

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

1.Reference 2.Anode 3.Cathode

■Features & Block Diagram

特点和框图

Programmable output Voltage to 36V

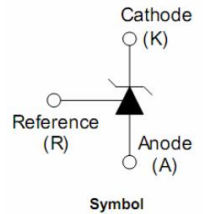
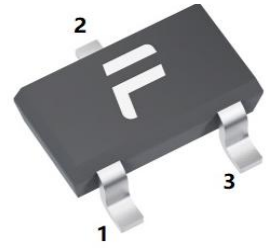
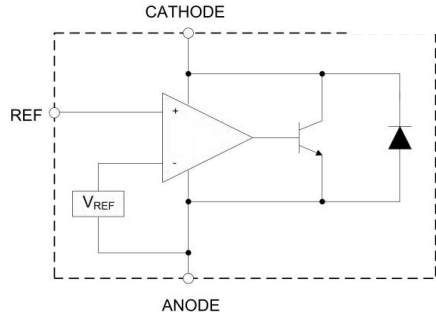
输出电压可调整到 36V

Low dynamic output impedance 0.15 Ω

低动态输出阻抗 0.15 Ω

Sink current capability of 1 to 100mA

电流能力 1 到 100mA

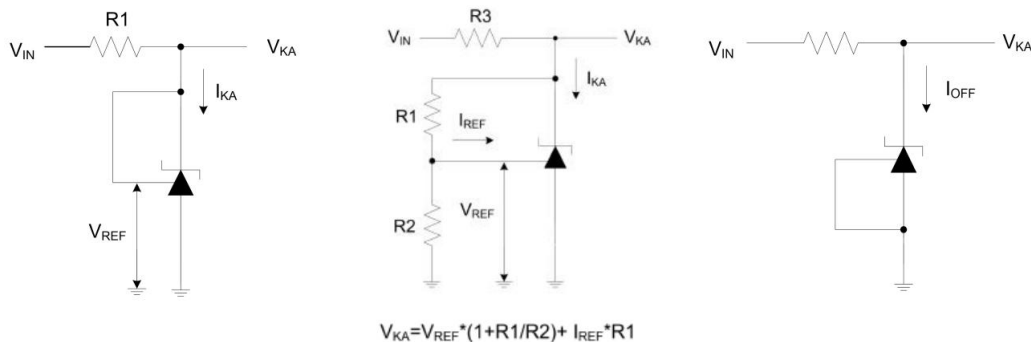


■Absolute Maximum Ratings 最大额定值

($T_A=25^\circ\text{C}$ 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	300	mW
Thermal Resistance Junction-Ambient 热阻	$R_{\theta JA}$	400	$^\circ\text{C}/\text{W}$
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}	-40~+125	$^\circ\text{C}$
Junction and Storage Temperature 结温和储藏温度	T_J, T_{stg}	-65to+150 $^\circ\text{C}$	

■Device Marking & Test Circuit 产品打标和测试电路 FS431AM=431A



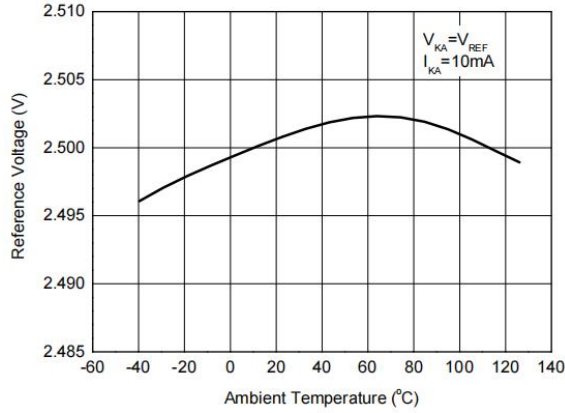
■Electrical Characteristics 电特性

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

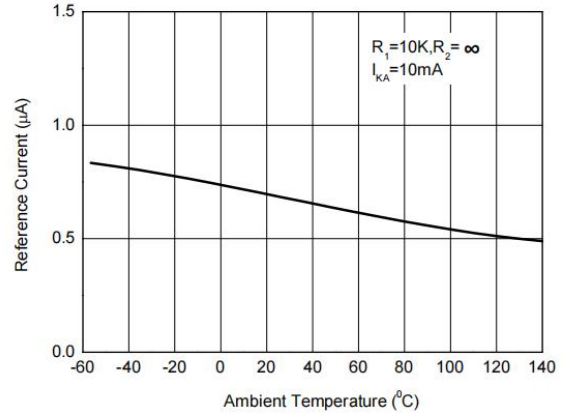
Characteristic 特性参数	Symbol 符号	Test Condition 测试条件	Min 最小值	Type 典型值	Max 最大值	Unit 单位
Reference Input Voltage 基准电压	0.2%	$V_{KA}=V_{REF}$ $I_{KA}=10mA$	2.49	2.495	2.50	V
	0.3%		2.488	2.495	2.502	
	0.5%		2.483	2.495	2.507	
Deviation of reference Input Voltage Over temperature 标准温度内基准电压偏差	$\Delta V_{REF}/\Delta T$	$V_{KA}=V_{REF}$ $I_{KA}=10mA$ 0 ~ +70°C -40 ~ +85°C -40 ~ +125°C		4.5 4.5 4.5	8 10 16	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	-1 -0.5	-2.7 -2.0	mV/V
Reference Input Current 基准电流	I_{REF}	$I_{KA}=10mA$ $R1=10k\Omega, R2=\infty$		0.7	4	μA
Deviation of Reference Input Current Over Full Temperature Range 标准温度内基准电流偏差	$\Delta I_{REF}/\Delta T$	$I_{KA}=10mA$ $R1=10k\Omega, R2=\infty$ $T_a=-40 \sim +125^{\circ}C$		0.4	1.2	μA
Minimum Cathode Current for Regulation 最小阴极电流	$I_{KA}(MIN)$	$V_{KA}=V_{REF}$		0.4	1	mA
Off-state Cathode Current 关闭状态阴极电流	$I_{KA}(OFF)$	$V_{KA}=36V$ $V_{REF}=0V$		0.05	1.0	μA
Dynamic Impedance 输出阻抗	Z_{KA}	$V_{KA}=V_{REF}$ $I_{KA}=1 \sim 100mA$ $f \leq 1kHz$		0.15	0.5	Ω

■ Typical Characteristic Curve 典型特性曲线

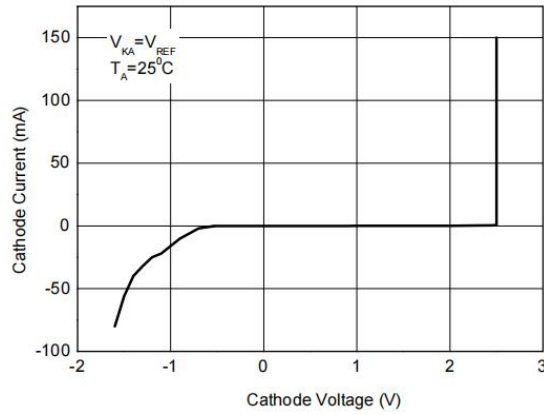
Reference Voltage vs. Ambient Temperature



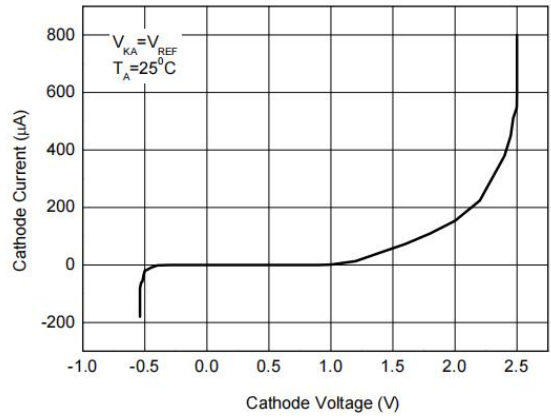
Reference Current vs. Ambient Temperature



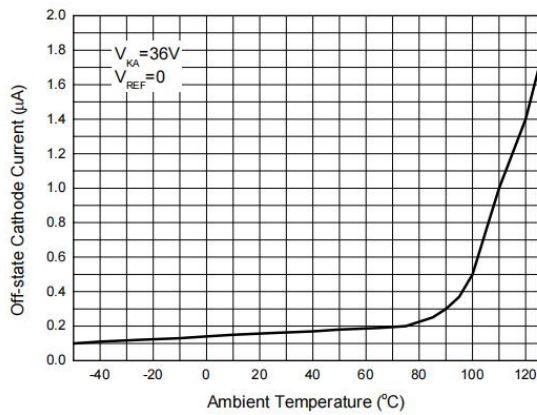
Cathode Current vs. Cathode Voltage



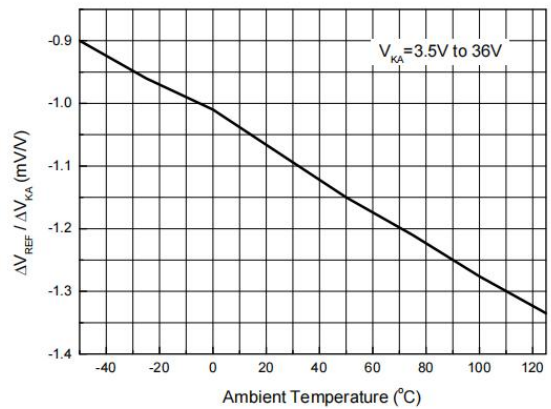
Cathode Current vs. Cathode Voltage



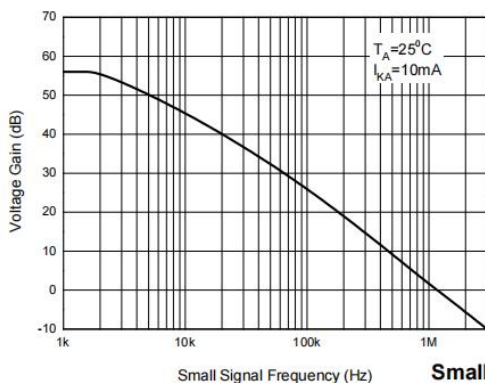
Off-state Cathode Current vs. Ambient Temperature



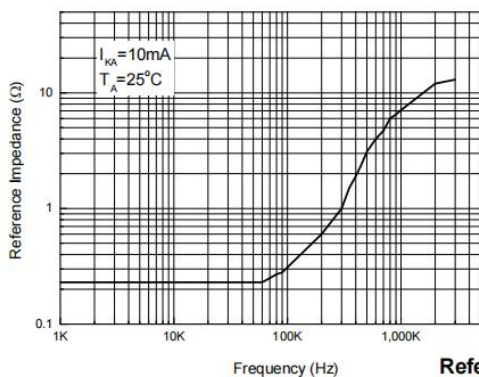
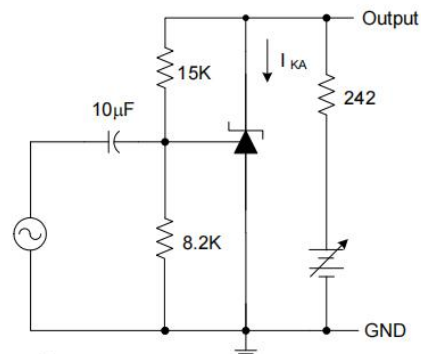
Ratio of Delta Reference Voltage to the Ratio of Delta Cathode Voltage



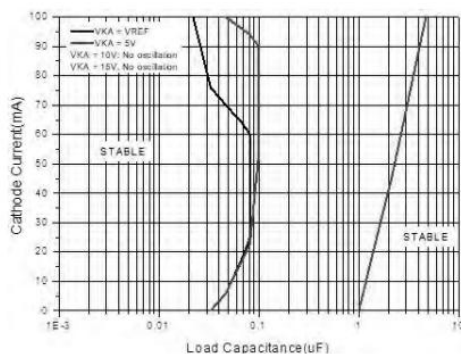
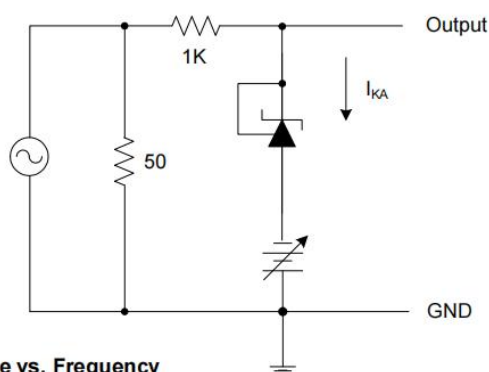
FS431AM



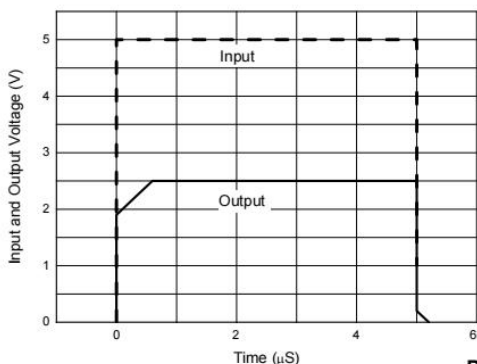
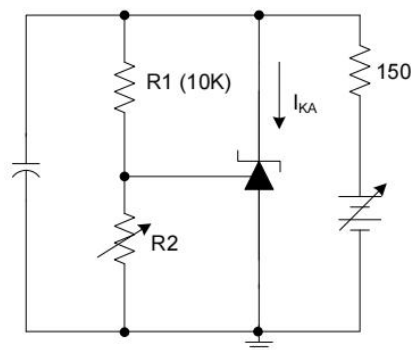
Small Signal Voltage Gain vs. Frequency



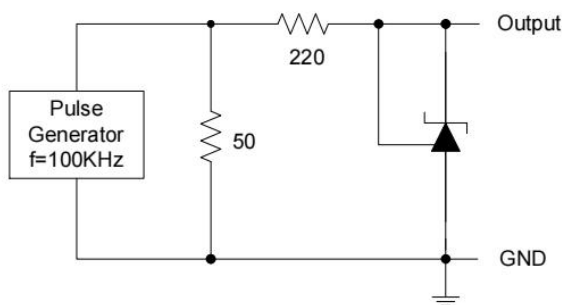
Reference Impedance vs. Frequency



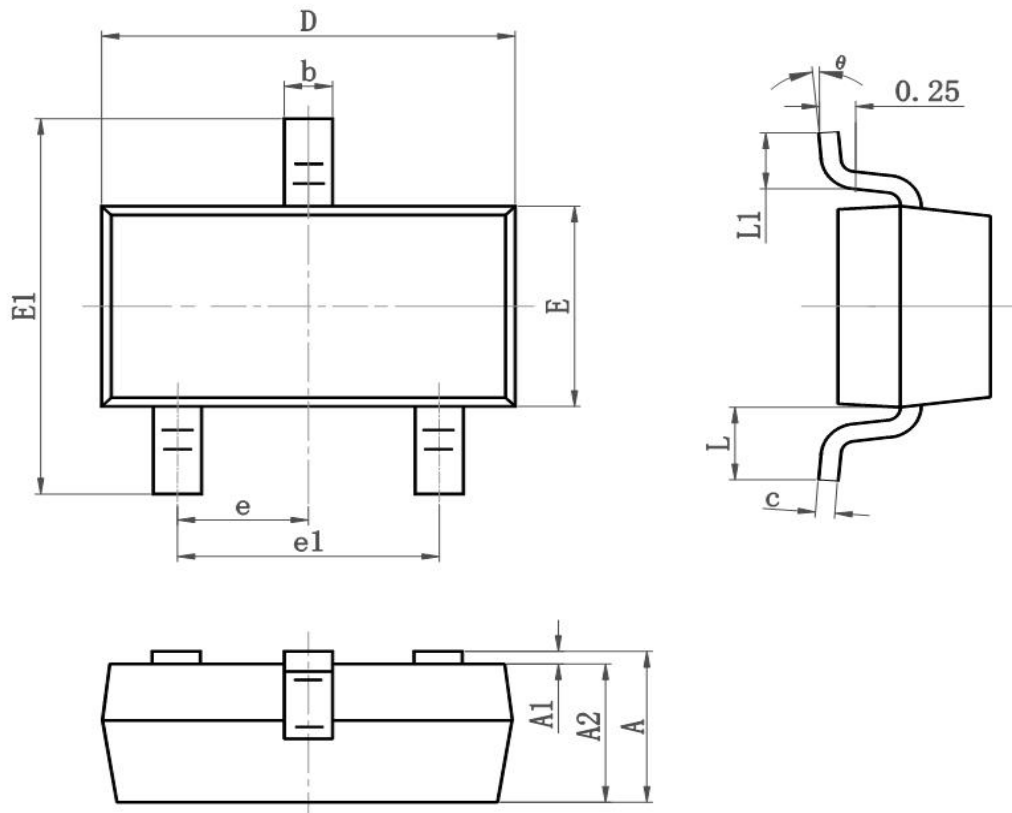
Stability Boundary Conditions vs. Load Capacitance



Pulse Response of Input and Output Voltage



■ 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	0.900	1.00	0.035	0.039
e1	1.800	2.000	0.071	0.079
L	0.500	0.600	0.020	0.024
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°