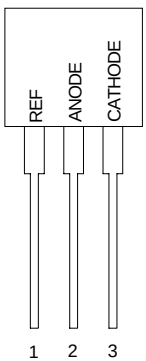
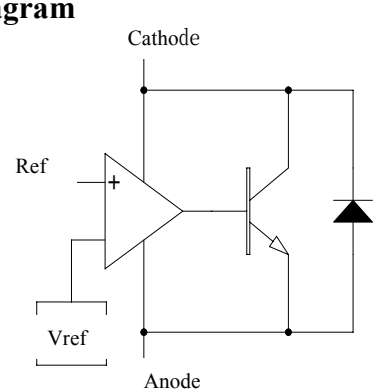
Low Voltage Adjustable Shunt Regulator **ST431**

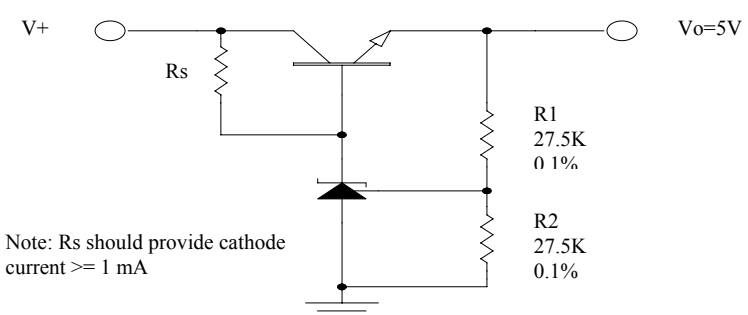


- **Voltage Reference Accuracy of 0.1%**
- **Sink Current Capability from 1mA to 100mA**
- **Adjustable Output Voltage from Vref to 36V**
- **Low Output Noise**
- **Typical Output Dynamic Impedance Less Than 200mΩ**

Block Diagram



Typical Application Circuit



5V Precision Regulator

Low Voltage Adjustable Shunt Regulator **ST431**

MAXIMUM RATINGS

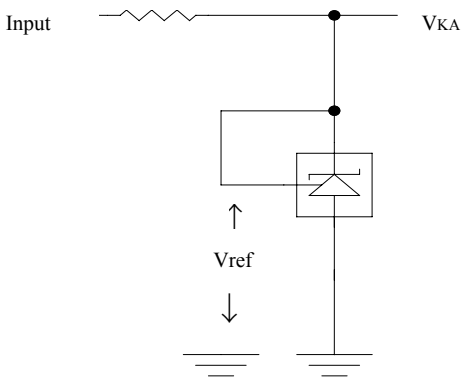
RATING	SYMBOL	VALUE	UNIT
Cathode to Anode Voltage	V_{KA}	-0.3 to 36	V
Continuous Cathode Current	I_K	-100 to +100	mA
Reference Input Current	I_{REF}	-0.05 to 10	mA
Power Dissipation	P_D	0.8	W
Operating Temperature Range	T_C	-0 to 105	℃
Storage Temperature Range	Tstg	-65 to 150	℃

ELECTRICAL CHARACTERISTICS（Vcc=5.0V; Ta=0-70℃）

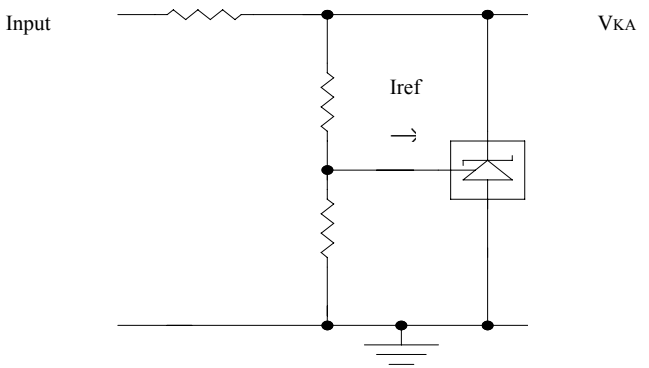
PARAMETERS	SYMBOL	Min	Typ	Max	UNITS
Reference Input Voltage (I_K=10mA, V_{KA}=V_{REF})	V_{REF}	2.475	2.5	2.525	V
Reference Drift (I_K=10mA, V_{KA}=V_{REF})			4	17	mV
Reference Input Current (I_K=10mA, V_{KA}=V_{REF}, Ta=25℃)	I_{REF}		2	4	uA
Reference Input Current (I_K=10mA, V_{KA}=V_{REF})	I_{REF}			2.3	uA
Minimum Operating Current (V_{KA}=V_{REF})	Imin		0.4	1	mA
Voltage Ratio, Ref to Cathode (I_K=10mA, V_{KA}=2.5V to 36V) (Note 1)			1.4	2.7	mV/V
Off-State Cathode Current (V_{KA}=36V, V_{REF}=0V)	I_{OFF}		0.1	1	uA
Dynamic Impedance (I_K=1mA to10mA, V_{KA}=V_{REF}, f<= 1kHz)	$\lvert Z_{KA} \rvert$		0.2	0.5	Ω

Note 1: $\triangle V_{REF}/\triangle V_{KA}$ Ratio of the change in reference input voltage to the change in cathode voltage

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



Test Circuit for $V_{KA}>V_{REF}$



Test Circuit for I_{REF}