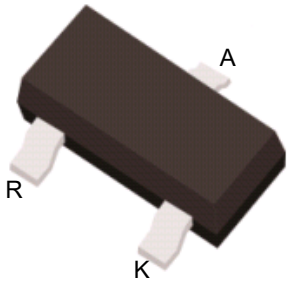
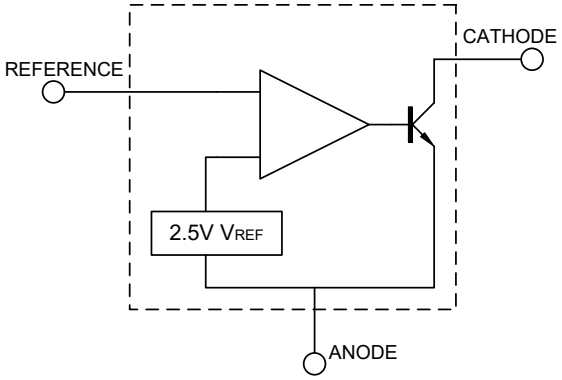
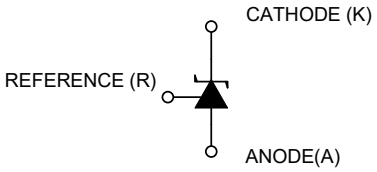
■ FEATURES

* Programmable output Voltage to 36V.
* Low dynamic output impedance 0.2Ω.
* Sink current capability of 1.0 to 100mA.
* Equivalent full-range temperature coefficient of 50ppm/°C typical for operation over full rated operating temperature range.



■ BLOCK DIAGRAM





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

PARAMETER	SYMBOL	RATINGS	UNIT
Cathode Voltage	V_{KA}	37	V
Cathode Current Range(Continuous)	I_{KA}	-100 ~ +150	mA
Reference Input Current Range	I_{REF}	-0.05 ~ +10	mA
Power Dissipation	P_D	300	mW
Operating Junction	T_J	+150	°C
Operating Ambient	T_{OPR}	-40 ~ +85	°C
Storage Temperature	T_{STG}	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

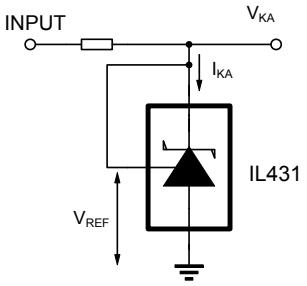
■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Cathode Voltage	V_{KA}	V_{REF}		36	V
Cathode Current	I_{KA}	1		100	mA

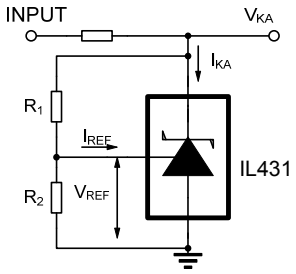
■ ELECTRICAL CHARACTERISTICS (T_C= 25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Reference Input Voltage	V_{REF}	$V_{KA}=V_{REF}, I_{KA}$=10mA	IL431-AN	2.488	2.495	2.502	V
			IL431-BN	2.483	-	2.507	V
			IL431-CN	2.47	-	2.519	V
Deviation of reference Input Voltage Over temperature	$\frac{\Delta V_{REF}}{\Delta T}$	$V_{KA}=V_{REF}, I_{KA}$=10mA, 0°C ≤T_A≤70°C			4.5		mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage	$\frac{\Delta V_{REF}}{\Delta V_{KA}}$	I_{KA}=10mA	ΔV_{KA}=10V~V_{REF}		-1.0	-2.7	mV/V
			ΔV_{KA}=36V~10V		-0.5	-2.0	mV/V
Reference Input Current	I_{REF}	I_{KA}=10mA, R1=10kΩ, R2=∞			4.0	6.0	μA
Deviation of Reference Input Current Over Full Temperature Range	$\frac{\Delta I_{REF}}{\Delta T}$	I_{KA}=10mA, R1=10kΩ, R2=∞, T_A =full Temperature			0.4		μA
Minimum Cathode Current for Regulation	$I_{KA(MIN)}$	$V_{KA}=V_{REF}$		0.4	0.5	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~ 100mA,f≤1.0kHz			0.15	0.5	Ω

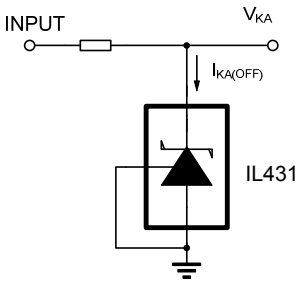
■ TEST CIRCUIT



For $V_{KA}=V_{REF}$

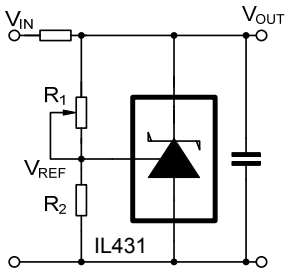


$V_{KA}=V_{REF}\times(1+R_1/R_2)+I_{REF}\times R_1$
For $V_{KA}\geq V_{REF}$



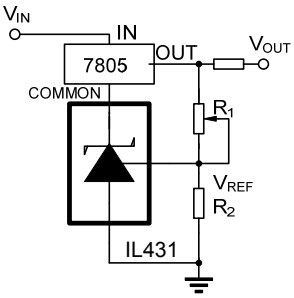
For $I_{KA(OFF)}$

■ APPLICATION CIRCUIT

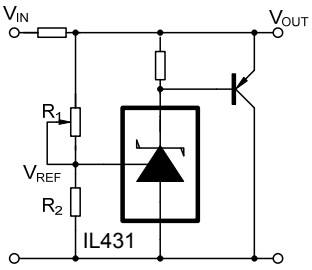


$V_{OUT}=(1+R_1/R_2)\times V_{REF}$

Shutdown Regulator

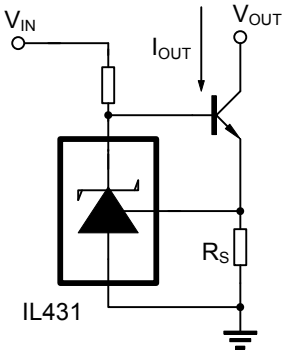


$V_{OUT}=(1+R_1/R_2)\times V_{REF}$
Minimum $V_{OUT}=V_{REF}+5V$
Output Control of a Three -Terminal Fixed Regulator

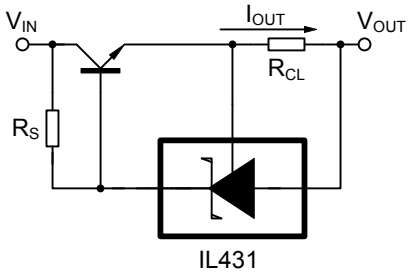


$V_{OUT}=(1+R_1/R_2)\times V_{REF}$

Higher-current Shunt Regulator



$I_{OUT}=V_{REF}/R_S$
Constant-current Sink



$I_{OUT}=V_{REF}/R_{CL}$
Current Limiting or Current Source

■ TIPYCAL PERFORMANCE CHARACTERISTICS

Fig 1 Cathode Current Vs Cathode Voltage

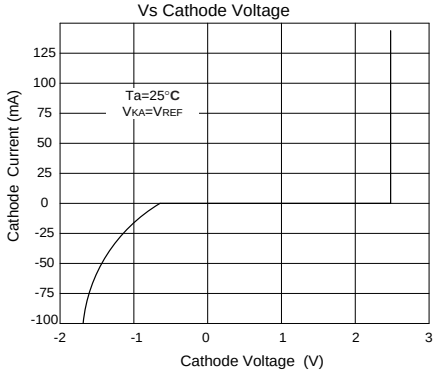


Fig 2 Cathode Current Vs Cahode Voltage

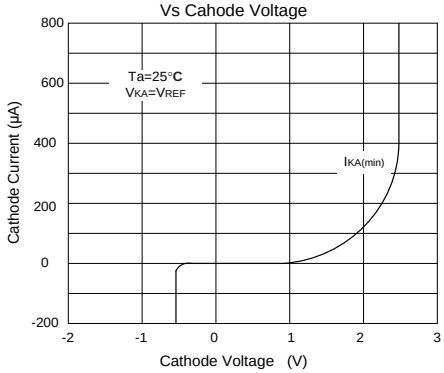


Fig 3 Change in Reference Input Voltage Vs Cathode voltage

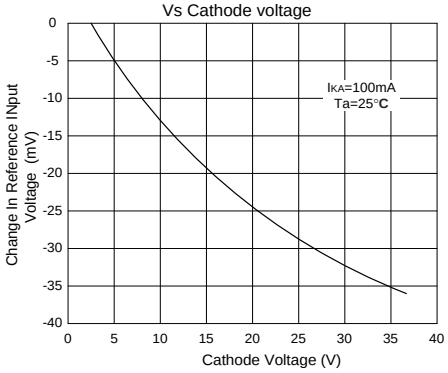


Fig 4 Pulse Response

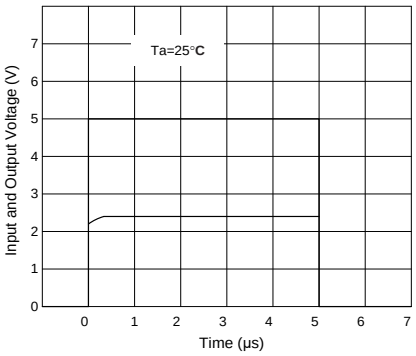


Fig 5 Dynamic Impedance Vs Frequency

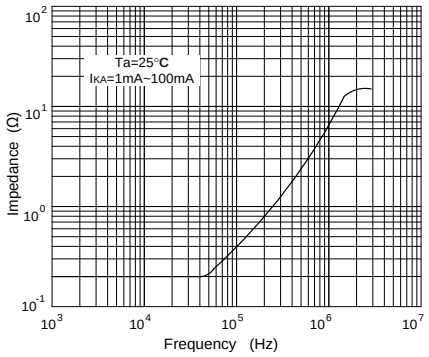


Fig 6 Small Signal Voltage Amplification Vs Frequency

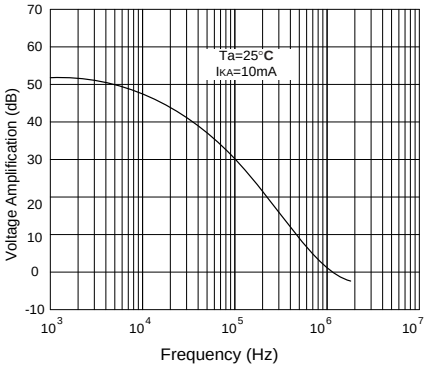
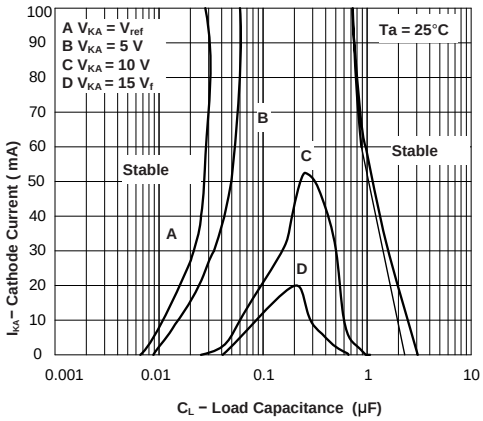
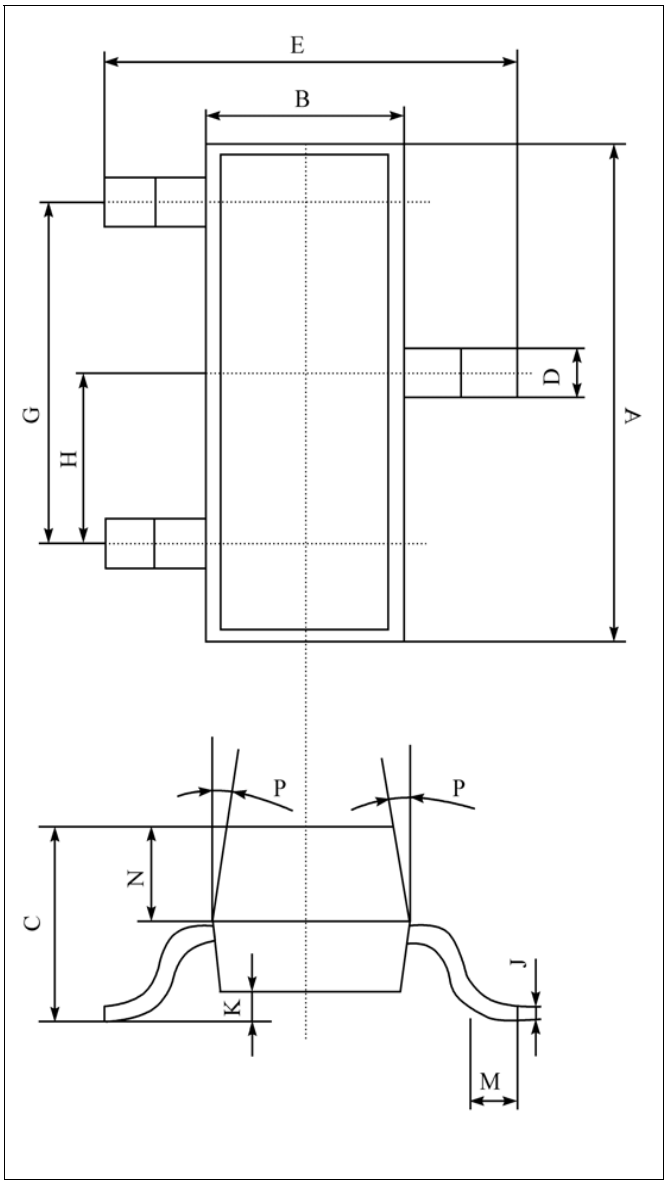


Fig 7 Cathode Current Vs Load Capacitance



■ DIMENSION 外形封装尺寸数据（Package: SOT-23）



单位（UNIT）：mm

序号	数值及公差
A	2.90±0.10
B	1.30±0.10
C	1.00±0.10
D	0.40±0.10
E	2.40±0.20
G	1.90±0.10
H	0.95±0.05
J	0.13±0.05
K	0.00-0.10
M	≥0.20
N	0.60±0.10
P	7±2°

Packing
SOT-23 包装规格
SMD片式表面贴封装
包装方式: 载带卷盘包装
Tape & Reel, 3Kpcs/Reel
每卷数量3000只（3Kpcs/Reel）
每盒数量45000只（45Kpcs/BOX）
每箱数量180000 只（180Kpcs/Cartons）

NOTICE：

1、The information in this document is believed to be accurate and reliable at the time of publication, but is subject to change without notice. Guangdong Renmao Electronics Co., Ltd. （"The Company"）reserves the right to modify its products and specifications at any time, and assumes no responsibility for any errors or omissions herein.

2、The Company makes no warranty, express or implied, regarding the fitness of its products for any particular purpose. Customers are responsible for verifying the suitability of the products for their applications and for the design and testing of their end products.

3、The values listed under "Absolute Maximum Ratings" are stress ratings only. Stresses beyond these limits may cause permanent damage to the device.

4、The Company's products are not designed or authorized for use in life support, medical, military, aerospace, or other critical applications where the failure of the product could result in personal injury or death. Any such use is at the customer's own risk.

5、These devices are sensitive to electrostatic discharge (ESD). Proper handling and protection procedures must be observed.

6、No license to any intellectual property right is granted by this document. All products are sold subject to the Company's terms and conditions of sale.