EVVOSEMI®
THINK CHANGE DO

ESD TVS MOS LDO Diode Sensor DC-DC

Product Specification

Domestic Part Number	TL431AIDBZR
Overseas Part Number	TL431AIDBZR
Equivalent Part Number	TL431AIDBZR

Three-terminal positive voltage regulator

DEVICE DESCRIPSION

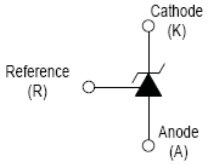
TheTL431AIDBZR is a three-terminal adjust able shunt regulator offering excellent temperature stability .
This device has a typical dynamic output impedance of 0.2Ω. The device can be used as a replacement for zener diodes in many applications.

SOT-23

FEATURES

- The output voltage can be adjusted to 36V
- Low dynamic output impedance, its typical value is 0.2K
- 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/℃

Equivalent Circuit



APPLICATION

- Shunt Regulator
- High-Current Shunt Regulator
- Precision Current Limiter

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TL431	SOT-23	431	3000

ABSOLUTE MAXIMUM RATINGS (Operating temperature range applies unless otherwise specified)

Parameter	Symbol	Value	Unit
Cathode Voltage	V_{KA}	36	V
Cathode Current Range (Continuous)	I_{KA}	-100-+150	mA
Reference Input Current Range	Iref	0.05-+10	mA
Power Dissipation	P_D	300	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	417	℃/W
Operating Temperature	Topr	-25~+85	℃
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-65~+150	℃

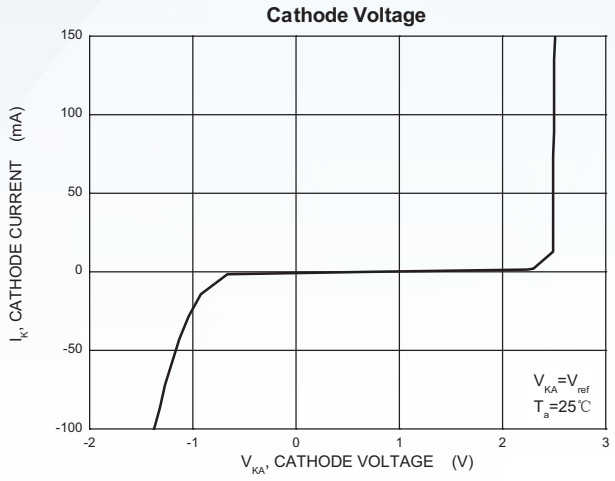
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

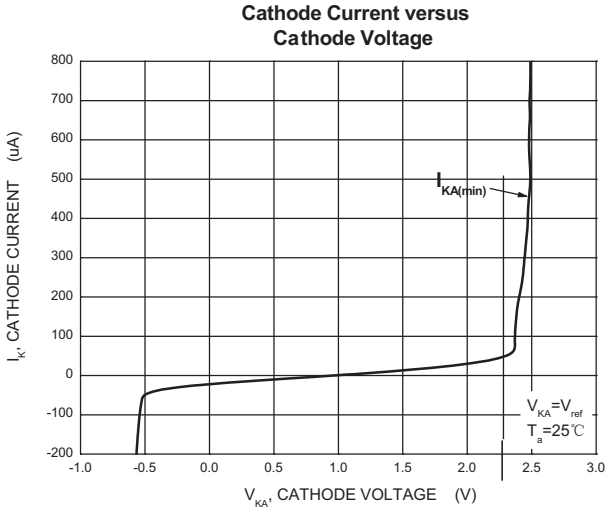
Parameter	Symbol	Test conditions		Min	Typ	Max	Unit
Reference input voltage	V_{ref}	$V_{KA}=V_{REF}$, I_{KA}=10mA		2.475	2.5	2.525	V
Deviation of reference Input voltage over temperature (note)	$\triangle V_{ref}/\triangle T$	$V_{KA}=V_{REF}$, I_{KA}=10mA $T_{MIN}\leq T_a\leq T_{MAX}$			4.5	17	mV
Ratio of change in reference Input voltage to the change in cathode voltage	$\triangle V_{ref}/\triangle V_{KA}$	I_{KA}=10mA	$\triangle V_{KA}$ =10V~V_{REF}		-1.0	-2.7	mV/V
			$\triangle V_{KA}$ =36V~10V		-0.5	-2.0	mV/V
Reference input current	I_{ref}	I_{KA}= 10mA,R_1=10kΩ R_2=∞			1.5	4	μA
Deviation of reference input current over full temperature range	$\triangle I_{ref}/\triangle T$	I_{KA}=10mA, R_1=10kΩ R_2=∞ T_A=-25 to 85℃			0.4	1.2	μA
Minimum cathode current for regulation	$I_{KA(min)}$	$V_{KA}=V_{REF}$			0.45	1.0	mA
Off-state cathode current	$I_{KA(OFF)}$	V_{KA}=36V ,V_{REF}=0			0.05	1.0	μA
Dynamic impedance	Z_{KA}	$V_{KA}=V_{REF}$, I_{KA}=1 to 100mA f≤1.0kHz			0.15	0.5	Ω

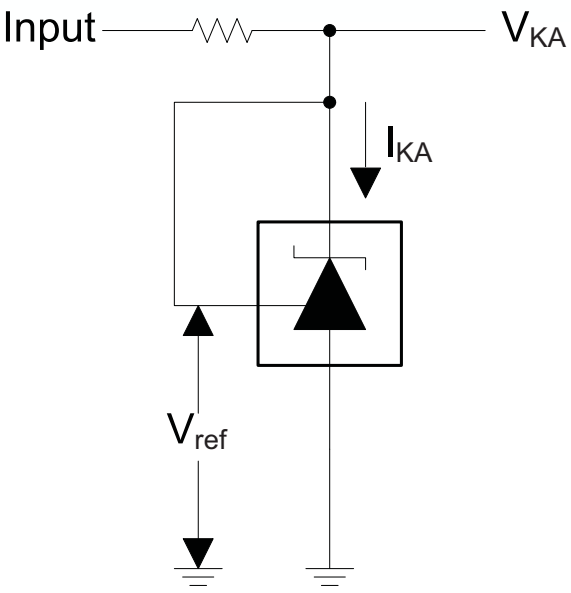
Note:T_{MIN}=-25℃ ,T_{MAX}=+85℃

CLASSIFICATION of V_{ref}

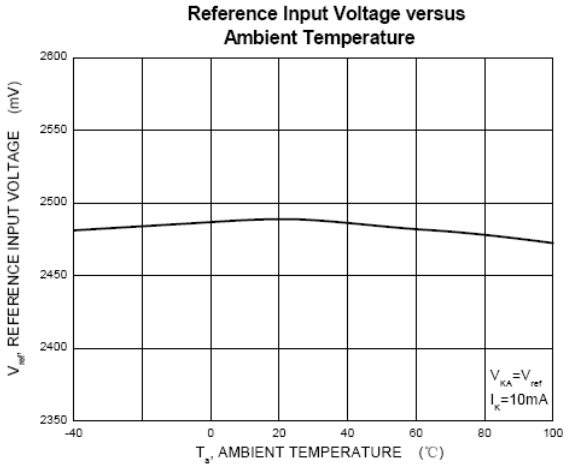
Rank	**0.5%**	**1%**
Range	2.487-2.513	2.475-2.525

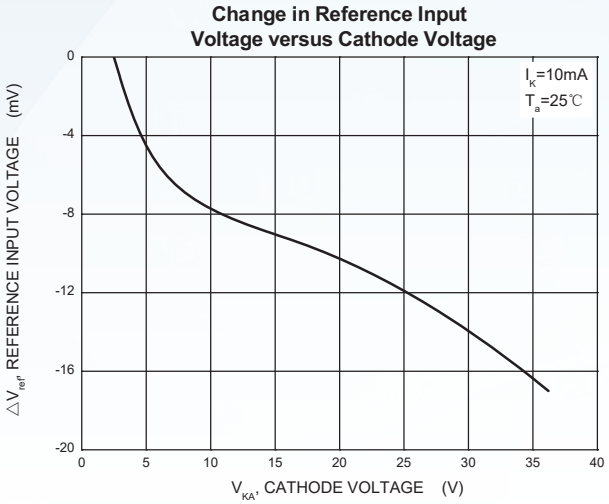


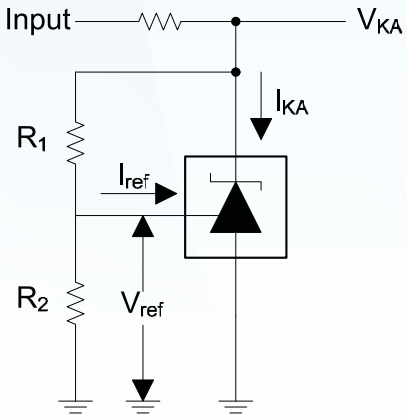




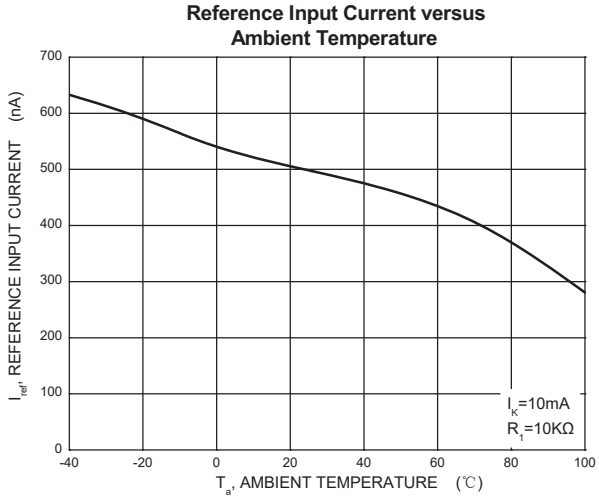
Test Circuit for $V_{KA}=V_{ref}$

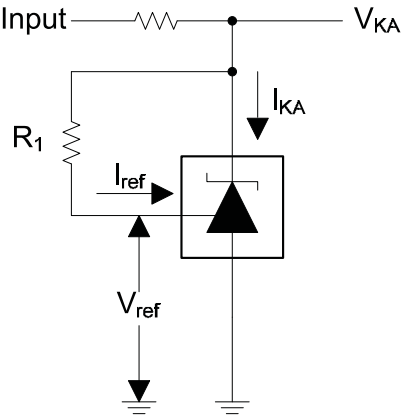




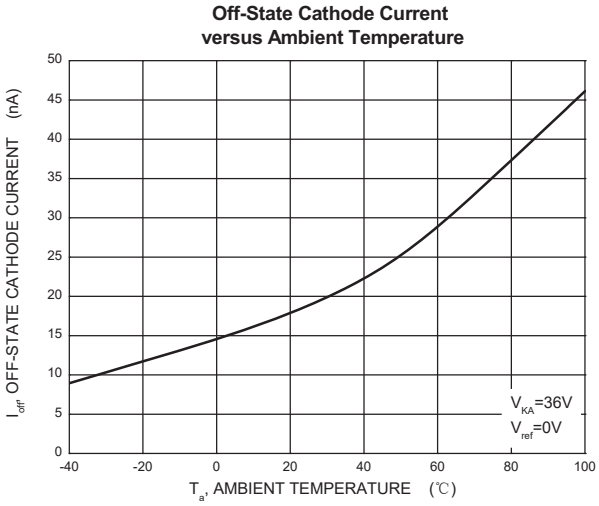


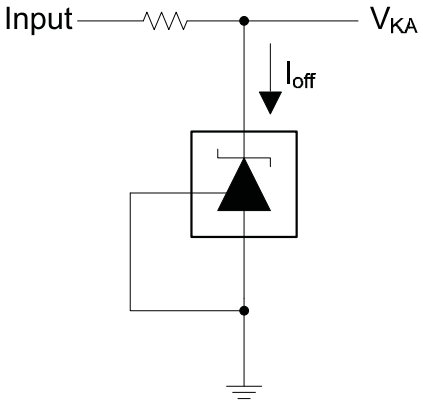
Test Circuit for $V_{KA}=V_{ref}(1+R1/R2)+R1*I_{ref}$





Test Circuit for I_{ref}





Test Circuit for I_{off}

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