



LM385-2.5

Micropower Voltage Reference Diode

General Description

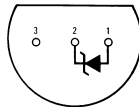
The LM385-2.5 are micropower 2-terminal band-gap voltage regulator diodes. Operating over a 20 μ A to 20 mA current range, they feature exceptionally low dynamic impedance and good temperature stability. On-chip trimming is used to provide tight voltage tolerance.

Features

- ± 20 mV ($\pm 0.8\%$) max. initial tolerance (A grade)
- Operating current of 20 μ A to 20 mA
- 0.6 Ω dynamic impedance (A grade)
- Low temperature coefficient
- Low voltage reference — 2.5V

Connection Diagrams

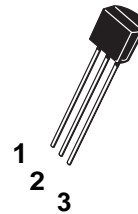
TO-92
Plastic Package



Bottom View

LM385Z-2.5

Ordering No: LM385Z-2.5



1: "-"

2: "+"

3: NC



LM385-2.5

Absolute Maximum Ratings

| | | |
|--------------------------------------|-------------------------|-------|
| | Soldering Information | |
| | TO-92 Package (10 sec.) | 260°C |
| Reverse Current | 30 mA | |
| Forward Current | 10 mA | |
| Operating Temperature Range (Note 3) | | |
| LM385-2.5 | 0°C to 70°C | |
| Storage Temperature | -55°C to + 150°C | |

Electrical Characteristics

(Note 4)

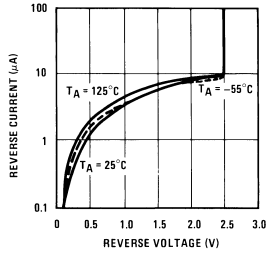
| Parameter | Conditions | Typ | LM385-2.5 | | Units (Limits) |
|---|---|-------|----------------|--------------|------------------------|
| | | | Tested Limit | Design Limit | |
| Reverse Breakdown Voltage | $T_A = 25^\circ\text{C}$ $20\mu\text{A} < I_{R1} < 20\text{mA}$ | 2.500 | 2.425 2.575 | | V(Min) V(Max) |
| Minimum Operating Current | | 13 | 20 | 30 | μA (Max) |
| Reverse Breakdown Voltage Change with Current | $20\mu\text{A} \leq I_R \leq 1\text{mA}$ | | 2.0 | 2.5 | mV (Max) |
| | $1\text{mA} \leq I_R \leq 20\text{mA}$ | | 20 | 25 | mV (Max) |
| Reverse Dynamic Impedance | $I_R = 100\mu\text{A}$ $f = 20\text{Hz}$ | 1 | | | Ω |
| Wideband Noise (rms) | $I_R = 100\mu\text{A}$ $10\text{Hz} \leq f \leq 10\text{kHz}$ | 120 | | | μV |
| Long Term Stability | $I_R = 100\mu\text{A}$, $T = 1000\text{Hr}$, $T_A = 25^\circ\text{C} \pm 0.1^\circ\text{C}$ | 20 | | | ppm |
| Average Temperature | $I_{MIN} \leq I_R \leq 20\text{mA}$ | | | 150 | ppm/°C (Max) |



LM385-2.5

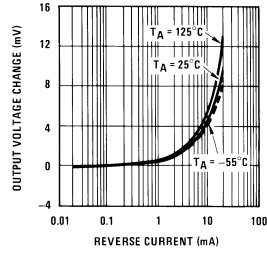
Typical Performance Characteristics

Reverse Characteristics



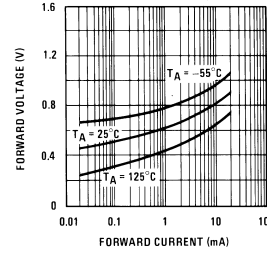
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Reverse Characteristics



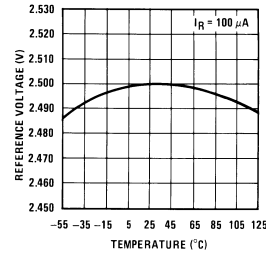
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Forward Characteristics



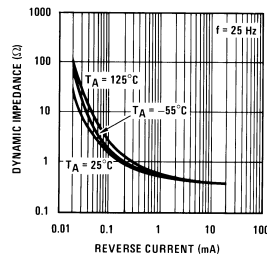
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Temperature Drift



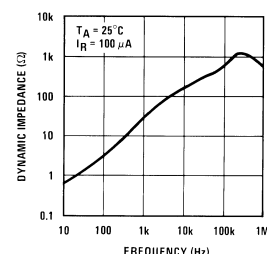
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Reverse Dynamic Impedance



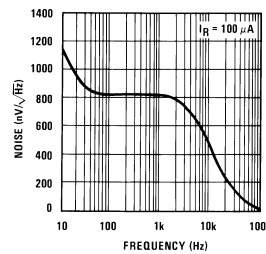
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Reverse Dynamic Impedance



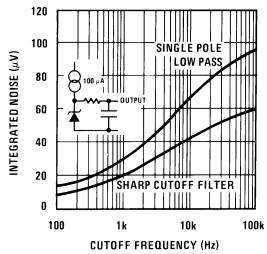
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Noise Voltage



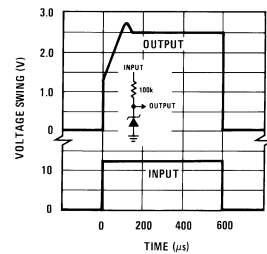
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Filtered Output Noise



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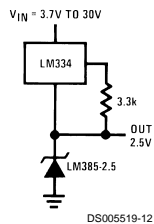
Response Time



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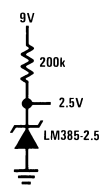
Applications

Wide Input Range Reference



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Micropower Reference from 9V Battery



LM385-2.5 Applications