



安徽富信半导体科技有限公司

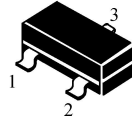
ANHUI FOSAN SEMICONDUCTOR TECHNOLOGY CO., LTD.

TL431

SOT-23 Three Terminal Adjustable Regulator 三端可调稳压 IC

SOT-23

1. Reference
2. Cathode
3. Anode



■ Features & Block Diagram

特点和框图

Programmable output Voltage to 36V

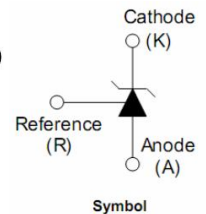
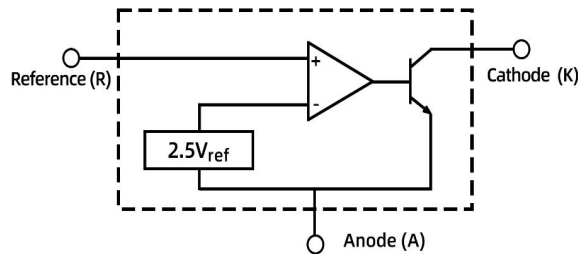
输出电压可调整到 36V

Low dynamic output impedance $0.27\ \Omega$

低动态输出阻抗 $0.27\ \Omega$

Sink current capability of 1 to 100mA

电流能力 1 到 100mA

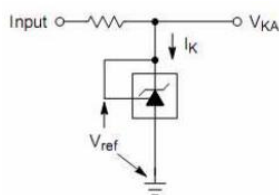


■ Absolute Maximum Ratings 最大额定值

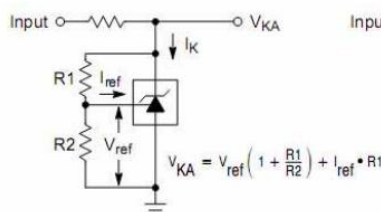
($T_A=25^\circ\text{C}$ unless otherwise noted 如无特殊说明, 温度为 25°C)

Characteristic 特性参数	Symbol 符号	Rat 额定值	Unit 单位
Cathode to Anode Voltage 阴极到阳极电压	V_{KA}	40	V
Cathode Current Range 工作电流	I_K	-100~+150	mA
Reference Input Current Range 输入电流	I_{REF}	-0.05~+10	mA
Power dissipation 耗散功率	P_D	200	mW
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Solder Temperature 焊接温度/时间	T_d	260/10	$^\circ\text{C}/\text{S}$
Operating Ambient Temperature 工作温度	T_{op}	-20~+85	$^\circ\text{C}$
Junction and Storage Temperature 结温和储藏温度	T_J, T_{stg}	-40to+125 $^\circ\text{C}$	

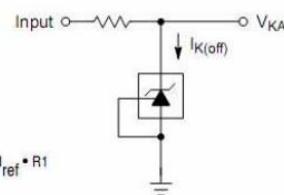
■ Device Marking & Test Circuit 产品打标和测试电路 TL431=431



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



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



Test Circuit for $I_{K(off)}$

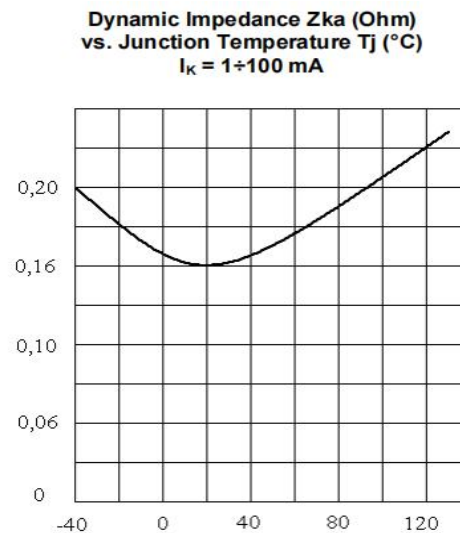
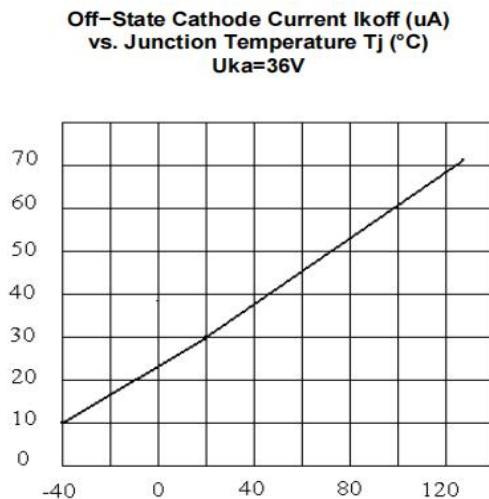
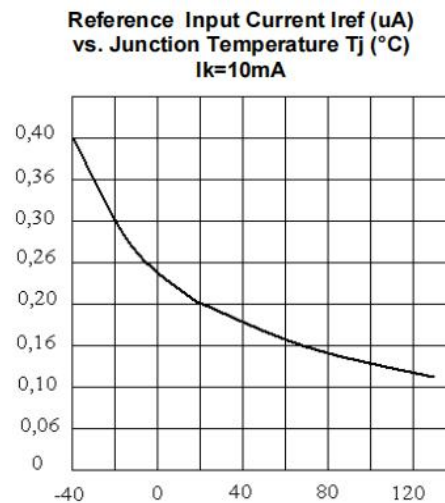
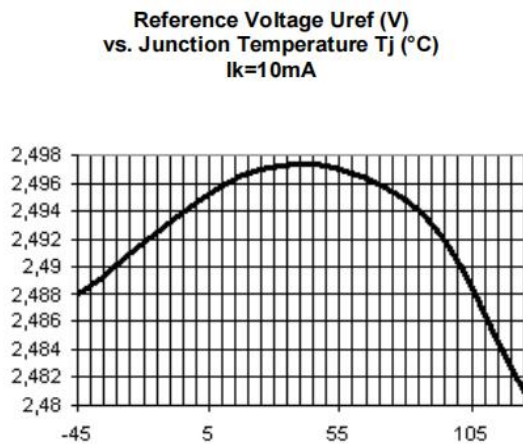
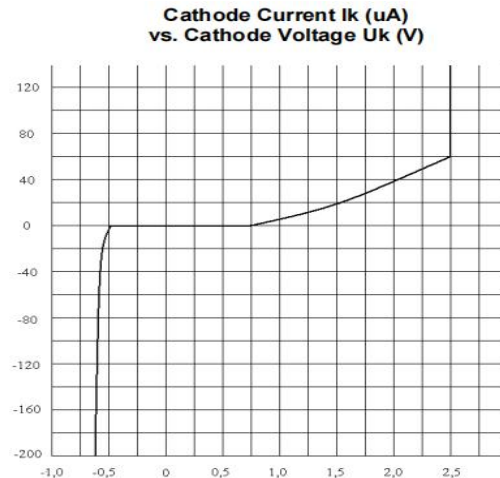
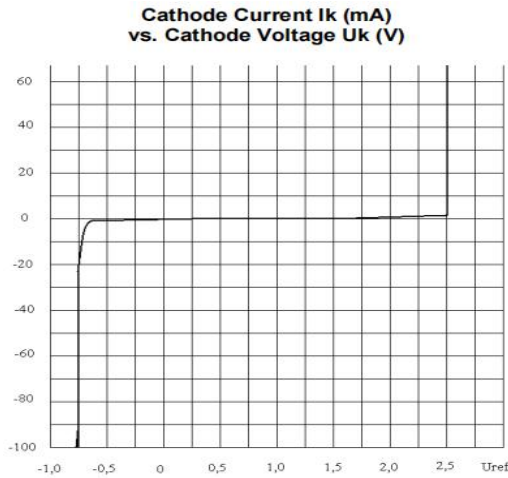


■ Electrical Characteristics 电特性

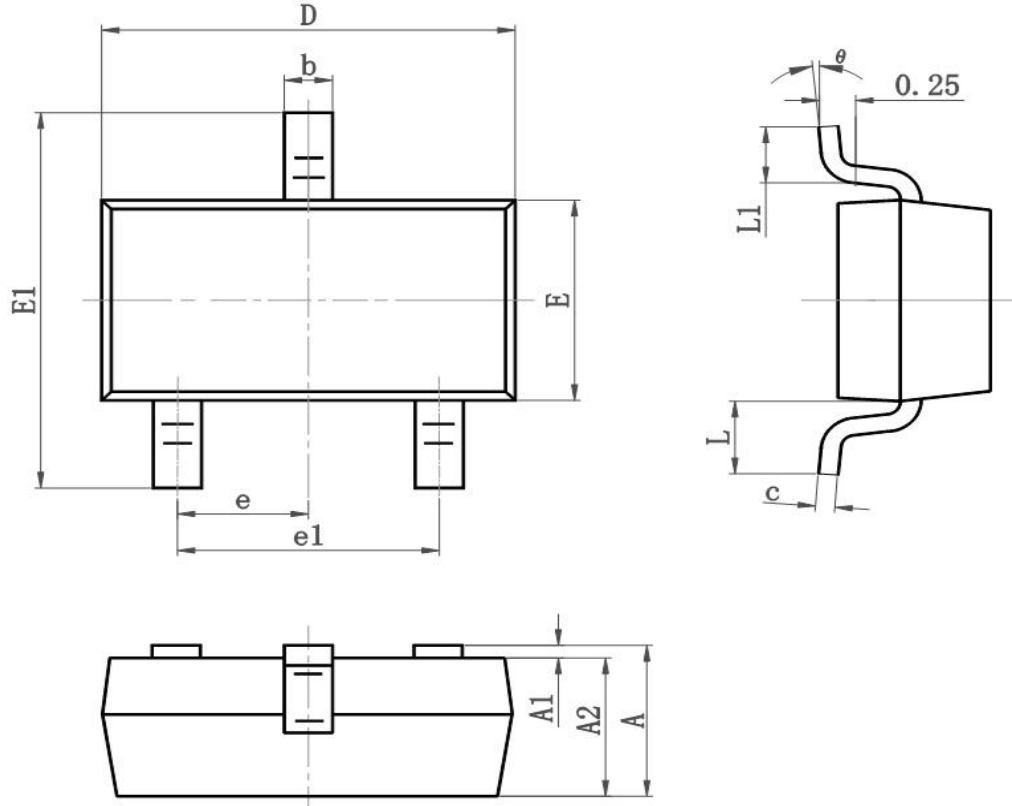
($V_{KA}=V_{REF}$ $I_{KA}=10mA$ $T_a=25^\circ C$ unless otherwise noted 如无特殊说明)

Characteristic 特性参数	Symbol 符号	Test Condition 测试条件	Min 最小值	Type 典型值	Max 最大值	Unit 单位
Reference Input Voltage 基准电压	0.3%	$V_{KA}=V_{REF}$ $I_{KA}=10mA$	2.488	2.495	2.502	V
	0.5%		2.483	2.495	2.507	
	1%		2.470	2.495	2.520	
Deviation of reference Input Voltage Over temperature 标准温度内基准电压偏差	$\Delta V_{REF}/\Delta T$	$V_{KA}=V_{REF}$ $I_{KA}=10mA$ $-20 \sim +85^\circ C$		3	17	mV
Ratio of Change in Reference Input Voltage Change in Cathode Voltage 阴极电压与基准电压变化比	$\Delta V_{REF}/\Delta V_{KA}$	$I_{KA}=10mA$ $\Delta V_{KA}=10V \sim V_{REF}$ $\Delta V_{KA}=36V \sim 10V$	-0.4 -0.4	0 0	2.7 2.0	mV/V
Reference Input Current 基准电流	I_{REF}	$I_{KA}=10mA$ $R1=10k \Omega, R2=\infty$		1.8	4	μA
Deviation of Reference Input Current Over Full Temperature Range 标准温度内基准电流偏差	$\Delta I_{REF}/\Delta T$	$I_{KA}=10mA$ $R1=10k \Omega, R2=\infty$ $T_a=-20 \sim +85^\circ C$		0.4	1.2	μA
Minimum Cathode Current for Regulation 最小阴极电流	$I_{KA(MIN)}$	$V_{KA}=V_{REF}$		0.25	0.5	mA
Off-state Cathode Current 关闭状态阴极电流	$I_{KA(OFF)}$	$V_{KA}=40V$ $V_{REF}=0V$		0.17	1.0	μA
Dynamic Impedance 输出阻抗	Z_{KA}	$V_{KA}=V_{REF}$ $I_{KA}=1 \sim 100mA$ $f \leq 1kHz$		0.27	0.5	Ω

■ Typical Characteristic Curve 典型特性曲线



■SOT-23 Dimension 外形封装尺寸



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.050	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°