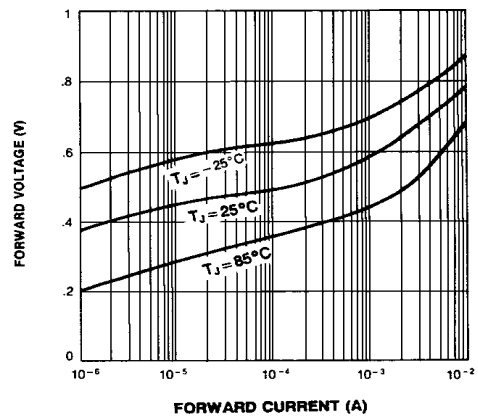


Figure 4. Forward Characteristics