

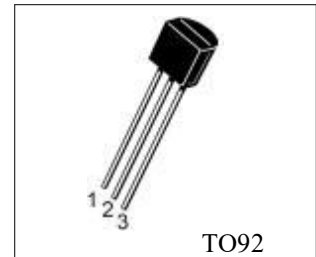


General Description

The LM336-5.0 integrated circuits is precision 5.0V shunt regulator diodes. The monolithic references operate as low-temperature-coefficient 5.0V zeners with a 0.6Ω dynamic impedance. A third terminal provided on the circuit allows the reference voltage and temperature coefficient to be easily trimmed.

The LM336-5.0 is useful as precision 5.0V low-voltage references (Vz) for digital voltmeters, power supplies, or operational-amplifier circuitry. The 5.0V voltage reference makes it convenient to obtain a stable reference from low voltage supplies. The LM336-5.0 operate as shunt regulators, and can be used as either positive or negative voltage references.

The LM336-5.0 is available in TO92 package.



Features

- Adjustable 4V to 6V
- Low temperature coefficient
- Wide operating current of $600\mu\text{A}$ to 10mA
- 0.6Ω dynamic impedance
- $\pm 1.0\%$ initial tolerance available
- Guaranteed temperature stability
- Easily trimmed for minimum temperature drift

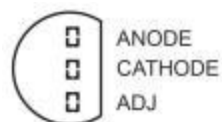
Package Information

Part NO.	Package Description	Package Marking	Package Option
LM336-5.0	TO92	SXXX LM336 Z-5.0	1000/Bag 2000/Tape

LM336Z-5.0:Part NO.

SXXX:Lot NO.

Pin Configuration



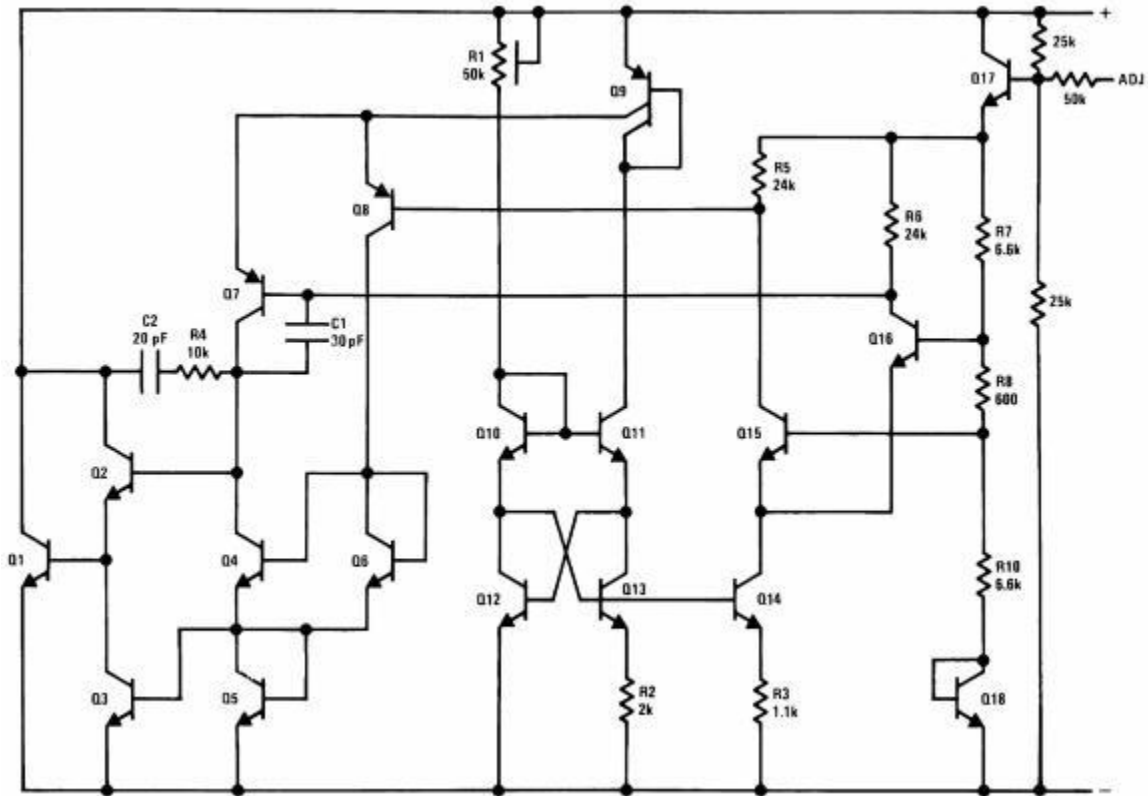
(TOP VIEW) LM336-5.0(TO92)



Symbol Configuration



Functional Block Diagram



Absolute Maximum Ratings * 1

Parameter	Symbol	Value	Unit
Reverse Current	I_R	20	mA
Forward Current	I_F	10	mA
Thermal Resistance Junction to Ambient	θ_{JA}	156	$^{\circ}C/W$
Lead Temperature (10 Seconds)	T_{lead}	260	$^{\circ}C$
Storage Temperature Range	T_{stg}	-65~150	$^{\circ}C$

**Recommended Operating Conditions**

Parameter	Symbol	Min.	Max.	Unit
Operating Free-air Temperature	T _A	0	70	°C

Electrical Characteristics (Unless otherwise specified, Full range is 0°C to +70°C)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
Reference Voltage	T _A =25°C, I _R =1mA	4.8	5.0	5.2	V
Change in Reference Voltage with Current	T _A =25°C, 600μA ≤ I _R ≤ 10mA		6	20	mV
Reference Dynamic Impedance	T _A =25°C, I _R =1mA, f=100Hz		0.6	2.0	Ω
Change in Reference Voltage with Temperature	V _R Adjusted 5.00V I _R =1mA, 0°C ≤ T _A ≤ 70°C		4	12	mV
Adjustment Range	Circuit of Figure3		±1		V
Long-term Change in Reference Voltage	T _A =25°C±0.1°C, I _R =1mA, time = 1000hrs		20		ppm

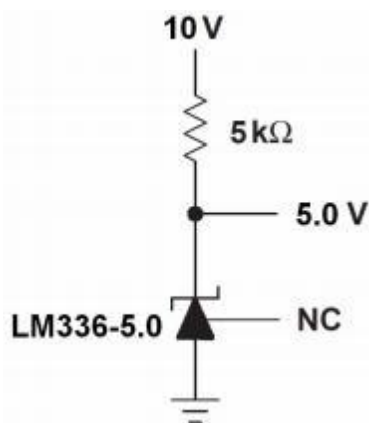
Application Circuit

Figure1 5.0V Reference

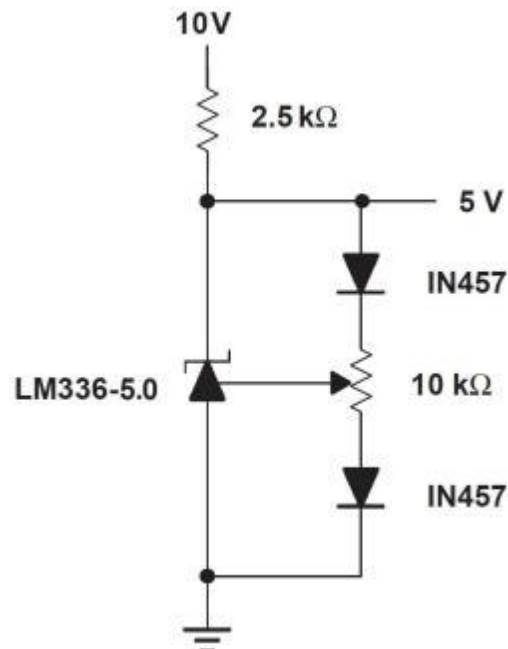


Figure2 5.0V Reference with Minimum Temperature Coefficient

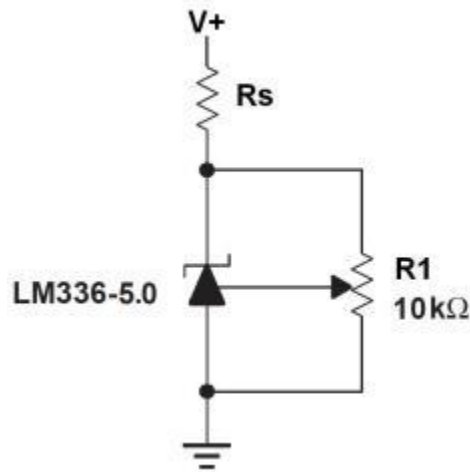
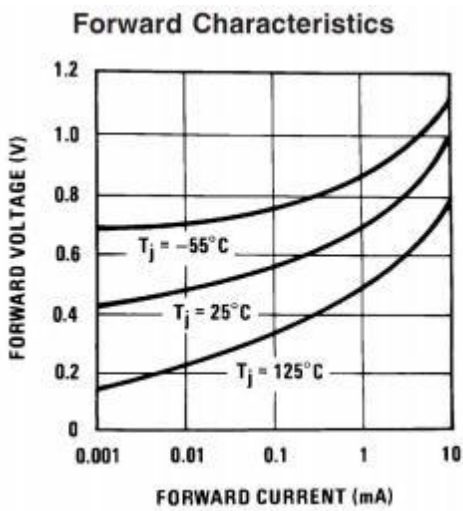


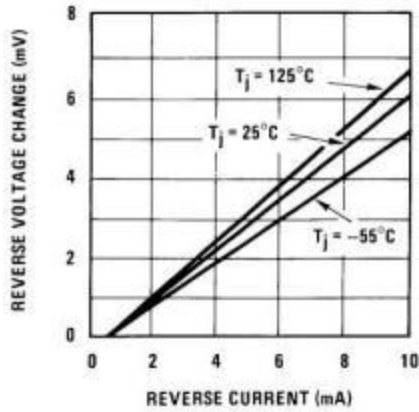
Figure3 LM336-5.0 with Pot for Adjustment of Reference Voltage (Trim Range = $\pm 1.0V$ Typical)

Characteristic Curves

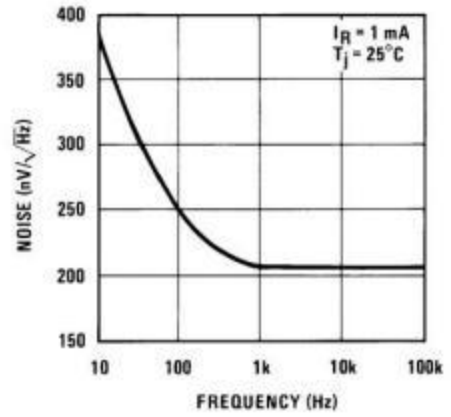




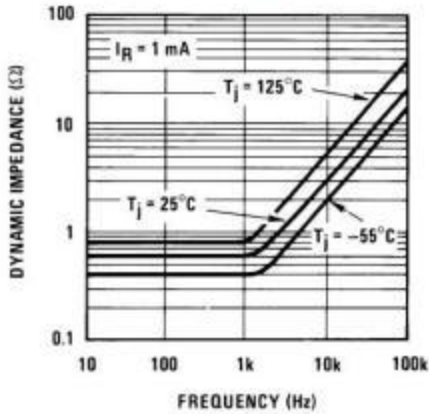
Reverse Voltage Change



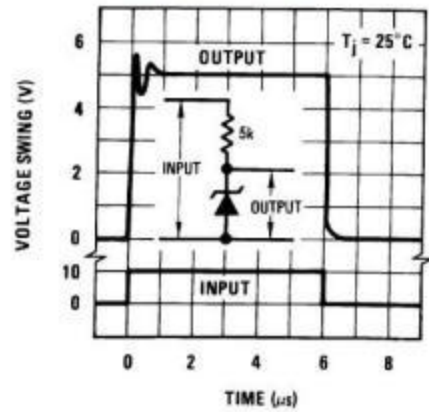
Zener Noise Voltage



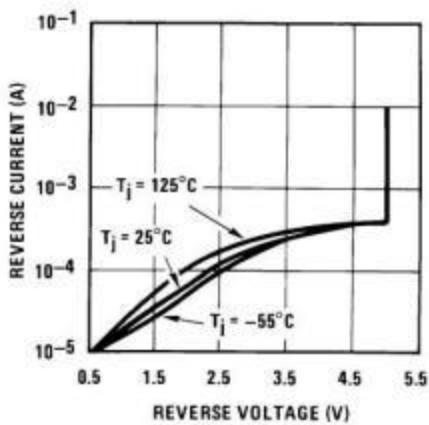
Dynamic Impedance



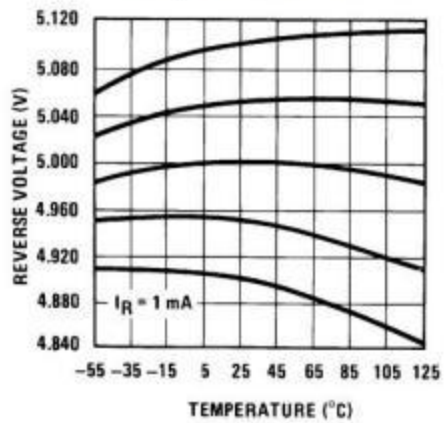
Response Time



Reverse Characteristics



Temperature Drift





Outline Dimensions

TO92: Unit:mm

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.420	1.620	0.056	0.064
A1	0.660	0.860	0.026	0.034
A2	0.350	0.480	0.014	0.019
D	3.050	3.250	0.120	0.128
E	0.350	0.550	0.014	0.022
E1	3.900	4.100	0.154	0.161
e	1.270 (BSC)		0.050 (BSC)	



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- Failure or malfunction of any semiconductor products may occur under particular conditions, customers shall have obligation to comply with safety standards when customers use HSETCL products to do their system design and machine manufacturing, and take corresponding safety measures in order to avoid potential risk of failure that may cause personal injury or property damage.

- The product upgrades without end, HSETCL will wholeheartedly provide customers integrated circuits that have better performance and better quality.