

TL431 Adjustable Accurate Reference Source

FEATURES

The output voltage can be adjusted to 36V
 Low dynamic output impedance ,its typical value is 0.2Ω
 Trapping current capability is 1 to 100mA
 The typical value of the equivalent temperature factor in the whole temperature scope is 50 ppm/°C
 The effective temperature compensation in the working range of full temperature
 Low output noise voltage
 Fast on -state response

SOT-23



- 1、REFERENCE
- 2、CATHODE
- 3、ANODE

ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

Parameter	SYMBOL	VALUE	UNITS
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
Power Dissipation	P_D	350	mW
Operating temperature	T_{opr}	0-70	°C
Storage temperature Range	T_{stg}	-65-+150°C	°C

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}C$ unless otherwise specified)

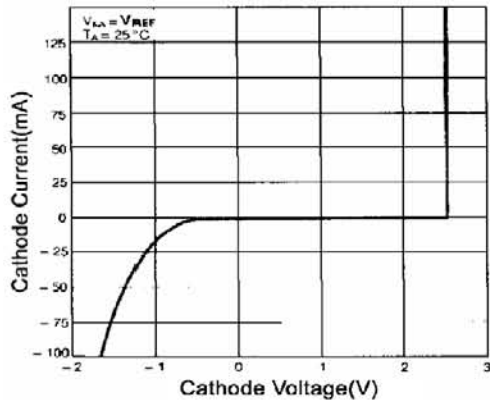
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Reference Input Voltage	V_{ref}	$V_{KA}=V_{REF}, I_{KA}=10mA$	2.450	2.5	2.550	V
Deviation of reference input Voltage Over temperature (note)	$\Delta V_{ref}/T\Delta$	$V_{KA}=V_{REF}, I_{KA}=10mA$ $T_{min}\leq T\leq T_{max}$		4.5	17	mV
Ratio Of Change in Reference Input Voltage to the change in Cathode Voltage	$\Delta V_{ref}/V\Delta I_{KA}$	$I_{KA}=10mA$	$\Delta V_{KA}=10V\sim V_{REF}$	-1.0	-2.7	m V/V
			$\Delta V_{KA}=36V\sim 10V$	-0.5	-2.0	m V/V
Reference Input Current	I_{ref}	$I_{KA}=10mA, R_1=10K\Omega R_2=\infty$		1.5	4	μA
Deviation Of Reference Input Current Over Full Temperature Range	$\Delta I_{ref}/T\Delta$	$I_{KA}=10mA,$ $R_1=10K\Omega R_2=\infty T_A=full$ Temperature		0.4	1.2	μA
Minimum cathode current for regulation	$I_{KA(min)}$	$V_{KA}=V_{REF}$		0.45	1.0	mA
Off-state cathode Current	$I_{KA(OFF)}$	$V_{KA}=36V, V_{REF}=0$		0.05	1.0	μA
Dynamic Impedance	Z_{KA}	$V_{KA}=V_{REF}, I_{KA}=1$ to 100mA $f\leq 1.0KHZ$		0.15	0.5	Ω

Note: $T_{MIN}=0^{\circ}C, T_{MAX}=+70^{\circ}C$ CLASSIFICATION OF V_{ref}

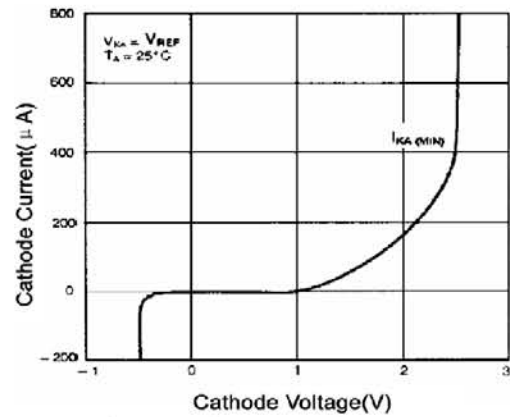
Rank	0.5%	1%	2%
Range	2.487-2.512	2.475-2.525	2.450-2.550

Typical Characteristics

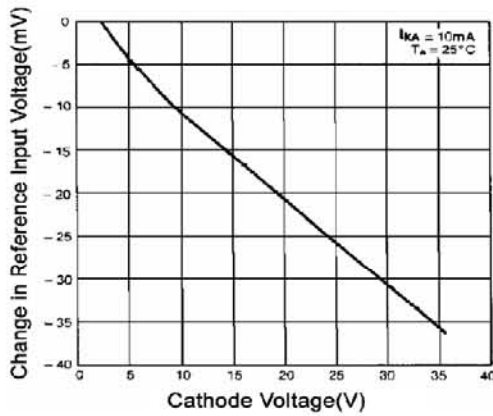
TL431



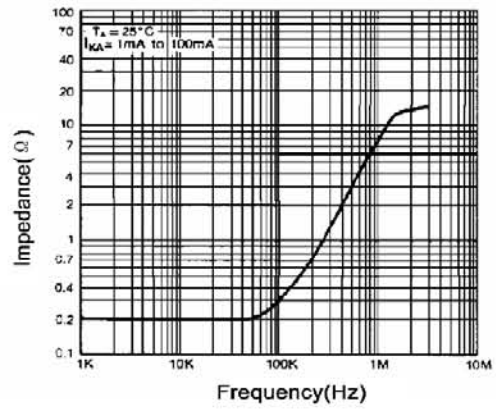
Cathode Current vs. Cathode Voltage



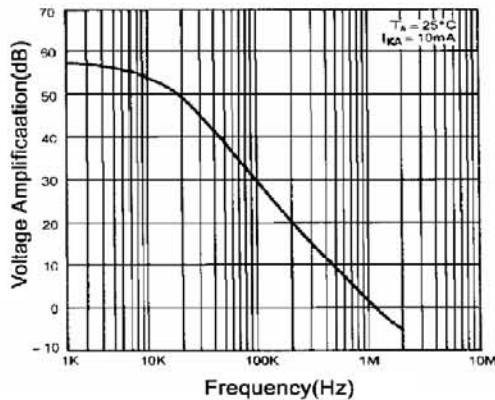
Cathode Current vs. Cathode Voltage



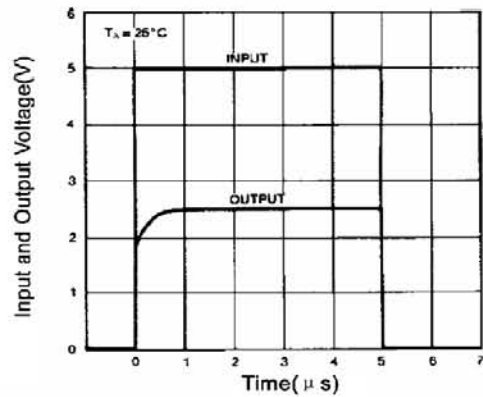
Change in Reference Input Voltage vs. Cathode Voltage



Dynamic Impedance Frequency



Small Signal Voltage Amplification vs. Frequency



Pulse Response