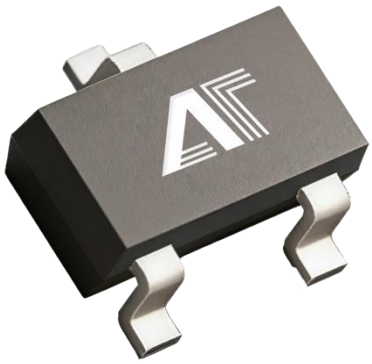
AOTE SEMICONDUCTOR



可调精密并联稳压器

Adjustable Precision Parallel Voltage Regulator

TL432

Product Data Sheet

AOTE DCC
RELEASE

◆ 概述：summary ：

TL432是一款可调精密并联稳压器,在全温度范围内如同低温度系数的齐管一样稳定；TL432具有较低的温度系数和较低的动态阻抗使其在开关电源、充电管理、运放电路等许多应用中代替齐纳二极管。

TL432工作最高电压为18V,输出电压可以通过外部电阻在VREF(1.25V)到18V之间灵活设置；SOT23封装。

The TL432 is an adjustable precision shunt regulator that is as stable as a low temperature coefficient diode across the entire temperature range. The TL432 has a low temperature coefficient and low dynamic impedance, making it a replacement for Zener diodes in many applications such as switching power supplies, charge management, and operational amplifier circuits.

The TL432 maximum operating voltage is 18V, and the output voltage can be flexibly set between VREF (1.25V) and 18V through external resistors.

◆ 产品特征Product features

- 可编程精确输出电压范围：1.25V至18V ; Programmable Precise Output Voltage from 1.25V to 18V
- 高基准电压精度: ±0.5%； High reference voltage accuracy ±0.5%
- 电容负载下高稳定性; High Stability under Capacitive Load
- 低温偏差：典型值为4.5mV ; Low-temperature deviation, typical value is 4.5mV
- 低动态阻抗：典型值为0.15Ω；Low dynamic impedance: typical value is 0.15Ω
- 负载电流范围 :1mA~100mA； Load current range 1mA~100mA
- 低输出噪声；Low Output Noise
- 工作温度范围：-40℃至85℃；Operating temperature range -40 to 85℃

◆ 应用领域 Applications

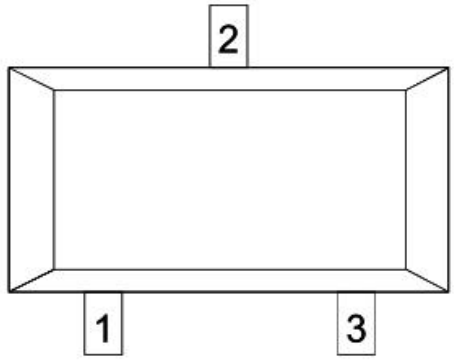
- 充电器 Charger
- 电源适配器 Power adapter
- 开关电源供电 Switched-mode power supply
- 高精度电压基准 High-precision voltage reference



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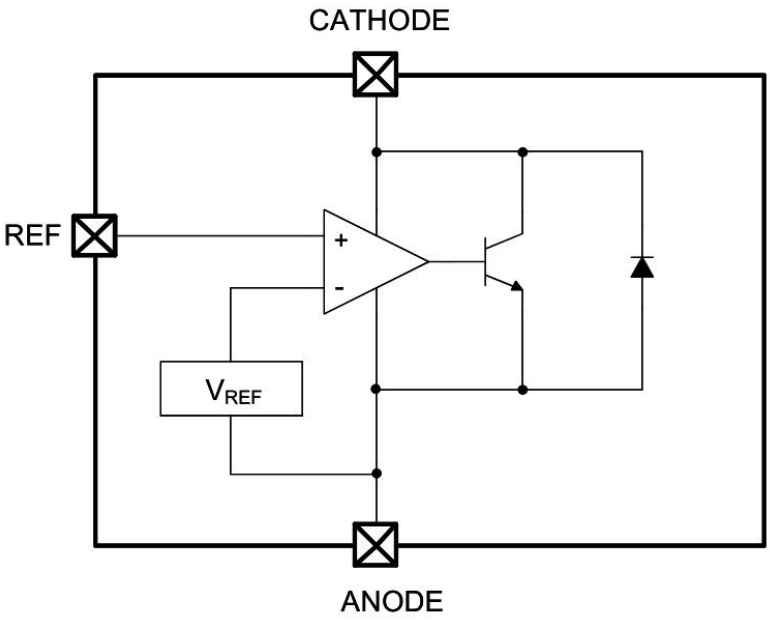
◆ **产品信息 on-product information:**

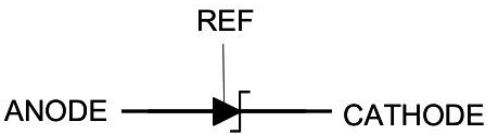
• **脚位图Footage image**



引脚编号	符号	功能
1	R	基准电压（REF）
2	A	阳极（ANODE）
3	K	阴极（CATHODE）

• **脚位功能示意图Schematic diagram of foot position function**





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◆ 绝对最大额定值 Absolute maximum rating

参数 Parameter	符号 Symbol	额定值 Rating	单位 Unit
阴极电压 Cathode voltage	VKA	18	V
阴极电流范围（连续） Cathodecurrentrange (continuous)	IKA	100	mA
基准输入电流范围 Reference input current range	IREF	6	mA
最大功率耗散 Maximum power dissipation	PD	0.35	W
结温范围 Junction Temperature Range	TJ	125	℃
储存温度范围 Storage Temperaturerange	TSTG	-55~+150	℃
封装热阻（结到空气环境的热阻） Encapsulation Thermal Resistance	θJA	350	℃/W

注：请在规定的最大额定值范围内使用该集成电路（IC）。超出这些限制范围运行可能导致设备性能下降或永久性损坏。Note:Use this IC within the stated maximum ratings. Operation beyond these limits may cause degrading or permanent damage to the device.

◆ 推荐操作条件 Recommended Operating Conditions

参数 Parameter	符号 Symbol	最小值 Min	最大值 Max.	单位 Unit
阴极电压 Cathode Voltage	VKA	VREF	18	V
阴极电流 Cathode Current	IKA	1.0	100	mA
工作环境温度范围 Operating Ambient Temperature Range	TA	-40	85	℃

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◆ 电气参数 Electrical parameters (Ta =25℃)

参数 Parameter		符号 Symbol	条件 Condition		最小 Min	典型 Typ	最大 Max	单位 Unit	测试电路 test circuit
基准电压 Reference voltage	±0.5%	V_{REF}	$V_{KA}=V_{REF}$ $I_{KA}=10mA$		1.22	1.25	1.26	V	Fig.1
温度范围内基准电压偏差 Reference voltage deviation within the temperature range		ΔVREF	VKA=VREF IKA=10mA	0 ~ 70℃		4.5	16	mV	Fig.1
动态阻抗 Dynamic impedance		$\|Z_{KA}\|$	$V_{KA}=V_{REF}$,$I_{KA}=1\sim100mA$, f≤1.0KHz			0.15	0.5	Ω	Fig.1
最小阴极电流 Minimum cathode current		I_{KA} (MIN)	$V_{KA}=V_{REF}$				0.1	mA	Fig.1
基准输入电压变化与阴极至阳极电压变化的比值 The ratio of the change in reference input voltage to the change in voltage from cathode to anode		$\Delta V_{REF}/\Delta V_{KA}$	$I_{KA}=10mA$	$\Delta V_{KA}=1.25V\sim15V$		1	2.5	mV/V	Fig.2
基准输入电流 Reference input current		I_{REF}	$I_{KA}=10mA$, R1=10KΩ, R2=∞			1.5	4	μA	Fig.2
在温度范围内基准输入电流偏差 Reference input current deviation within the temperature range		ΔIREF	$I_{KA}=1mA$, R1=10KΩ, R2=∝,T_A=-40~125℃			0.1	2.5	μA	Fig.2
截止态阴极电流 Off-state cathode current		I_{KA} (OFF)	$V_{KA}=18V$, $V_{REF}=0$			0.05	0.5	μA	Fig.3

注:动态阻抗定义为:IZKAI=△VKA/△IKA

Note:The dynamic impedance is defined as:|ZKA |=△VKA/△IKA

◆ 测试电路Test circuit:

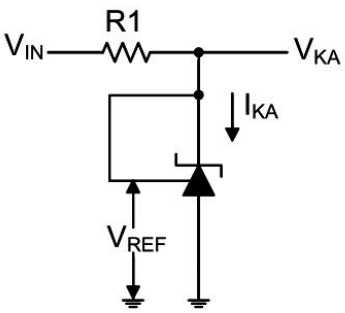
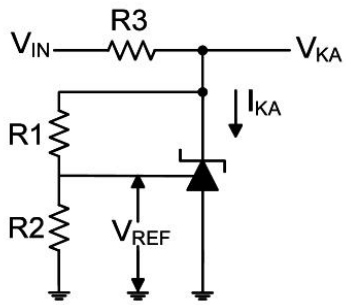


图 1: $V_{KA}=V_{REF}$



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

图 2: $V_{KA}>V_{REF}$

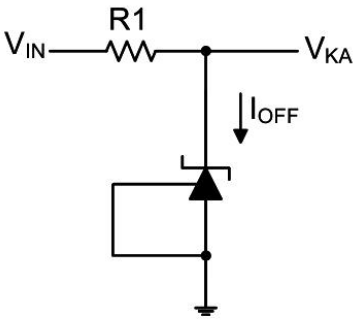


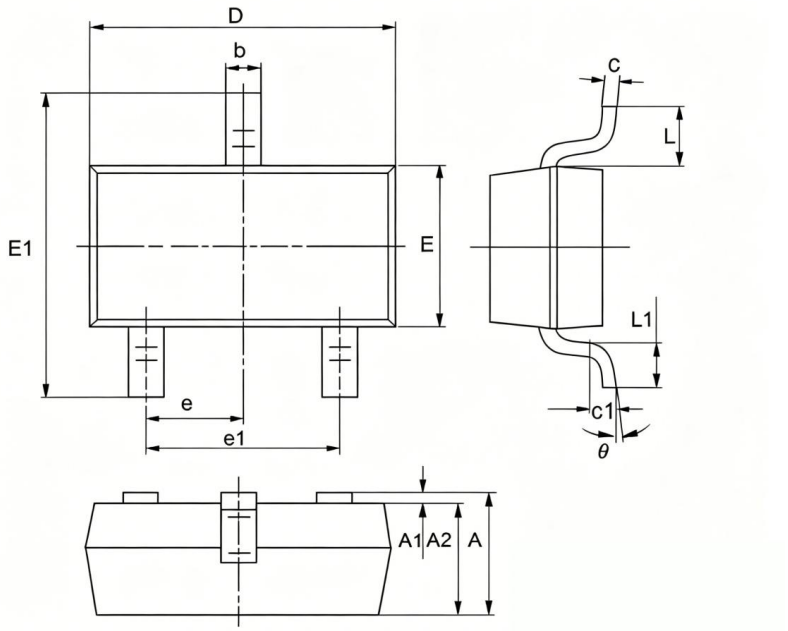
图 3: I_{OFF}

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◆包装数量 Packaging Quantity

封装形式	最小包装数量	盒数量	箱数量
SOT-23	3000 只/盘	10 盘/盒	4盒/箱

◆ 封装尺寸及信息Package size and information:



参 数	毫米 Millimeters		英寸Inch	
	Min	Max	Min	Max
A	0.9	1.15	0.0354	0.0453
A1	0	0.14	0.0000	0.0055
A2	0.9	1.05	0.0354	0.0413
b	0.28	0.52	0.0110	0.0205
c	0.07	0.23	0.0028	0.0091
D	2.8	3.0	0.1102	0.1181
e1	1.8	2.0	0.0709	0.0787
E	1.2	1.4	0.0472	0.0551
E1	2.2	2.6	0.0866	0.1024
e	0.95(TYP)		0.0374(TYP)	
L	0.55(TYP)		0.0217(TYP)	
L1	0.25	0.55	0.0098	0.0217
θ	0	8°	0.0000	8°
c1	0.25(TYP)		0.0098(TYP)	

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◆ 注意 Attention

- 奥特半导体实施动态技术迭代机制，产品规格可能随工艺升级调整，最新技术参数以官网发布版本为准。

AOTE implements dynamic technical updates. Specifications are subject to change. Refer to the official website for the latest version.

- 用户需严格遵循本规格书限定的操作条件，因超范围使用（包括但不限于过载、高温、非兼容电路设计）导致的器件失效，不在质量保证范围内。

Users must strictly adhere to specified conditions. Failures caused by misuse (overload, high temperature, incompatible circuits) are excluded from warranty.

- 医疗设备、工业控制等关键场景应用前，需联系技术支持获取定制化验证方案。

Contact technical support for customized validation in critical applications (medical devices, industrial control).

- 本文档有效期至2026年12月31日，后续更新将通过官网公告推送。

This document is valid until Dec 31, 2026. Updates will be notified on the official website.

- 如需对技术参数或应用方案进行进一步确认，欢迎通过以下渠道获取官方支持：

For further clarification on technical specifications or application solutions, please contact us through official channels:

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