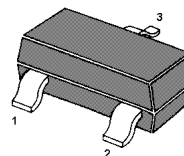


MMTL431 / A

Programmable Precision Reference

Features:

- Programmable output Voltage to 36 V
- Low dynamic output impedance
- Sink current capability of 1 to 100 mA
- Low output noise voltage
- Fast turn on response



1. Reference 2. Cathode 3. Anode
TO-236 Plastic Package

Absolute Maximum Ratings ($T_a = 25\text{ }^\circ\text{C}$, unless otherwise noted.)

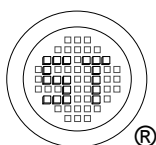
| Parameter | Symbol | Value | Unit |
|------------------------------------|-----------|----------------|------------------|
| Cathode Voltage | V_{KA} | 37 | V |
| Cathode Current Range (Continuous) | I_{KA} | - 100 to + 150 | mA |
| Reference Input Current Range | I_{REF} | - 0.05 to + 10 | mA |
| Power Dissipation | P_D | 350 | mW |
| Operating Temperature Range | T_{opr} | - 25 to + 85 | $^\circ\text{C}$ |
| Junction Temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | - 65 to + 150 | $^\circ\text{C}$ |

Recommended Operating Conditions

| Parameter | Symbol | Min. | Max. | Unit |
|-----------------|----------|-----------|------|------|
| Cathode Voltage | V_{KA} | V_{REF} | 36 | V |
| Cathode Current | I_{KA} | 1 | 100 | mA |

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

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|----------------------------------|------|-------|------|---------------|
| Reference Input Voltage at $V_{KA} = V_{REF}$, $I_{KA} = 10\text{ mA}$ | V_{REF} | 2.44 | 2.495 | 2.55 | V |
| | | 2.48 | 2.495 | 2.51 | |
| Deviation of Reference Input Voltage Over Temperature at $V_{KA} = V_{REF}$, $I_{KA} = 10\text{ mA}$, $-25\text{ }^\circ\text{C} \leq T_a \leq +85\text{ }^\circ\text{C}$ | $\Delta V_{REF} / \Delta T$ | - | 4.5 | 17 | mV |
| Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage at $I_{KA} = 10\text{ mA}$ | $\Delta V_{REF} / \Delta V_{KA}$ | - | -1.0 | -2.7 | mV/V |
| | | - | -0.5 | -2 | |
| Reference Input Current at $I_{KA} = 10\text{ mA}$, $R1 = 10\text{ K}\Omega$, $R2 = \infty$ | I_{REF} | - | 1.5 | 4 | μA |
| Deviation of Reference Input Current Over Full Temperature at $I_{KA} = 10\text{ mA}$, $R1 = 10\text{ K}\Omega$, $R2 = \infty$, $-25\text{ }^\circ\text{C} \leq T_a \leq +85\text{ }^\circ\text{C}$ | $\Delta I_{REF} / \Delta T$ | - | 0.4 | 1.2 | μA |
| Minimum Cathode Current for Regulation at $V_{KA} = V_{REF}$ | $I_{KA(min)}$ | - | 0.45 | 1 | mA |
| Off-Stage Cathode Current at $V_{KA} = 36\text{ V}$, $V_{REF} = 0$ | $I_{KA(OFF)}$ | - | 0.05 | 1 | μA |
| Dynamic Impedance at $V_{KA} = V_{REF}$, $I_{KA} = 1\text{ to }100\text{ mA}$, $f \leq 1\text{ KHz}$ | Z_{KA} | - | 0.15 | 0.5 | Ω |



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Fig 1 Cathode Current Vs Cathode Voltage

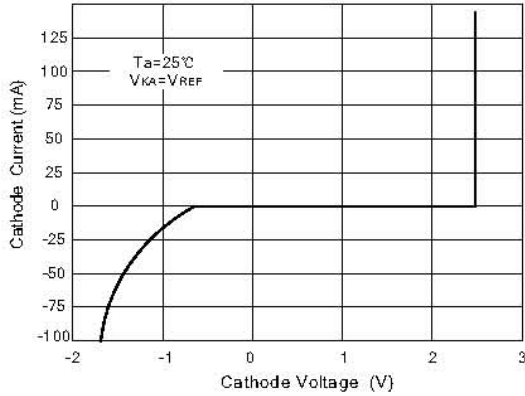


Fig 2 Cathode Current Vs Cathode Voltage

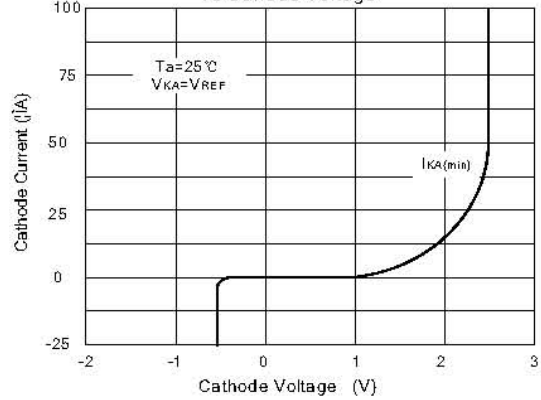


Fig 3 Change in Reference Input Voltage Vs Cathode voltage

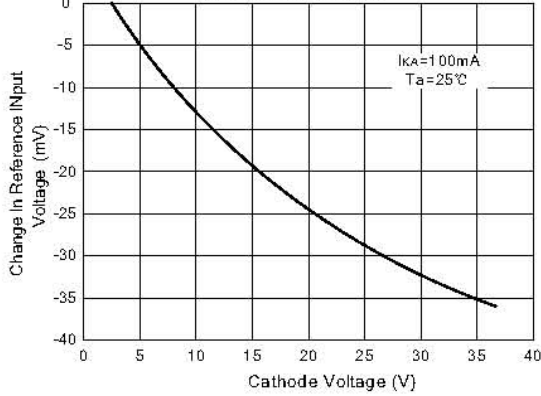


Fig 4 Pulse Response

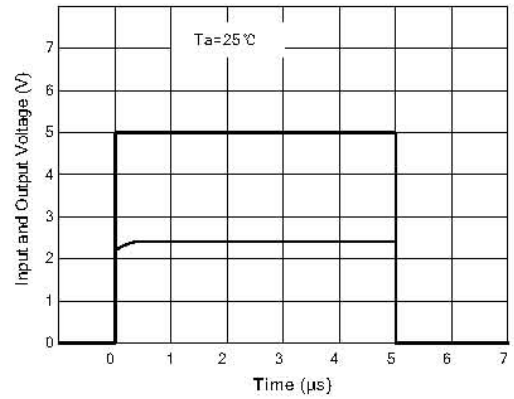


Fig 5 Dynamic Impedance Vs Frequency

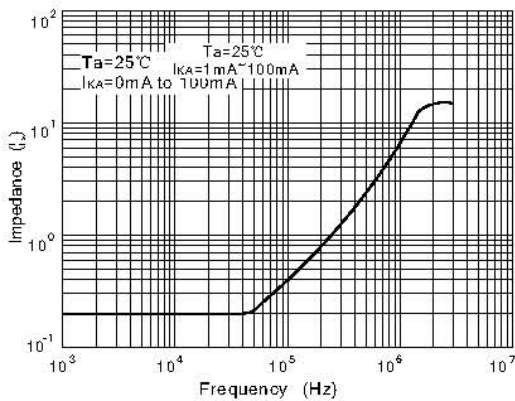
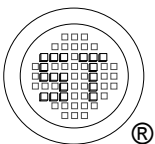
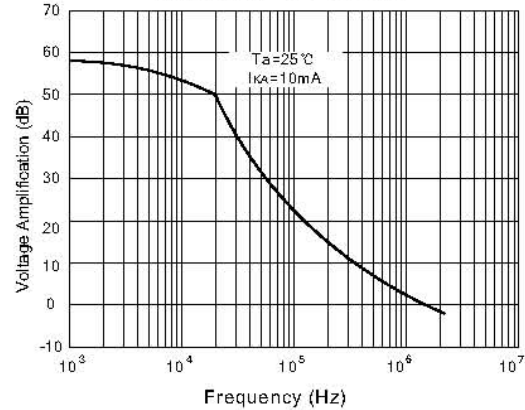


Fig 6 Small Signal Voltage Amplification Vs Frequency



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