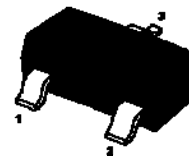


## Programmable Precision Reference

## MMTL431

### 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  
SOT-23 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 $V_{KA} = V_{REF}$ , $I_{KA} = 10\text{ mA}$	$V_{REF}$	2.487	2.50	2.513	V
Reference Input Voltage at $V_{KA} = V_{REF}$ , $I_{KA} = 10\text{ mA}$	$V_{REF}$	2.475	2.50	2.525	V
Reference Input Voltage at $V_{KA} = V_{REF}$ , $I_{KA} = 10\text{ mA}$	$V_{REF}$	2.44	2.495	2.55	V
Deviation of Reference Input Voltage Over Temperature at $V_{KA} = V_{REF}$ , $I_{KA} = 10\text{ mA}$ , $-25\text{ }^\circ\text{C} \leq T_a \leq +85\text{ }^\circ\text{C}$	$\frac{\Delta V_{REF}}{\Delta T}$	-	4.5	17	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage at $I_{KA} = 10\text{ mA}$	$\frac{\Delta V_{REF}}{\Delta V_{KA}}$	-	-1.0 -0.5	-2.7 -2	mV/V
Reference Input Current at $I_{KA} = 10\text{ mA}$ , $R_1 = 10\text{ K}\Omega$ , $R_2 = \infty$	$I_{REF}$	-	1.5	4	$\mu\text{A}$
Deviation of Reference Input Current Over Full Temperature at $I_{KA} = 10\text{ mA}$ , $R_1 = 10\text{ K}\Omega$ , $R_2 = \infty$ , $-25\text{ }^\circ\text{C} \leq T_a \leq +85\text{ }^\circ\text{C}$	$\Delta I_{REF}/\Delta T$	-	0.4	1.2	$\mu\text{A}$
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	$\mu\text{A}$
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	$\Omega$



# MMTL431

Fig 1 Cathode Current Vs Cathode Voltage

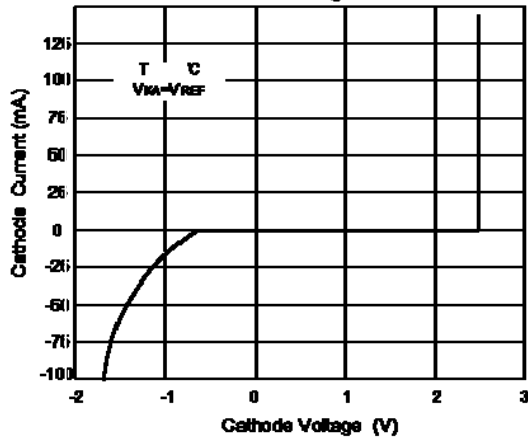


Fig 2 Cathode Current Vs Cathode Voltage

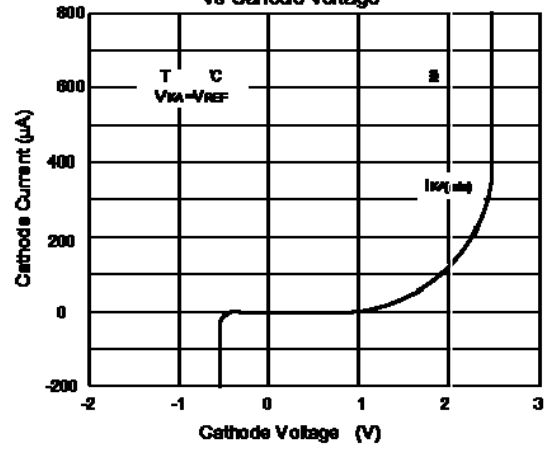


Fig 3 Change in Reference Input Voltage Vs Cathode voltage

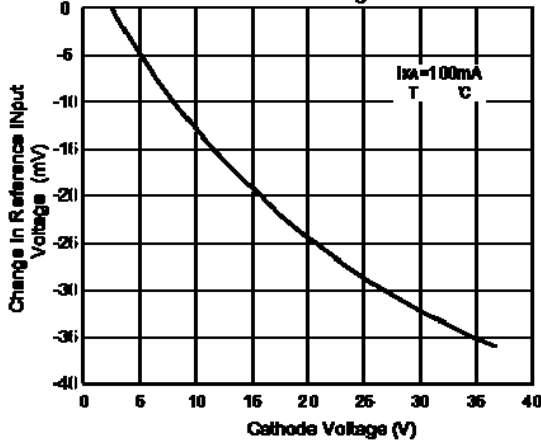


Fig 4 Pulse Response

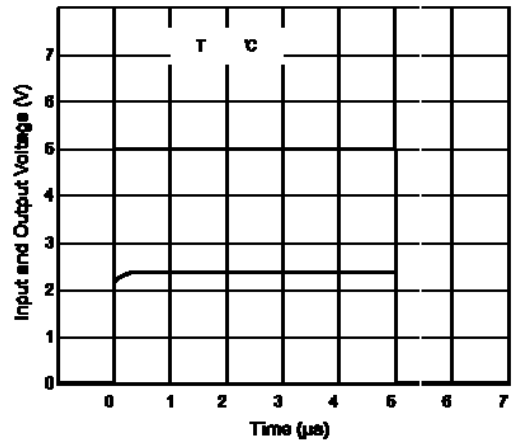


Fig 5 Dynamic Impedance Vs Frequency

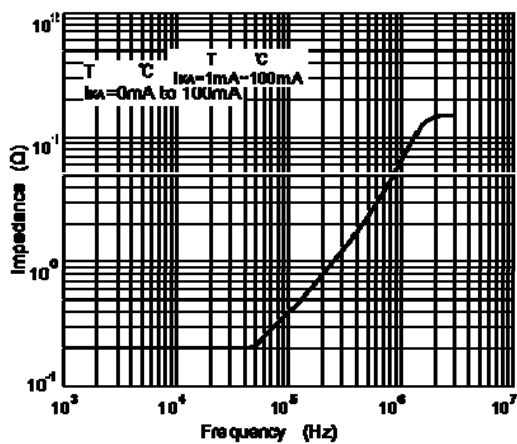
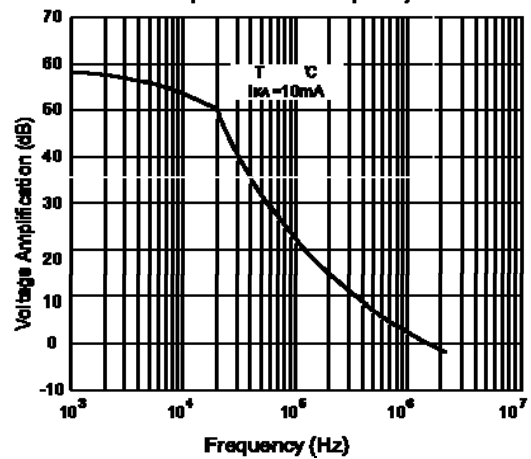


Fig 6 Small Signal Voltage Amplification Vs Frequency

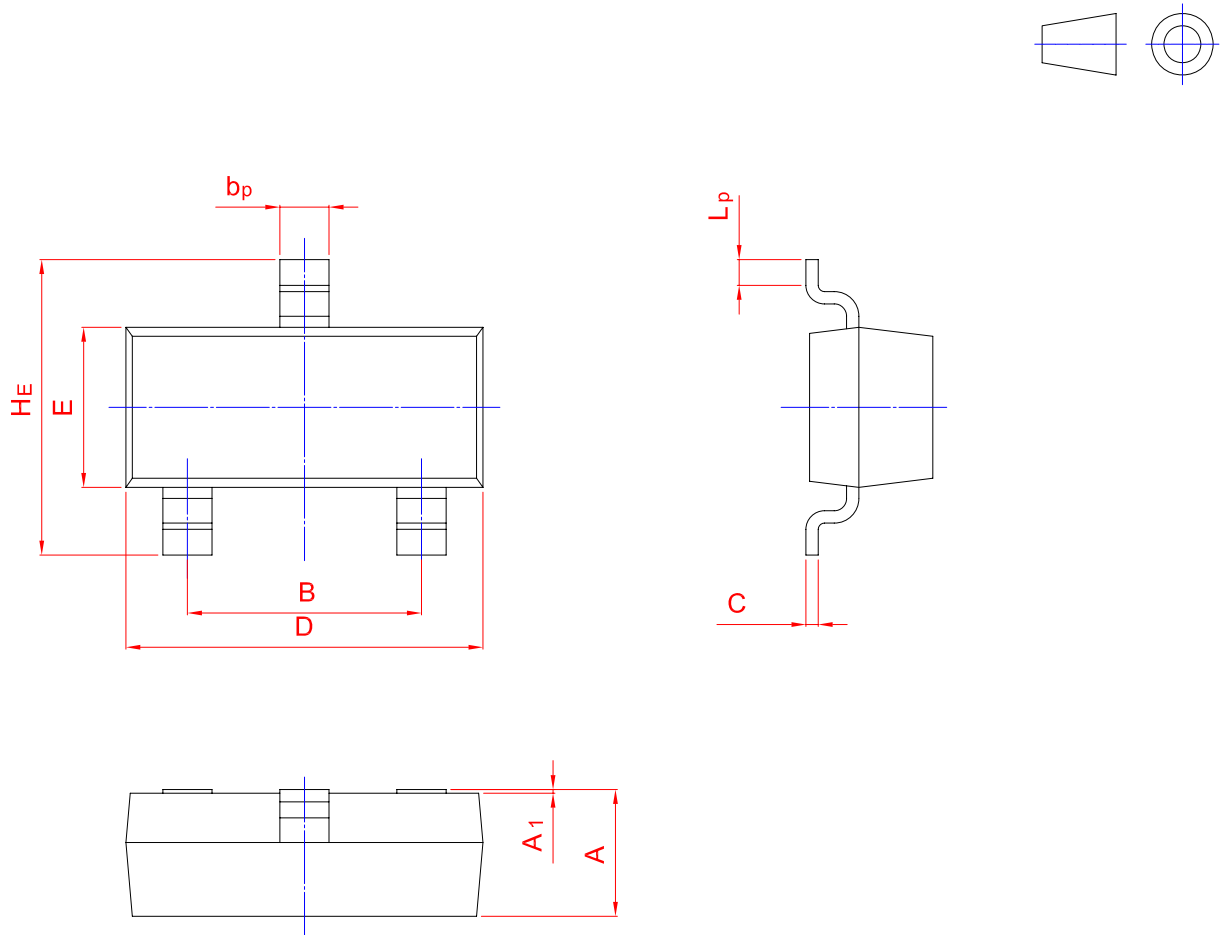




## PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	$b_p$	C	D	E	$H_E$	$A_1$	$L_p$
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20

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