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## NTE7080 Integrated Circuit Precision Voltage Reference Diode, 1.235V

**Description:**

The NTE7080 is a micropower two-terminal band-gap voltage regulator diode in a TO92 type package. This device features exceptionally low dynamic impedance, low noise, and stable operation over time and temperature. Tight voltage tolerances are achieved by on-chip trimming. The large dynamic operating range enables this device to be used in applications with widely varying supplies with excellent regulation. Extremely low operating current make the NTE7080 ideal for micropower circuitry like portable instrumentation, regulators, and other analog circuitry where extended battery life is required.

**Features:**

- 1.0% Tolerance
- Low Temperature Coefficient
- 1.0Ω Dynamic Impedance

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Reverse Current,  $I_R$  ..... 30mA  
 Forward Current,  $I_F$  ..... 10mA  
 Operating Ambient Temperature Range,  $T_A$  ..... 0 to  $+70^\circ\text{C}$   
 Operating Junction Temperature,  $T_J$  .....  $+150^\circ\text{C}$   
 Storage Temperature Range,  $T_{stg}$  .....  $-65^\circ$  to  $+150^\circ\text{C}$

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Breakdown Voltage	$V_{(BR)R}$	$I_{Rmin} \leq I_R \leq 20\text{mA}$	1.223	1.235	1.247	V
		$I_{Rmin} \leq I_R \leq 20\text{mA}, T_A = 0 \text{ to } +70^\circ\text{C}$	1.210	–	1.260	V
Minimum Operating Current	$I_{Rmin}$		–	8.0	15.0	$\mu\text{A}$
		$T_A = 0 \text{ to } +70^\circ\text{C}$	–	–	20.0	$\mu\text{A}$
Reverse Breakdown Voltage Change with Current	$\Delta V_{(BR)R}$	$I_{Rmin} \leq I_R \leq 1\text{mA}$	–	–	1.0	mV
		$I_{Rmin} \leq I_R \leq 1\text{mA}, T_A = 0 \text{ to } +70^\circ\text{C}$	–	–	1.5	mV
		$I_{Rmin} \leq I_R \leq 20\text{mA}$	–	–	20.0	mV
		$I_{Rmin} \leq I_R \leq 20\text{mA}, T_A = 0 \text{ to } +70^\circ\text{C}$	–	–	25.0	mV

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reverse Dynamic Impedance	Z	$I_R = 100\mu\text{A}$	-	0.6	-	$\Omega$
Average Temperature Coefficient	$\Delta V_{(BR)}/\Delta T$	$10\mu\text{A} \leq I_R \leq 20\text{mA}$ , $T_A = 0$ to $+70^\circ\text{C}$	-	80	-	ppm/ $^\circ\text{C}$
Wideband Noise (RMS)	n	$I_R = 100\mu\text{A}$ , $10\text{Hz} \leq f \leq 10\text{kHz}$	-	60	-	$\mu\text{V}$
Long Term Stability	S	$I_R = 100\mu\text{A}$ , $T_A = +25^\circ\text{C} \pm 0.1^\circ\text{C}$	-	20	-	ppm/kHR

