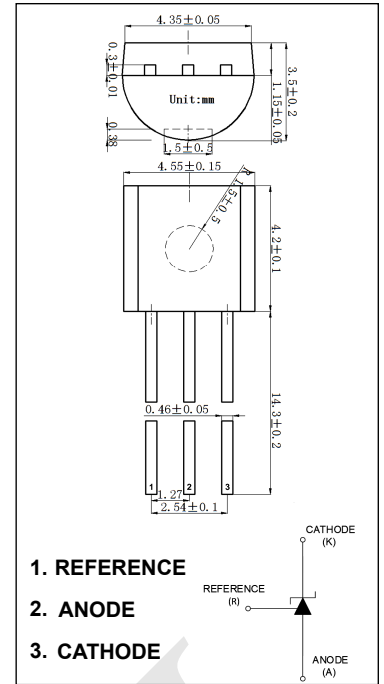


**ALJTL431A** Adjustable Accurate Reference Source

**Features**

- The output voltage can be adjusted to 40V
- Low dynamic output impedance, its typical value is 0.2Ω
- Trapping current capability is 1 to 100mA
- Low output noise voltage
- Fast on -state response
- The effective temperature compensation in the working range of full temperature
- The typical value of the equivalent temperature factor in the whole temperature scope is 50 ppm/°C
- ESD Tolerance (human body model) 4000V
- Operating Temperature Range -60 ~ +125 °C

**Marking: ALJTL431A**



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

Symbol	Parameter	Value	Unit
V <sub>KA</sub>	Cathode Voltage	40	V
I <sub>KA</sub>	Cathode Current Range (Continuous)	-100~+150	mA
I <sub>ref</sub>	Reference Input Current Range	0.05~+10	mA
P <sub>D</sub>	Power Dissipation	700	mW
R <sub>θJA</sub>	Thermal Resistance from Junction to Ambient	178	°C/W
T <sub>j</sub>	Operating Junction Temperature	-25~+150	°C
T <sub>opr</sub>	Operating Ambient Temperature Range	-60~+125	°C
T <sub>stg</sub>	Storage temperature Range	-65~+150	°C

## Electrical Characteristics (T<sub>a</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V <sub>ref</sub>	Reference input voltage (Fig.1)	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =10mA	2.445	2.495	2.545	V
ΔV <sub>ref</sub> /ΔT	Deviation of reference input voltage over temperature (note) (Fig.1)	V <sub>KA</sub> =V <sub>REF</sub> , I <sub>KA</sub> =10mA T <sub>min</sub> ≤ T <sub>a</sub> ≤ T <sub>max</sub>		3	17	mV
ΔV <sub>ref</sub> /ΔV <sub>KA</sub>	Ratio of change in reference input voltage to the change in cathode voltage (Fig.2)	I <sub>KA</sub> =10mA ΔV <sub>KA</sub> =10V~V <sub>REF</sub>		-1.4	-2.7	mV/V
		I <sub>KA</sub> =10mA ΔV <sub>KA</sub> =36V~10V		-1.0	-2.0	mV/V
I <sub>ref</sub>	Reference input current (Fig.2)	I <sub>KA</sub> =10mA, R <sub>1</sub> =10kΩ R <sub>2</sub> =∞		1.8	4	μA
ΔI <sub>ref</sub> /ΔT	Deviation Of reference input current over full temperature range (Fig.2)	I <sub>KA</sub> =10mA, R <sub>1</sub> =10kΩ R <sub>2</sub> =∞ T <sub>a</sub> =full Temperature		0.4	1.2	μA
I <sub>KA(min)</sub>	Minimum cathode current for regulation (Fig.1)	V <sub>KA</sub> =V <sub>REF</sub>		0.5	1.0	mA
I <sub>KA(OFF)</sub>	Off-state cathode Current (Fig.3)	V <sub>KA</sub> =36V, V <sub>REF</sub> =0		0.05	1.0	μA
Z <sub>KA</sub>	Dynamic impedance	V <sub>KA</sub> =V <sub>REF</sub> , f ≤ 1.0kHz I <sub>KA</sub> =1 to 100mA		0.20	0.5	Ω

Note: T<sub>MIN</sub>=0°C, T<sub>MAX</sub>=+70°C

## Classification of V<sub>ref</sub>

Rank	±0.5%	±1.0%	±2.0%
Range	2.483-2.507	2.470-2.520	2.445-2.545

Figure 1. Test Circuit for V<sub>KA</sub> = V<sub>ref</sub>

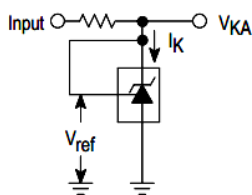


Figure 2. Test Circuit for V<sub>KA</sub> > V<sub>ref</sub>

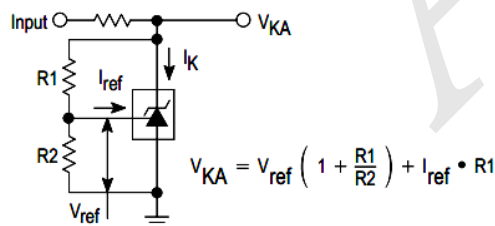
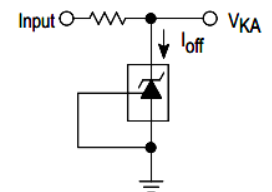
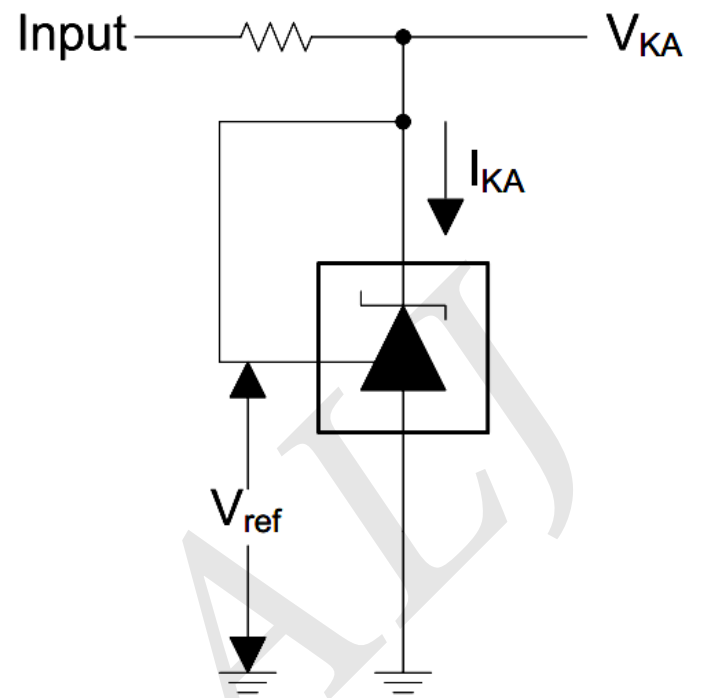
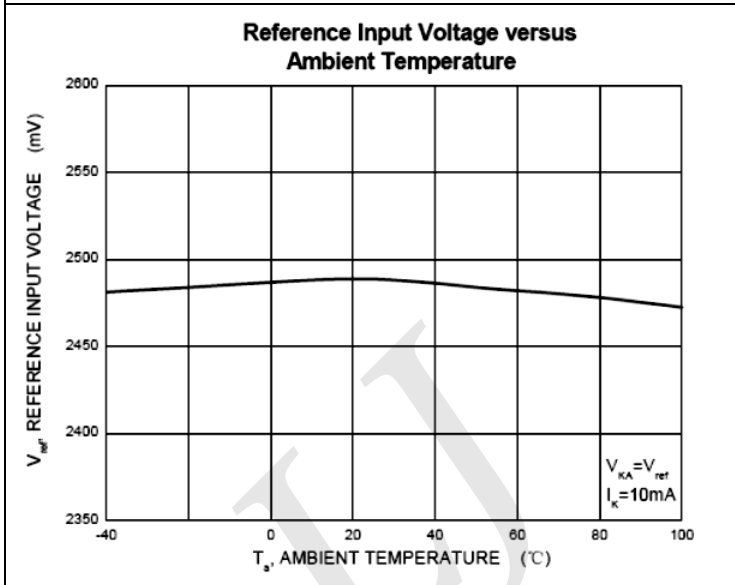
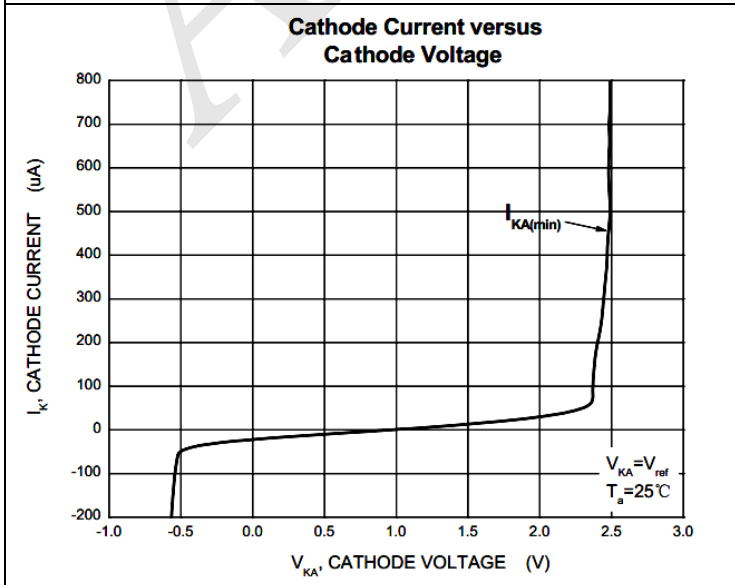
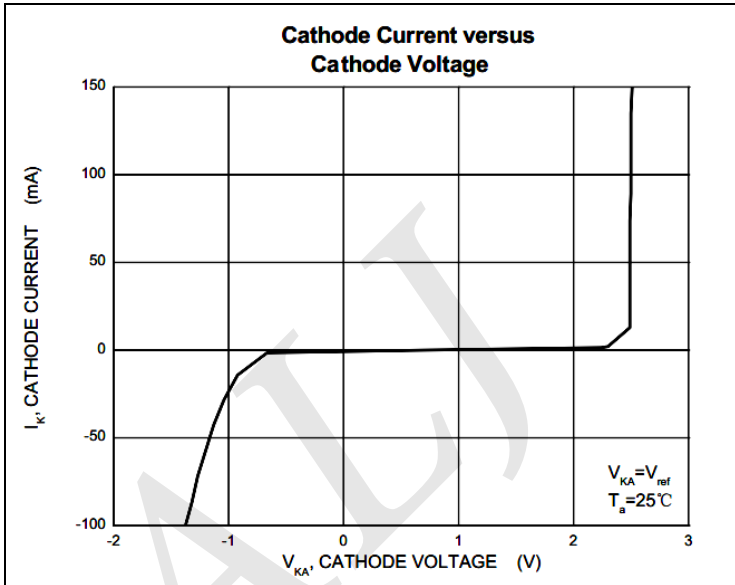


Figure 3. Test Circuit for I<sub>off</sub>



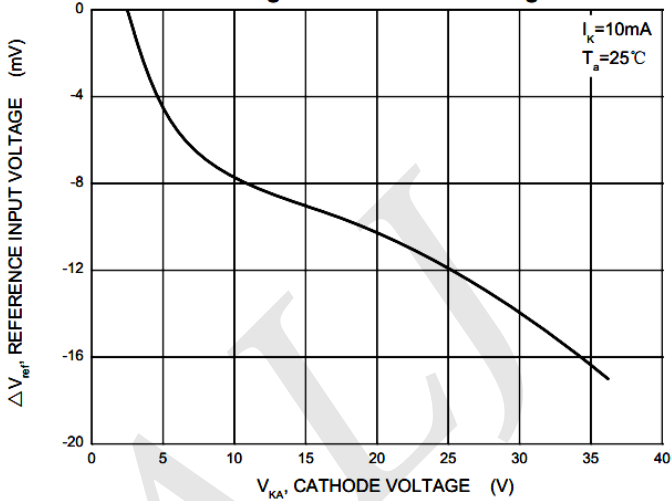
# Typical Electrical Characteristics



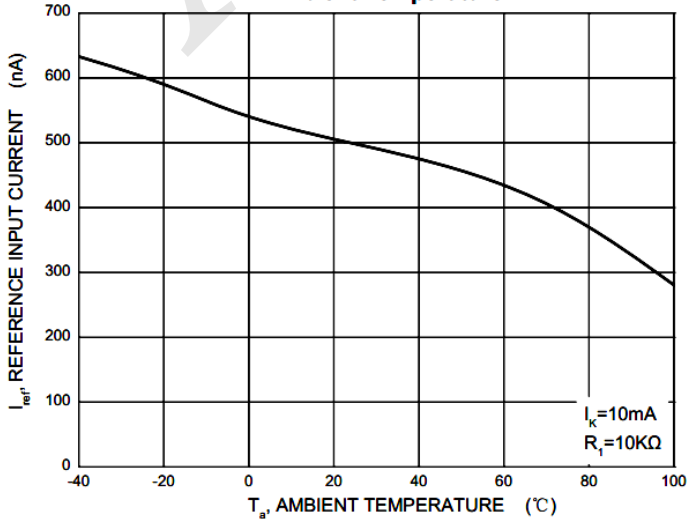
Test Circuit for  $V_{KA} = V_{ref}$

# Typical Electrical Characteristics (Continued)

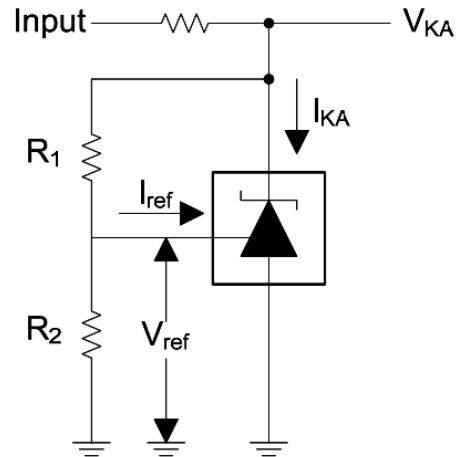
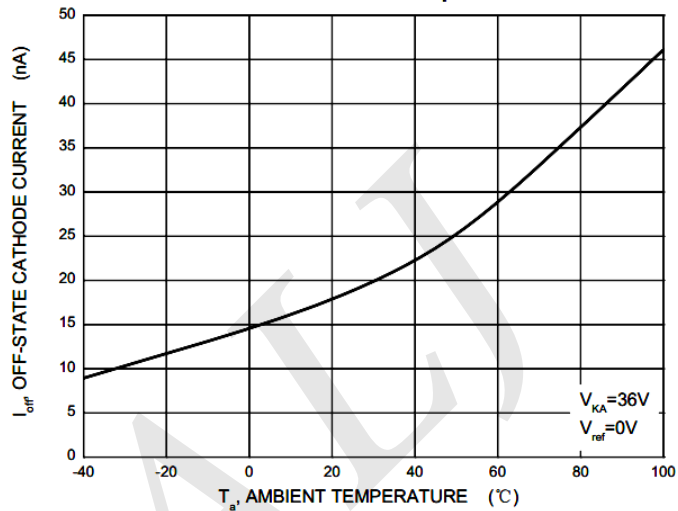
**Change in Reference Input Voltage versus Cathode Voltage**



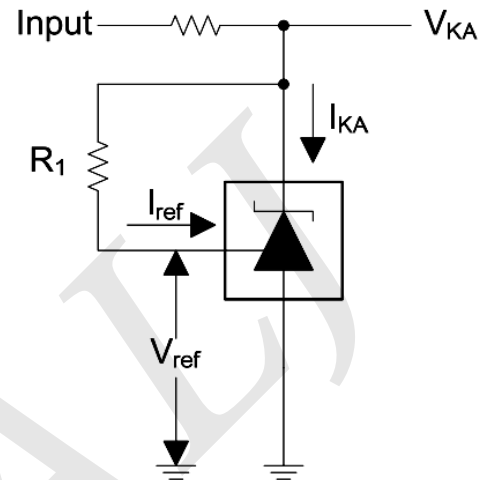
**Reference Input Current versus Ambient Temperature**



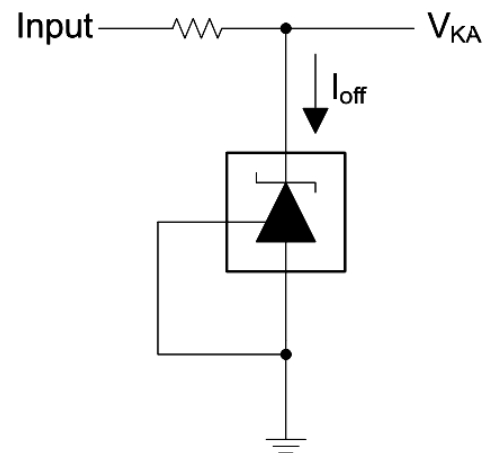
**Off-State Cathode Current versus Ambient Temperature**



Test Circuit for  $V_{KA} = V_{ref}(1 + R_1/R_2) + R_1 \cdot I_{ref}$



Test Circuit for  $I_{ref}$



Test Circuit for  $I_{off}$

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