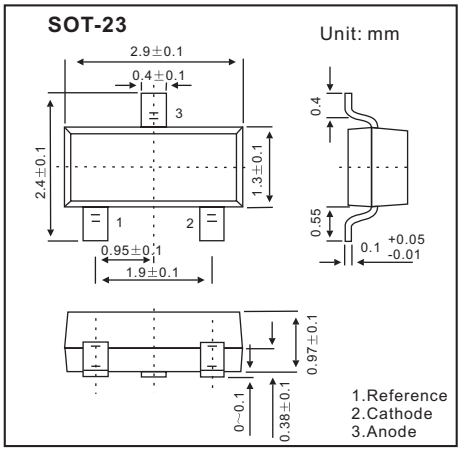
Adjustable Accurate Reference Source
RC431A

■ Features

- The output voltage can be adjusted to 36V
- Low dynamic output impedance, its typical value is 0.15Ω
- Trapping current capability is 1 to 100mA
- The typical value of the equivalent temperature factor in the whole temperature scope is 50 ppm/℃
- The effective temperature compensation in the working range of full temperature
- Low output noise voltage
- Fast on-state response



■ Absolute Maximum Ratings (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Rating	Unit
Cathode Voltage	V_{KA}	36	V
Cathode Current Range (Continuous)	I_{KA}	-80 ～ +100	mA
Reference Input Current Range	I_{REF}	10	mA
Power Dissipation	P_D	400	mW
Temperature Range	T_J	-40 ～ +150	℃
Storage Temperature Range	T_{STG}	-55 ～ +150	℃

■ Electrical Characteristics (Ta = 25℃ unless otherwise specified)

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Reference Input Voltage	V_{REF}	$V_{KA} = V_{REF}$, I_{KA} = 10mA	2.45	2.5	2.55	V
Deviation of Reference Input Voltage Over Temperature (*)	$\triangle V_{REF}/\triangle T$	$V_{KA} = V_{REF}$, I_{KA} = 1mA $T_{min} \leqslant T_a \leqslant T_{max}$		7	10	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage	$\triangle V_{REF}/\triangle V_{KA}$	I_{KA} = 1mA , $\triangle V_{KA}$ = 10V ～ V_{REF}		-0.4	-2.7	mV/V
		I_{KA} = 1mA , $\triangle V_{KA}$ = 36V ～ 10V		-0.2	-2.0	mV/V
Reference Input Current	I_{REF}	I_{KA} = 1mA , R_1 = 10KΩ , R_2 = ∞		0.9	3	μA
Deviation of Reference Input Current Over Full Temperature Range	$\triangle I_{REF}/\triangle T$	I_{KA} = 1mA , R_1 = 10KΩ , R_2 = ∞ T_A = Full Temperature		0.1	2.5	μA
Off-state Cathode Current	$I_{KA(OFF)}$	V_{KA} = 36V, V_{REF} = 0		0.03	1.0	μA
Dynamic Impedance	Z_{KA}	$V_{KA} = V_{REF}$, I_{KA} = 1 to 100mA, f ⩽ 1.0KHz		0.15	0.5	Ω

* T_{MIN} = 0℃ , T_{MAX} = +70℃

■ Classification Of V_{REF}

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

■ Marking

Marking	431A

Adjustable Accurate Reference Source
RC431A

■ Test Circuit

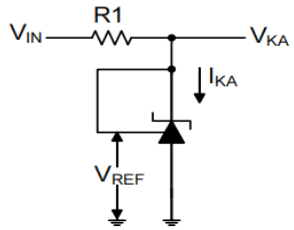
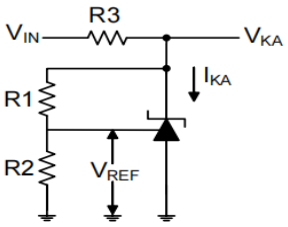


Fig.1 V_{KA}= V_{REF}



$$V_{KA} = V_{REF}\left(1 + \frac{R1}{R2}\right) + I_{REF}R1$$

Fig.2 V_{KA} > V_{REF}

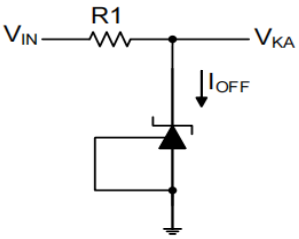
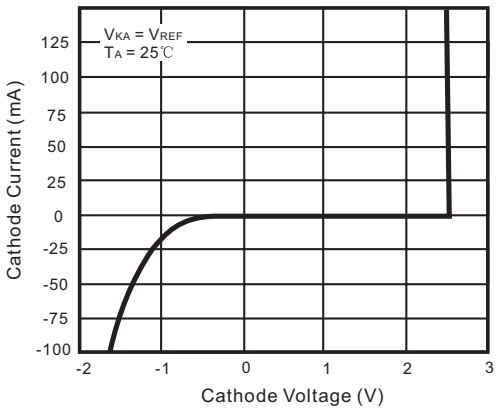
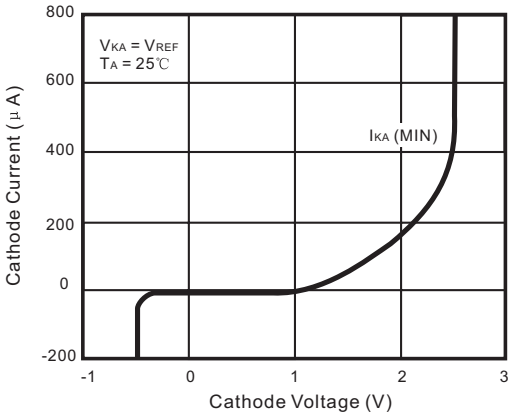


Fig.3 I_{OFF}

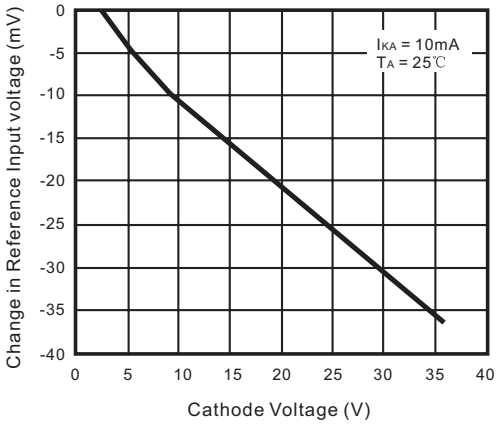
■ Typical Characteristics



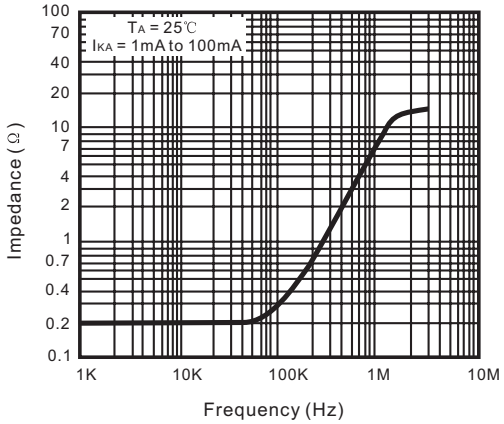
Cathode Current vs. Cathode Voltage



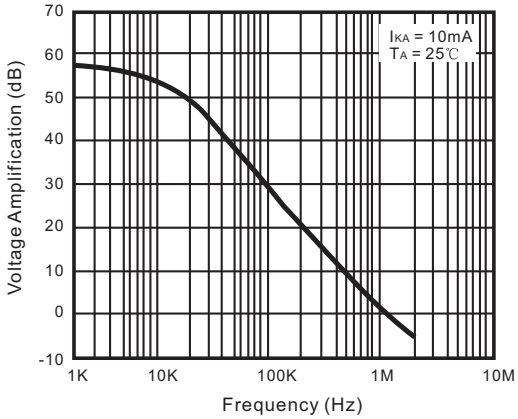
Cathode Current vs. Cathode Voltage



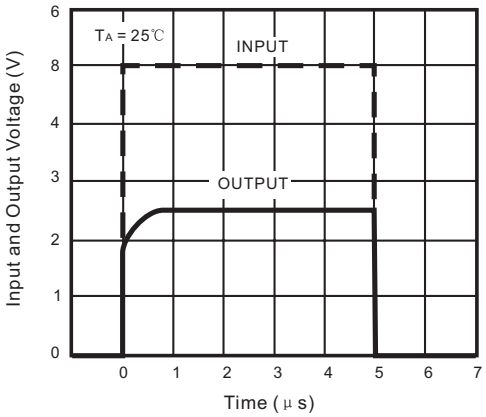
Change in Reference Input Voltage vs. Cathode Voltage



Dynamic Impedance Frequency



Small Signal Voltage Amplification vs. Frequency



Pulse Response