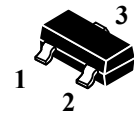


PROGRAMMABLE PRECISION REFERENCE

(Pb) Lead(Pb)-Free

Features:

- * Programmable output voltage to 36V.
- * Low dynamic output impedance 0.2Ω.
- * Sink current capability of 1 to 100mA.
- * Equivalent full-range temperature coefficient of 50ppm/°C typical for operation over full rated operating temperature range.



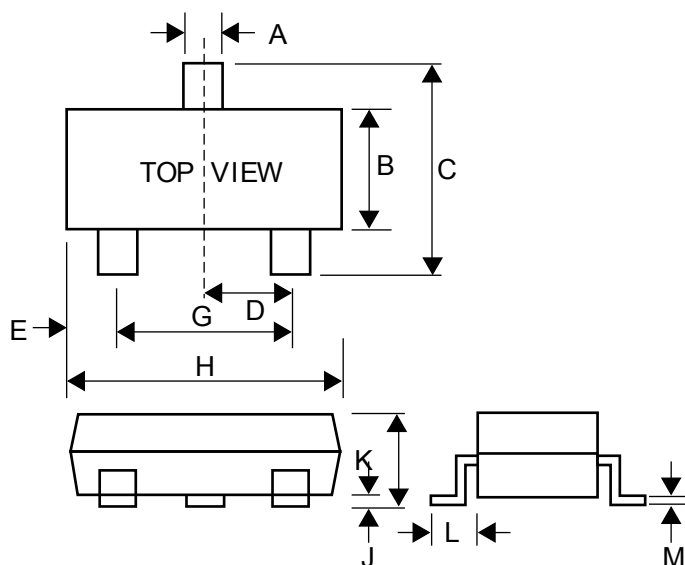
SOT-23

Description:

* The WT431 is a three-terminal adjustable regulator with a guaranteed thermal stability over applicable temperature ranges. The output voltage may be set to any value between V_{ref} (approximately 2.5) and 36V with two external resistors. It provides very wide applications, including shunt regulator, series regulator, switching regulator, voltage reference and others.

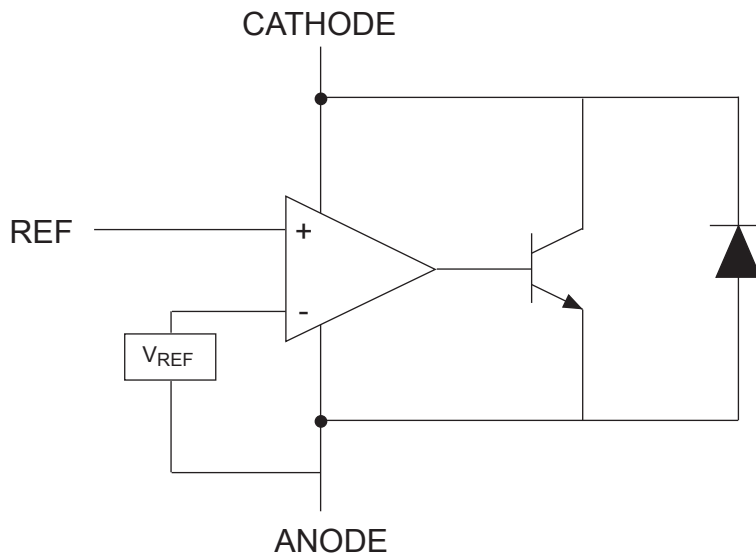
SOT-23 Outline Dimensions

Unit:mm



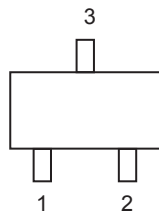
Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25

BLOCK DIAGRAM



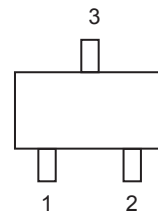
PIN ASSIGNMENT

WT431R



P_{IN1} = REF
 P_{IN2} = Cathode
 P_{IN3} = Anode

WT431L



P_{IN1} = Cathode
 P_{IN2} = REF
 P_{IN3} = Anode

Ordering information

Ordering Number	Rank	Shipping
WT431RA	0.5%	3000 Units / Tape & Reel
WT431RB	1%	3000 Units / Tape & Reel
WT431LA	0.5%	3000 Units / Tape & Reel
WT431LB	1%	3000 Units / Tape & Reel

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	I_{ref}	-0.05 ~ +10	mA
Operating Junction Temperature	T_j	150	°C
Operating Ambient Temperature	T_{opr}	0~70	°C
Storage Temperature	T_{stg}	-65 ~ +150	°C

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($T_A=25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	Min	Typ	Max	UNIT
Reference Input Voltage	V_{ref}	$V_{KA}=V_{REF}, I_{KA}=10\text{mA}$	-	2.50	-	V
Deviation of reference Input Voltage Over temperature	$\Delta V_{ref}/\Delta T$	$V_{KA}=V_{REF}, I_{KA}=10\text{mA}$ $T_{MIN}\leq T_A\leq T_{MAX}$	-	4.5	17	mV
Ratio of Change in Reference Input Voltage to the change in Cathode Voltage	$\Delta V_{ref}/\Delta V_{KA}$	$I_{KA}=10\text{mA}$ $\Delta V_{KA}=10\text{V}\sim V_{REF}$ $\Delta V_{KA}=36\text{V}\sim 10\text{V}$	-	-1.0 -0.5	-2.7 -2.0	mV/V
Reference Input Current	I_{ref}	$I_{KA}=10\text{mA}, R1=10\text{k}\Omega, R2=\infty$	-	1.5	4	μA
Deviation of reference Input Current Over Full temperature range	$\Delta I_{ref}/\Delta T$	$I_{KA}=10\text{mA}, R1=10\text{k}\Omega, R2=\infty$ $T_A=\text{full temperature}$	-	0.4	1.2	μA
Minimum Cathode current for Regulation	$I_{KA(\text{min})}$	$V_{KA}=V_{REF}$	-	0.45	1.0	mA
Off-State Cathode current	$I_{KA(\text{OFF})}$	$V_{KA}=36\text{V}, V_{REF}=0$	-	0.05	1.0	μA
Dynamic Impedance	Z_{KA}	$V_{KA}=V_{REF}=0, I_{KA}=1$ to 100mA $f\leq 1.0\text{kHz}$	-	0.15	0.5	Ω

CLASSIFICATION OF V_{ref} AND MARKING

PARAMETER	Rank	Range(V)	Marking
WT431RA	0.5%	2.487~2.512	RA
WT431RB	1%	2.475~2.525	RB
WT431LA	0.5%	2.487~2.512	LA
WT431LB	1%	2.475~2.525	LB

TYPICAL PERFORMANCE CHARACTERISTICS

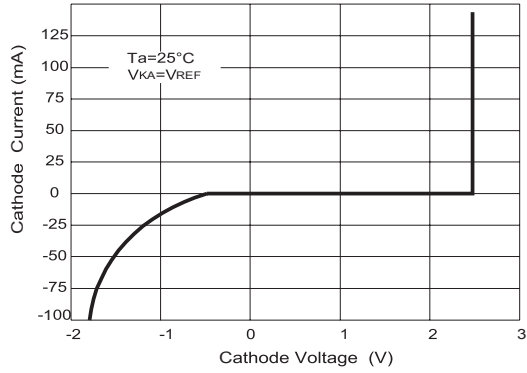


Fig 1 Cathode Current Vs Cathode Voltage

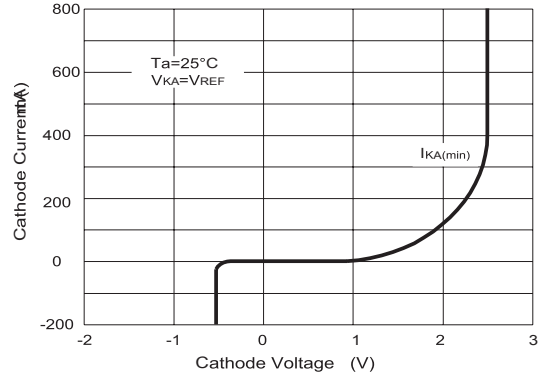


Fig 2 Cathode Current Vs Cathode Voltage

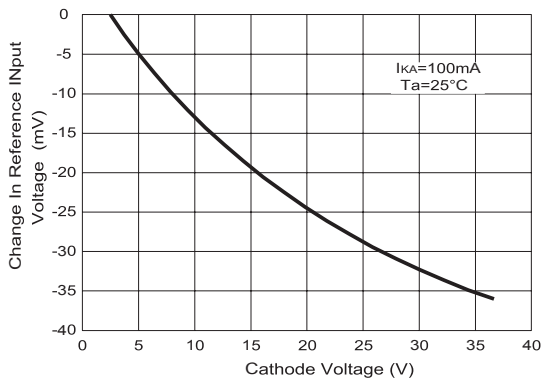


Fig 3 Change in Reference Input Voltage Vs Cathode voltage

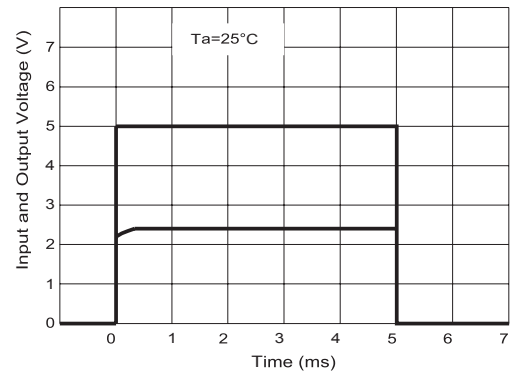


Fig 4 Pulse Response

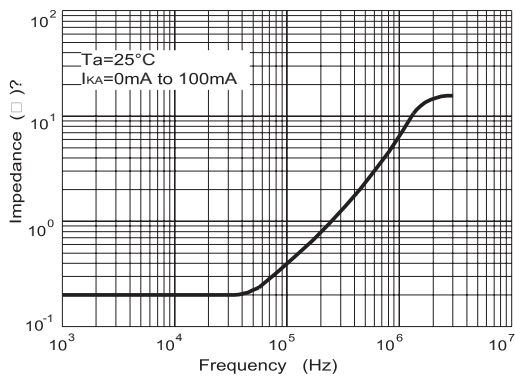


Fig 5 Dynamic Impedance Vs Frequency

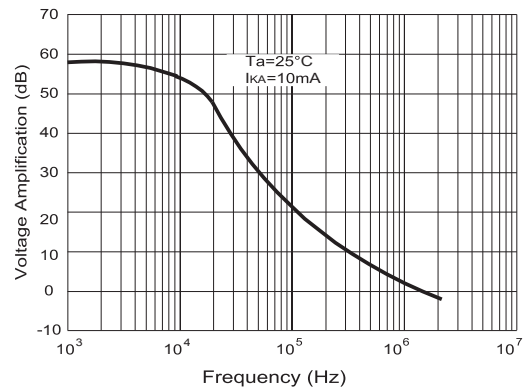


Fig 6 Small Signal Voltage Amplification Vs Frequency

WT431 LINEAR INTEGRATED CIRCUIT

TEST CIRCUIT

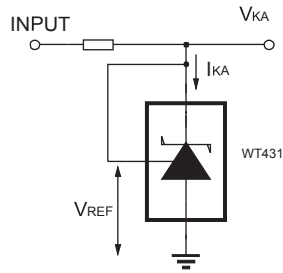


Fig 7 Test Circuit For $V_{KA}=V_{REF}$

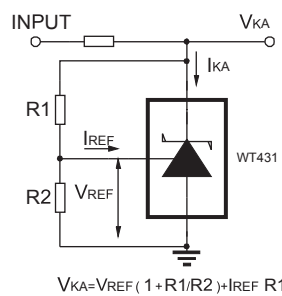


Fig 8 Test Circuit for $V_{KA} \geq V_{REF}$

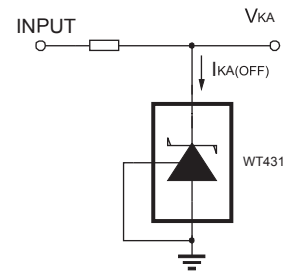


Fig 9 Test Circuit For $I_{KA(OFF)}$

APPLICATION CIRCUIT

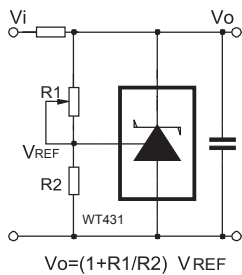


Fig 10 Shutdown Regulator

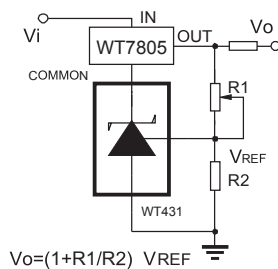


Fig 11 Output Control of a Three-Terminal Fixed Regulator

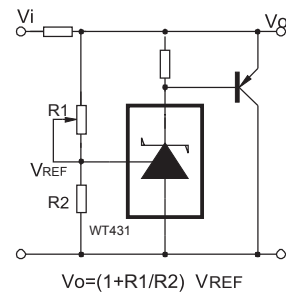


Fig 12 Higher-current Shunt Regulator

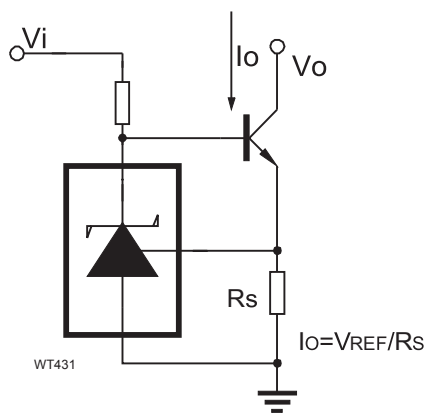


Fig 13 Constant-current Sink

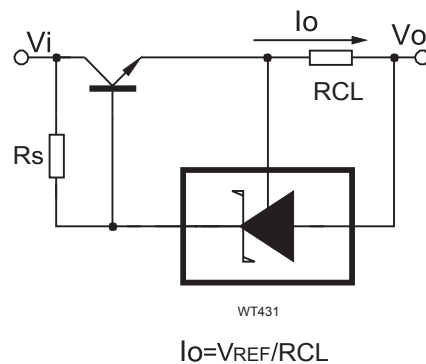


Fig 14 Current Limiting or Current Source