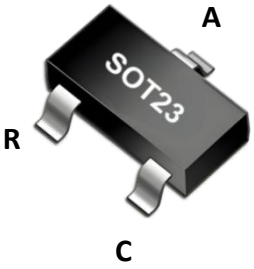
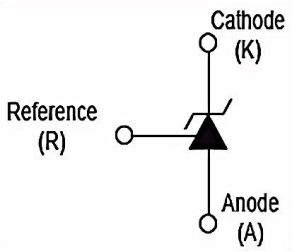
■ DESCRIPTION

The B C D 431 is a three-terminal adjustable shunt regulator offeringexcellent 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.

The B C D 431 meet the ROHS and Green Productrequirement with full function reliabilit1.15.y approved.





■ FEATURES

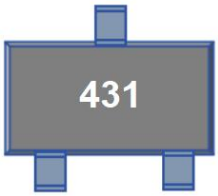
*The output voltage can be adjusted to 36V
*Low dynamic output impedance, its typical value is 0.2Ω
*Trapping current capability is 1 to 100mA
*Low output noise voltage
*Fast on -state response
*The effective temperature compensation in the working range of full temperature
*The typical value of the equivalent temperature factor in the whole temperature scope is 50 ppm/°C

■ APPLICATION

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

■ MARKING

Type Code: Marking: 431



■ ABSOLUTE MAXIMUM RATINGS

(Operating temperature range applies unless otherwise specified)

SYMBOL	PARAMETER	VALUE	UNIT
V_{KA}	Cathode Voltage	36	V
I_{KA}	Cathode Current Range (Continuous)	-100 to +150	mA
I_{ref}	Reference Input Current Range	0.05~+10	mA
P_D	Power Dissipation	300	mW
T_J	Operating JunctionTemperature	-40 ~ 150	°C
T_{STG}	Storage Temperature Range	-65 ~ 150	°C
$R_{\theta JA}$	Thermal Resistance fromJunction to Ambient	417	°C/W

■ ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise specified)

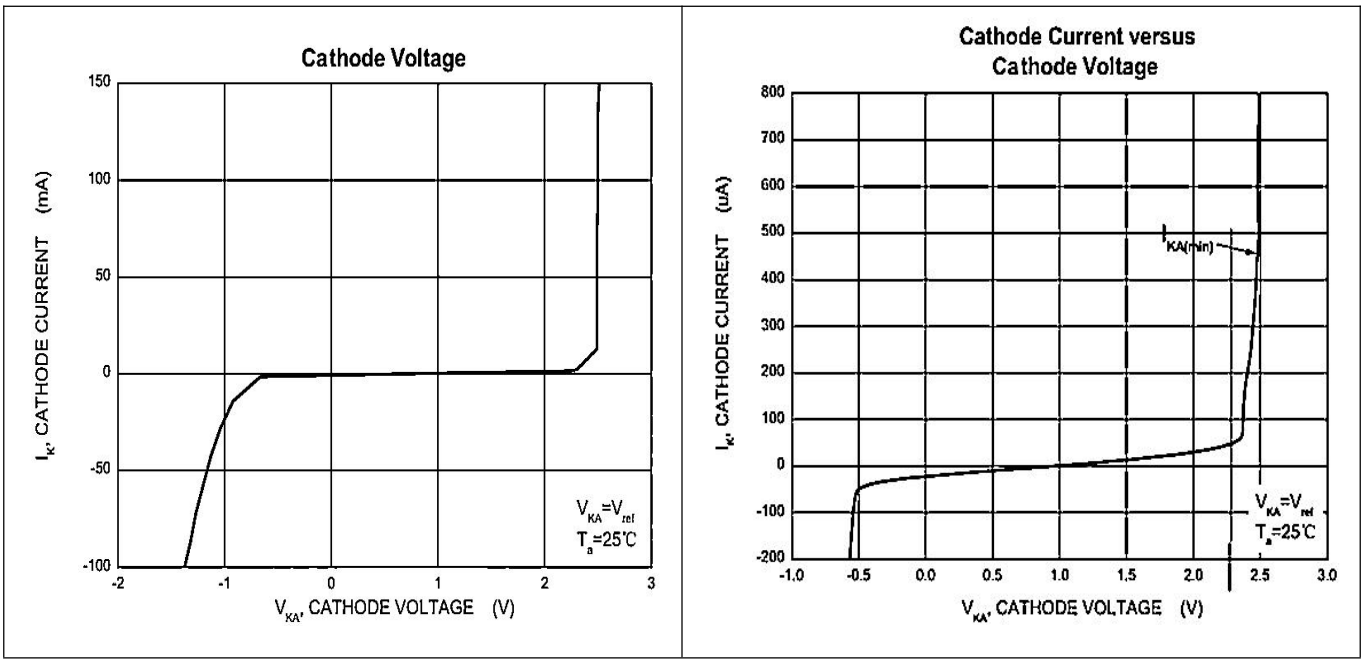
PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Reference input voltage	Vref	$V_{KA}=V_{REF}$, I_{KA}=10mA	0.5%	2.4875	2.5	2.5125	V
Deviation of reference input voltage over temperature (note)	Vref(dev)	$V_{KA}=V_{REF}$, I_{KA}=10mA $T_{MIN} \leqq Ta \leqq T_{MAX}$			4.5	17	mV
Ratio of change in reference Input voltage to the change in cathode voltag	△Vref /△V_{KA}	I_{KA}=10mA	△V_{KA}=10V~V_{REF}		-1	-2.7	mV/V
			△V_{KA}=36V~10V		-0.5	-2	mV/V
Reference input current	Iref	I_{KA}= 10mA,R1=10KΩ R2=∞			0.7	4	μA
Deviation of reference input current over full temperature range	Iref(dev)	I_{KA}=10mA, R1=10KΩ R2=∞,T_A=-40 to 85°C			0.4	1.2	μA
Minimum cathode current for regulation	$I_{KA(min)}$	$V_{KA}=V_{REF}$			0.45	1	mA
Off-state cathode current	$I_{KA(OFF)}$	V_{KA}=36V ,V_{REF}=0			0.05	1	μA
Dynamic impedance	Z_{KA}	$V_{KA}=V_{REF}$, I_{KA}=1 to 100mA f≦1KHz			0.15	0.5	Ω

Notes: T_{MIN}=-25°C ,T_{MAX}=85°C

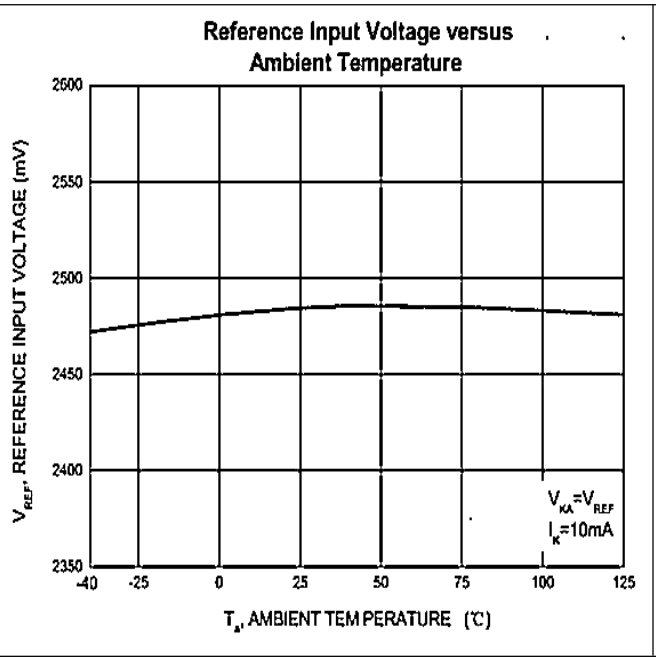
CLASSIFICATION OF Vref

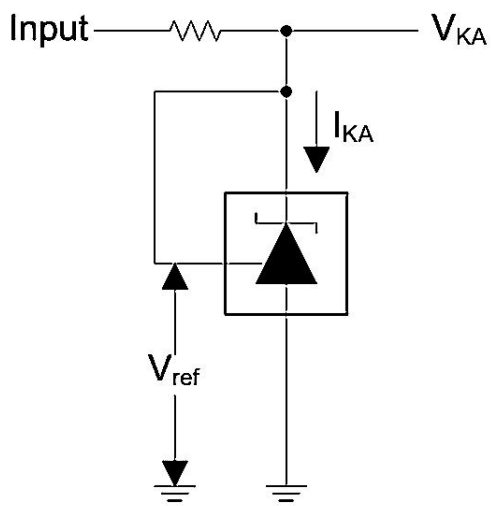
Rank	0.3%	0.5%	1%
Range	2.493-2.507	2.4875-2.5125	2.470-2.483

■ TYPICAL APPLICATIONS CIRCUIT(1)



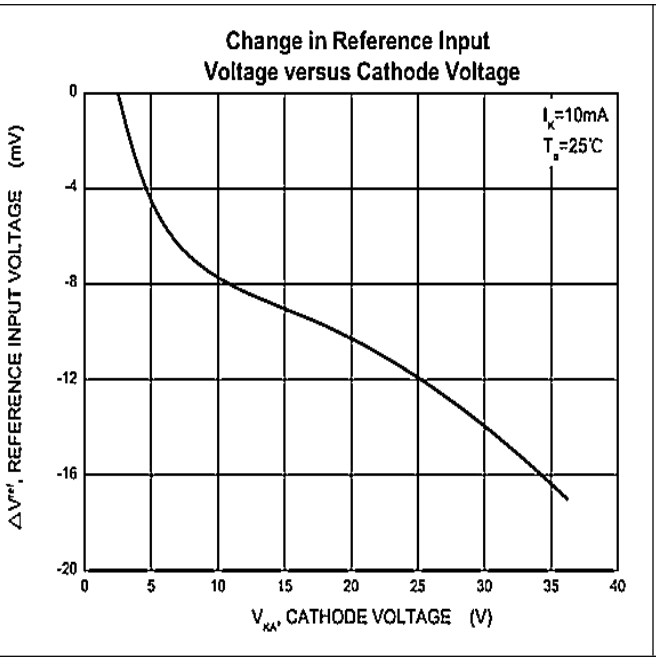
■ TYPICAL CHARACTERISTICS(1-1)

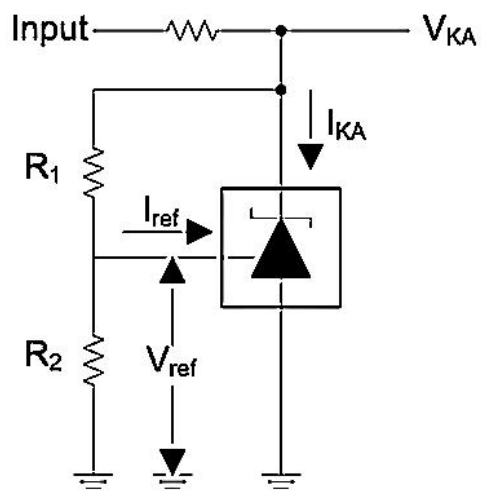




Test Circuit for $V_{KA}=V_{ref}$

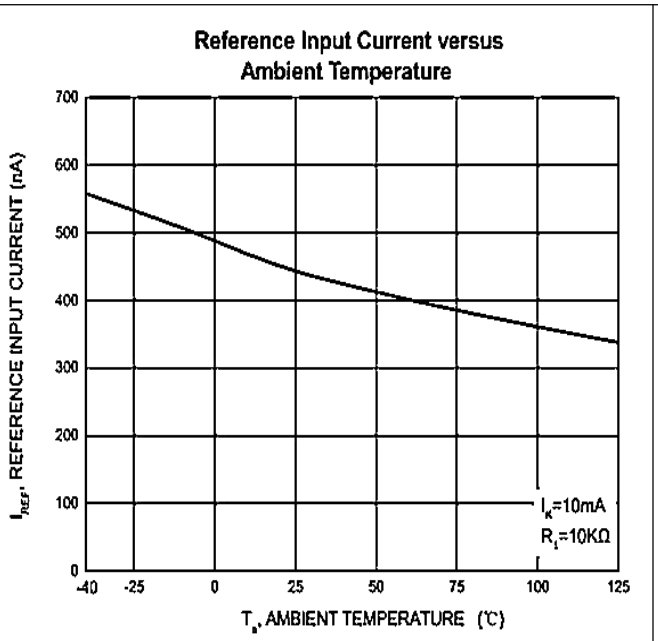
■ TYPICAL CHARACTERISTICS(2)

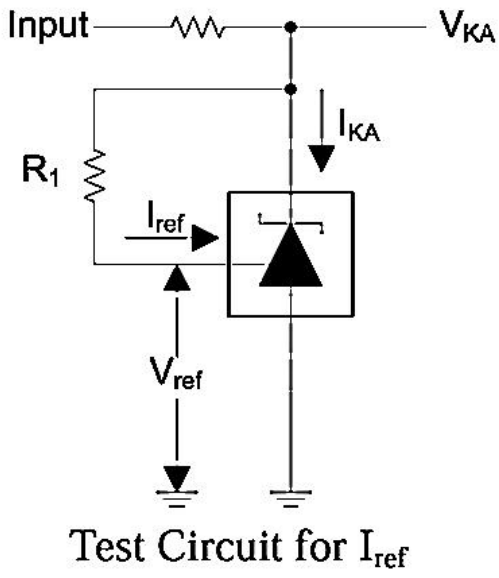


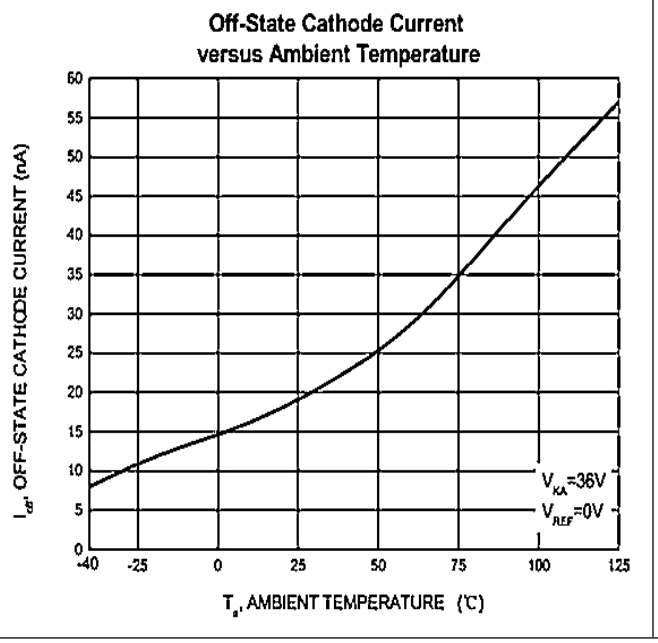


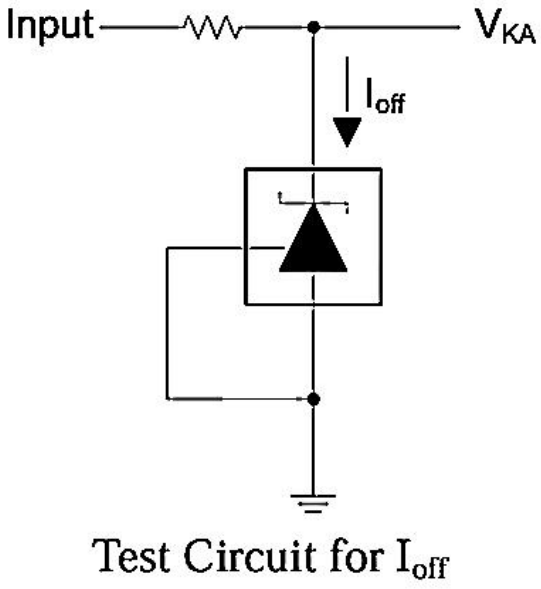
Test Circuit for $V_{KA}=V_{ref}(1+R1/R2)+R1*I_{ref}$

■ TYPICAL CHARACTERISTICS(2-1)

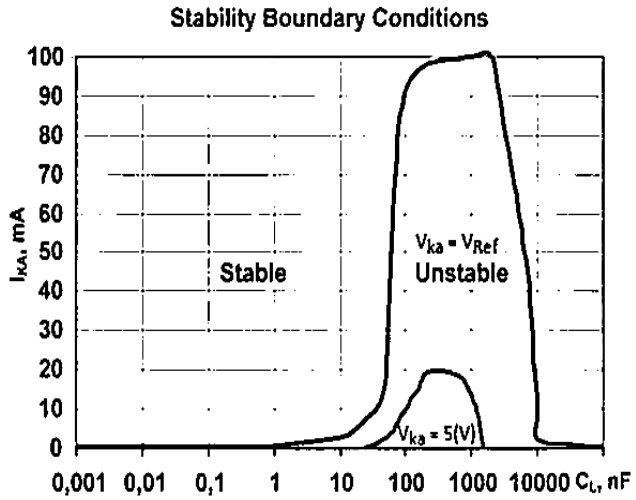




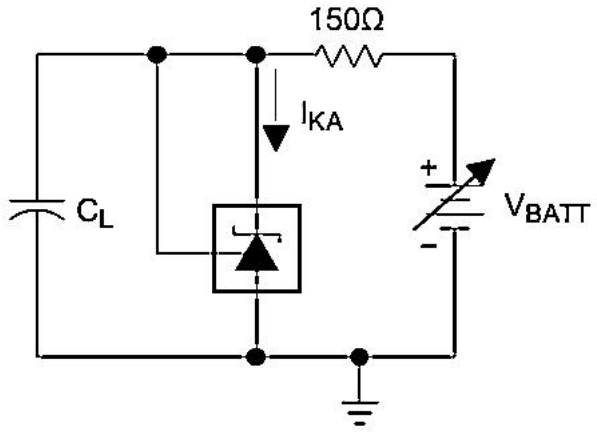




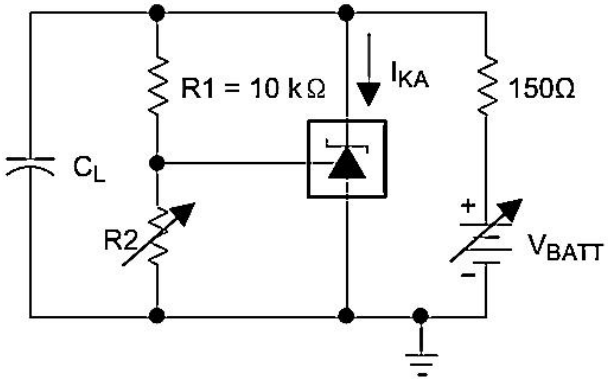
■ TYPICAL CHARACTERISTICS(Con.t)



JSCJ recommend capacitance should be less than 1/10 of the left boundary or more than 10 times of the right boundary.

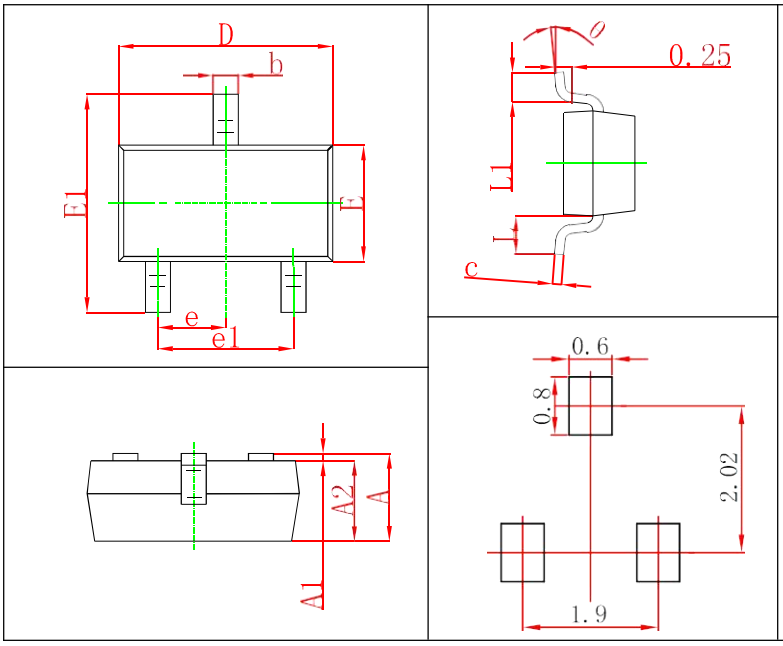


Test Circuit for $V_{KA}=V_{ref}$



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

■ SOT23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.9	1.15	0.035	0.045
A1	0	0.1	0	0.004
A2	0.9	1.05	0.035	0.041
b	0.3	0.5	0.012	0.02
c	0.08	0.15	0.003	0.006
D	2.8	3	0.11	0.118
E	1.2	1.4	0.047	0.055
E1	2.25	2.55	0.089	0.1
e	0.950 TYP		0.037 TYP	
e1	1.8	2	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.25	0.45	0.01	0.02
θ	0°	8°	0°	8°

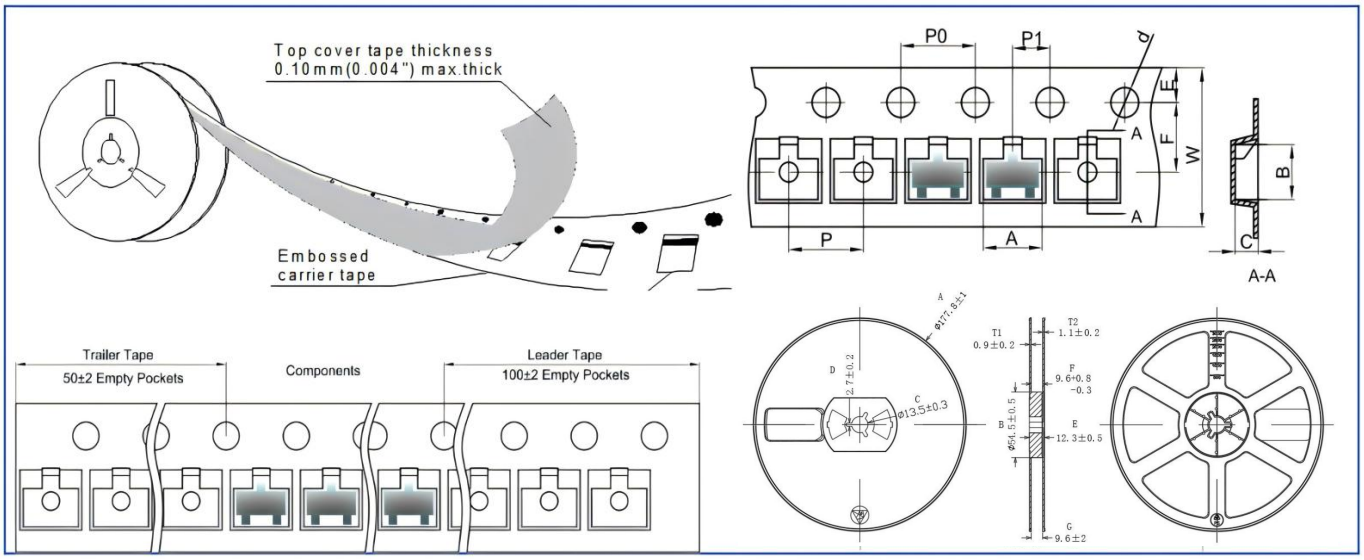
Note:

1.Controlling dimension:in millimeters.

2.General tolerance:±0.05mm.

3.The pad layout is for reference purposes only.

■ REEL PACKING



Dimensions are in millimeter										
PKG TYPE	A	B	C	d	E	F	Po	P	P1	W
SOT-23	3.17	2.77	1.22	Φ1.55	1.75	3.50	4.00	4.00	2.00	8.00

Reel Optiom	A	B	C	D	E	F	G	T1	T2	Q.TY PER REEL
7" Dia	Φ177.8	Φ54.5	Φ13.5	2.7	12.3	9.6	9.6	0.9	1.1	3000PCS