

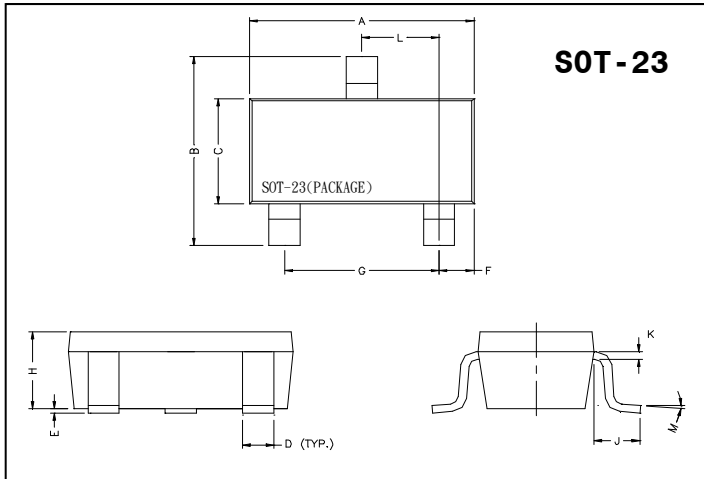
G431

Adjustable Shunt Regulator

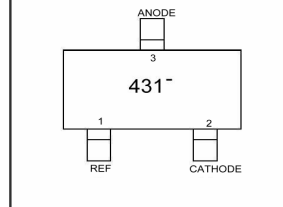
Description

The G431 series are three-terminal adjustable regulators with guaranteed thermal stability over applicable temperature ranges. The output voltage may be set to any value between V_{REF} (approximately 2.495v) and 36v with two external resistors. It provides very wide applications, including shunt regulator, series regulator, switching regulator, voltage reference and others.

Package Dimensions



Marking:



| REF. | Millimeter | | REF. | Millimeter | |
|------|------------|------|------|------------|------|
| | Min. | Max. | | Min. | Max. |
| A | 2.70 | 3.10 | G | 1.90 | REF. |
| B | 2.40 | 2.80 | H | 1.00 | 1.30 |
| C | 1.40 | 1.60 | K | 0.10 | 0.20 |
| D | 0.35 | 0.50 | J | 0.40 | - |
| E | 0 | 0.10 | L | 0.85 | 1.15 |
| F | 0.45 | 0.55 | M | 0° | 10° |

Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

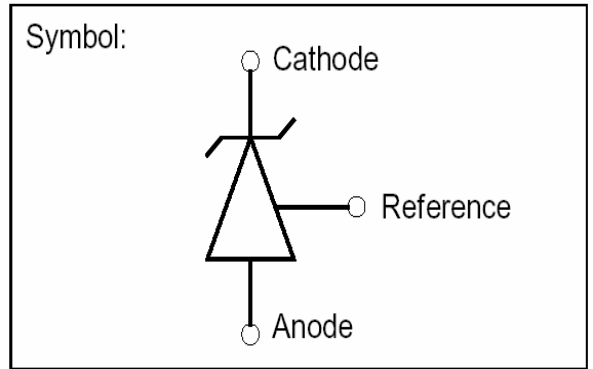
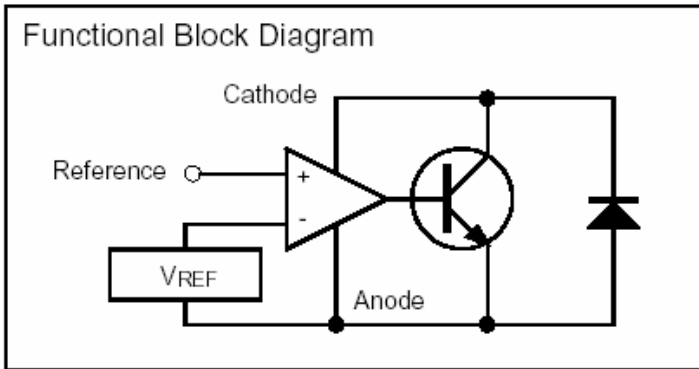
| Parameter | Symbol | Ratings | Unit |
|-----------------------------------|-----------|------------|------------------|
| Junction Temperature | T_j | +150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -65 ~ +150 | $^\circ\text{C}$ |
| Cathode Voltage | V_{KA} | 37 | V |
| Cathode Current Range(Continuous) | I_{KA} | -100~+150 | mA |
| Reference Input Current Range | I_{REF} | -0.05~+10 | mA |
| Total Power Dissipation | PD | 225 | mW |

Characteristics at $T_a = 25^\circ\text{C}$

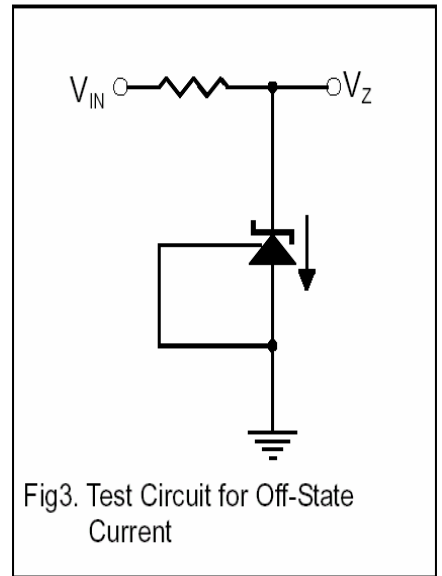
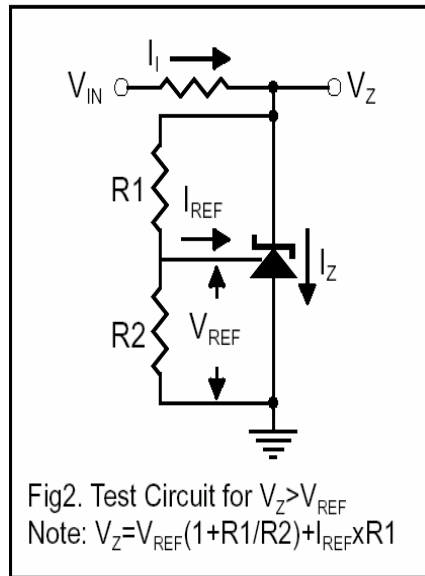
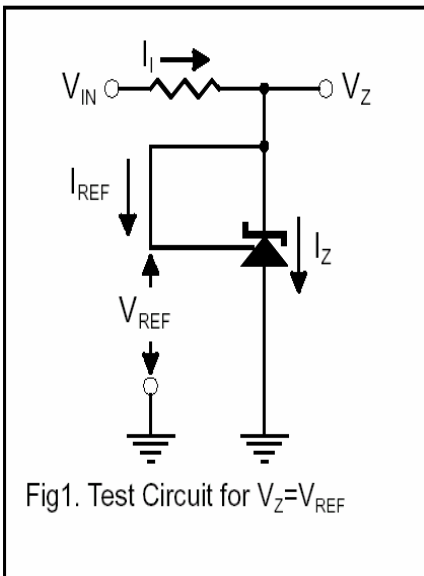
| Parameter | Symbol | Min | Typ. | Max. | Unit | Test Conditions |
|---|--------------------------------|-----------|-------|-------|---------------|--|
| Cathode Voltage | V_{KA} | V_{REF} | - | 36 | V | |
| Cathode Current | I_{KA} | 1 | - | 100 | mA | |
| Reference Input Voltage | V_{REF} | 2.445 | 2.495 | 2.545 | V | $V_{KA}=V_{REF}, I_{K}=10\text{mA}$ |
| G431C | | 2.470 | 2.495 | 2.520 | | |
| G431A | | 2.483 | 2.495 | 2.507 | | |
| Deviation of reference Input Voltage Over temperature(note) | $\Delta V_{REF}/\Delta T$ | - | 4.5 | 17 | mV | $V_{KA}=V_{REF}, I_{K}=10\text{mA}$ $T_{min} \leq T_a \leq T_{max}$ |
| Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage | $\Delta V_{REF}/\Delta V_{KA}$ | - | -1.0 | -2.7 | mV/V | $I_{K}=10\text{mA}$ |
| | | - | -0.5 | -2.0 | | $\Delta V_{KA}=36\text{V} \sim 10\text{V}$ |
| Reference Input Current | I_{REF} | - | 1.5 | 4 | μA | $I_{K}=10\text{mA}, R_1=10\text{K}\Omega, R_2=\infty$ |
| Deviation of reference Input Current Over Full Temperature Range | $\Delta I_{REF}/\Delta T$ | - | 0.4 | 1.2 | μA | $I_{K}=10\text{mA}, R_1=10\text{K}\Omega, R_2=\infty$ $T_A=\text{Full Temperature}$ |
| Minimum Cathode Current for Regulation | $I_{KA}(\text{min})$ | - | 0.45 | 1.0 | mA | $V_{KA}=V_{REF}$ |
| Off-State Cathode Current | $I_{KA}(\text{off})$ | - | 0.05 | 1.0 | μA | $V_{KA}=36\text{V}, V_{REF}=0$ |
| Dynamic Impedance | $ Z_{KA} $ | - | 0.15 | 0.5 | Ω | $V_{KA}=V_{REF}, I_{K}=1$ to 100mA, $F \leq 1.0\text{KHz}$ |

Note: $T_{min}=0^\circ\text{C}, T_{max}=+70^\circ\text{C}$

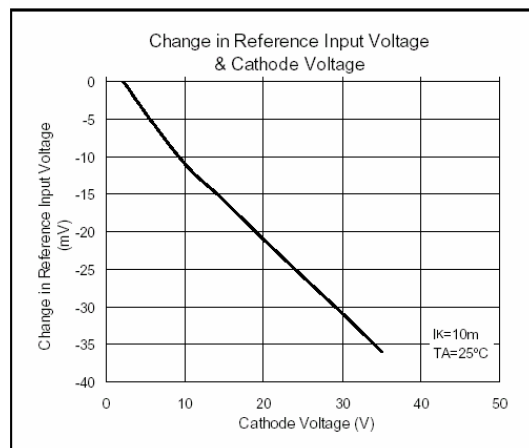
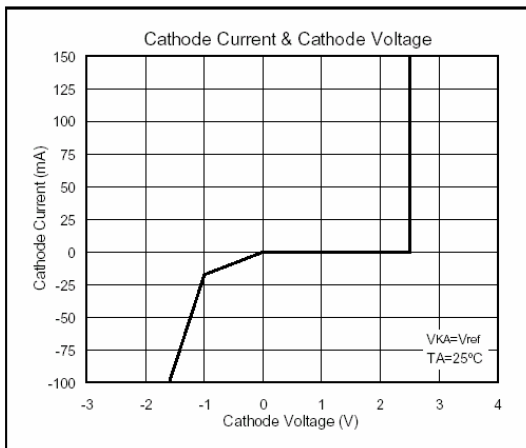
Functional Block Diagram & Symbol

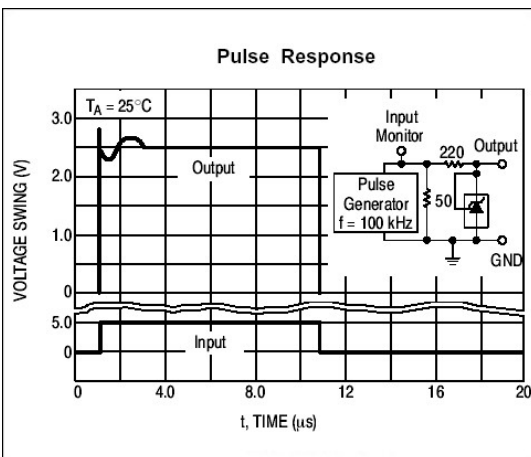
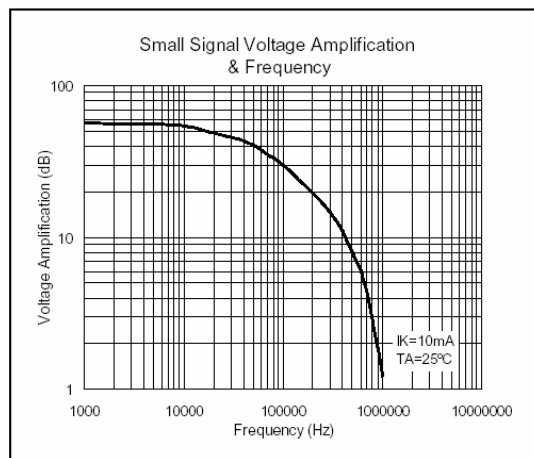
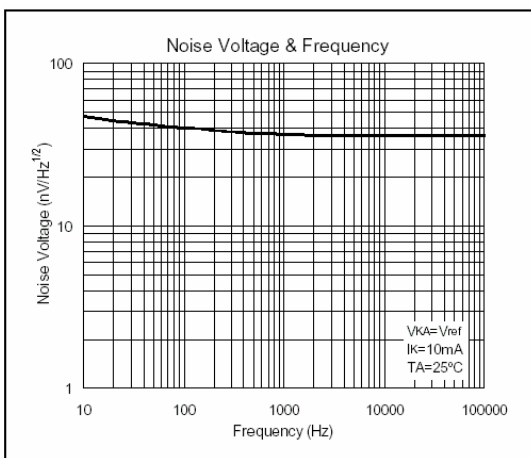
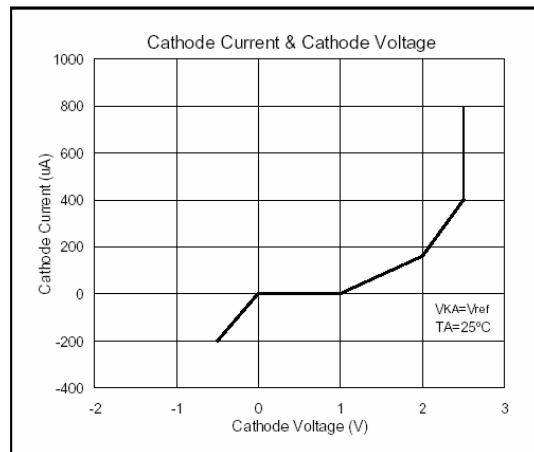
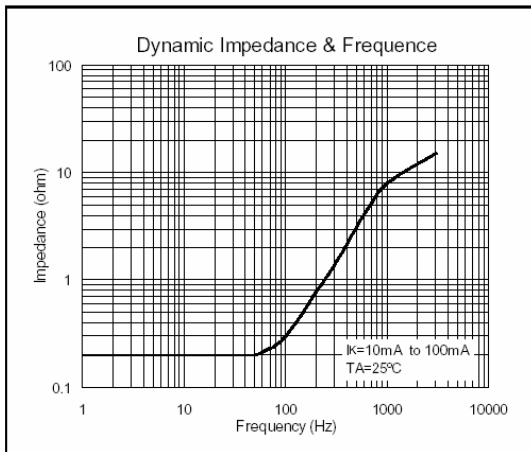


Test Circuits



Characteristics Curve





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