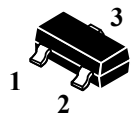
WEITRON

WT431LT1

PROGRAMMABLE PRECISION REFERENCE

Lead(Pb)-Free



SOT-23

Features:

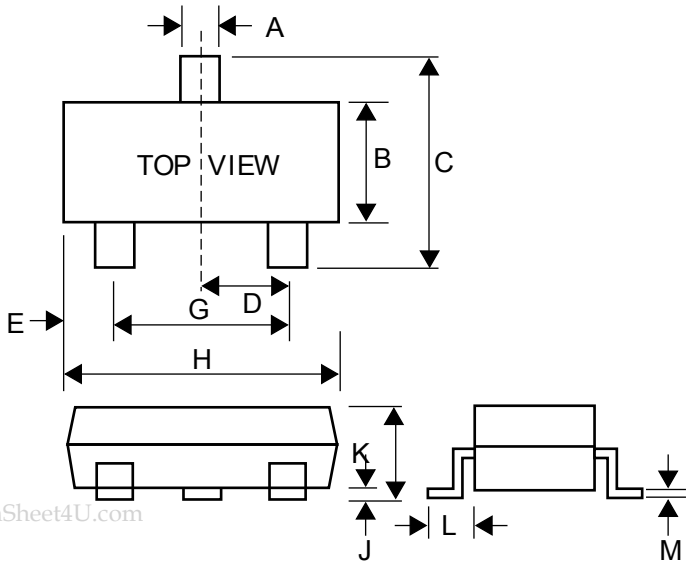
* Programmagle output voltage to 36V.
* Low dynamic output impedance 0.2Ω.
* Sink current capability of 1 to 100mA.
* Equivalent full-range temperature coefficient of 50ppm/°C typical for operation over full rated operating temperature range.

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 Vref(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.

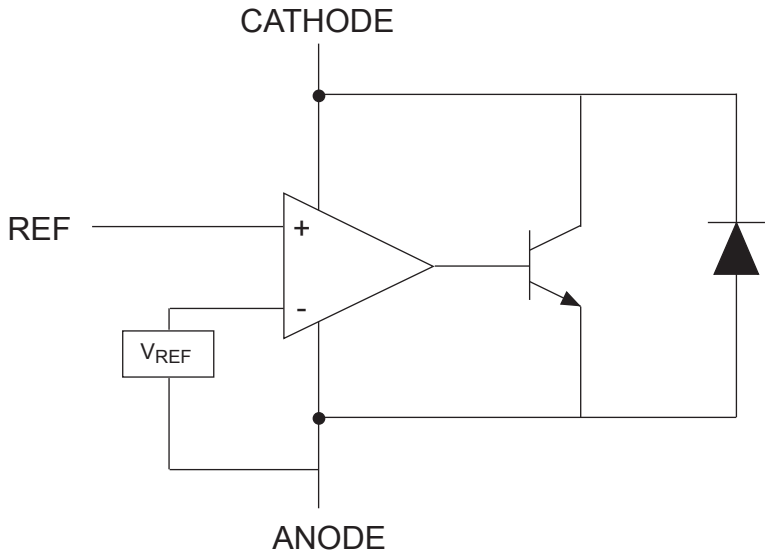
SOT-23 Outline Dimensions

Unit:mm



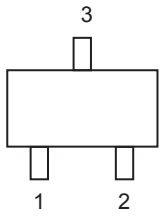
Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25

BLOCK DIAGRAM



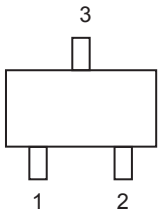
PIN ASSIGNMENT

WT431R



$P_{IN}1$ = REF
$P_{IN}2$ = Cathode
$P_{IN}3$ = Anode

WT431L



$P_{IN}1$ = Cathode
$P_{IN}2$ = REF
$P_{IN}3$ = 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°C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		Min	Typ	Max	UNIT
Reference Input Voltage	V_{ref}	$V_{KA}=V_{REF}$, I_{KA}=10mA		-	2.50	-	V
Deviation of reference Input Voltage Over temperature	$\Delta V_{ref}/\Delta T$	$V_{KA}=V_{REF}$, I_{KA}=10mA $T_{MIN}<=T_A<=T_{MAX}$		-	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}=10mA	ΔV_{KA}=10V~V_{REF} ΔV_{KA}=36V~10V	-	-1.0 -0.5	-2.7 -2.0	mV/V
Reference Input Current	I_{ref}	I_{KA}=10mA, R1=10kΩ, R2=∞		-	1.5	4	μA
Deviation of reference Input Current Over Full temperature range	$\Delta I_{ref}/\Delta T$	I_{KA}=10mA, R1=10kΩ, R2=∞ T_A=full temperature		-	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}	$V_{KA}=V_{REF}$=0, I_{KA}=1 to 100mA f<=1.0kHz		-	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

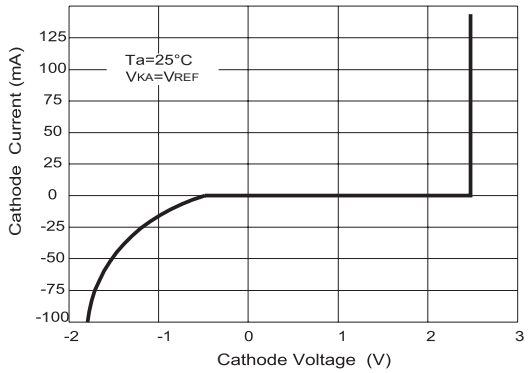


Fig 1 Cathode Current Vs Cathode Voltage

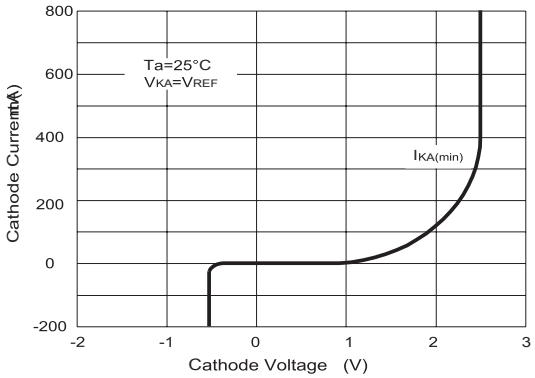


Fig 2 Cathode Current Vs Cathode Voltage

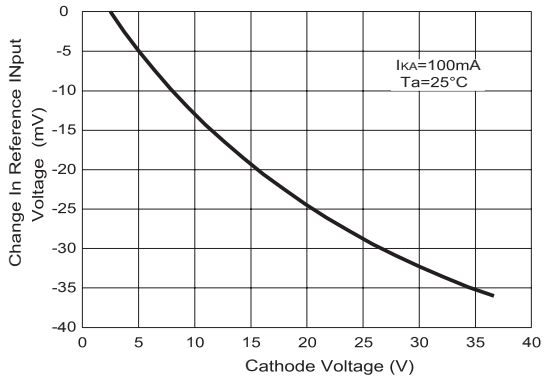


Fig 3 Change in Reference Input Voltage Vs Cathode voltage

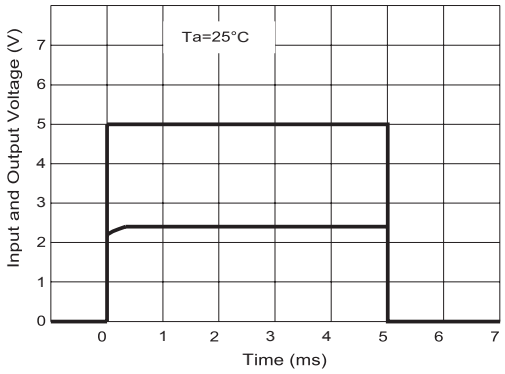


Fig 4 Pulse Response

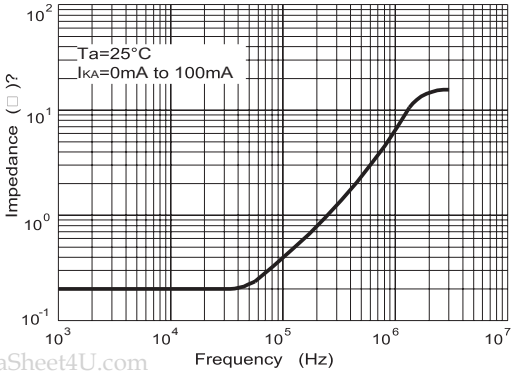


Fig 5 Dynamic Impedance Vs Frequency

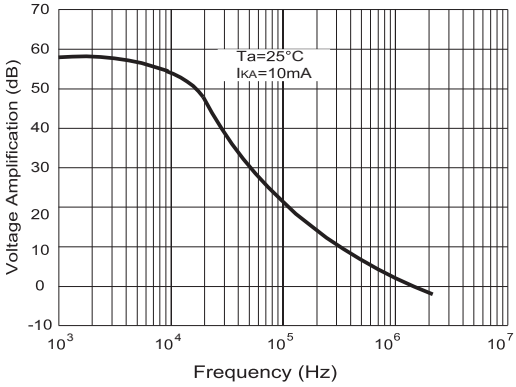


Fig 6 Small Signal Voltage Amplification Vs Frequency

WT431 LINEAR INTEGRATED CIRCUIT

TEST CIRCUIT

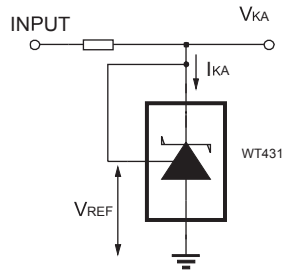
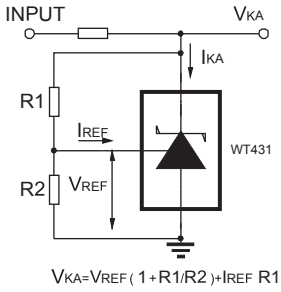


Fig 7 Test Circuit For $V_{KA}=V_{REF}$



$V_{KA}=V_{REF}(1+R1/R2)+I_{REF}\ R1$

Fig 8 Test Circuit for $V_{KA} >= V_{REF}$

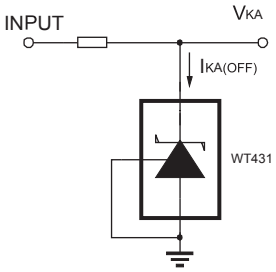


Fig 9 Test Circuit For $I_{KA(OFF)}$

APPLICATION CIRCUIT

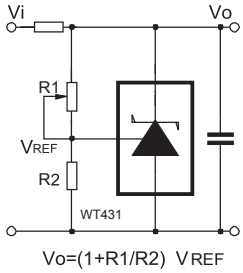


Fig 10 Shutdown Regulator

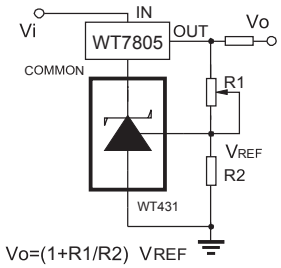


Fig 11 Output Control of a Three -Terminal Fixed Regulator

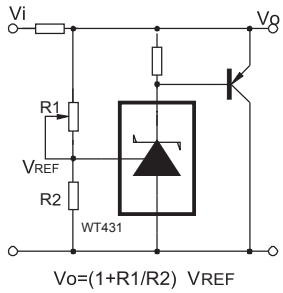


Fig 12 Higher-current Shunt Regulator

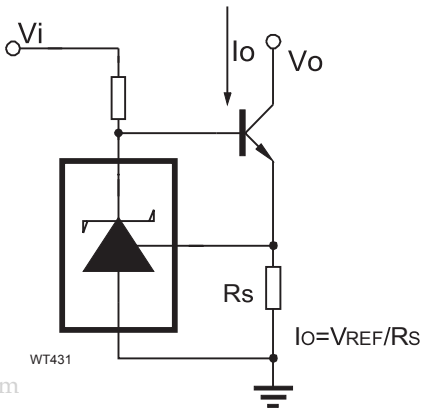


Fig 13 Constant-current Sink

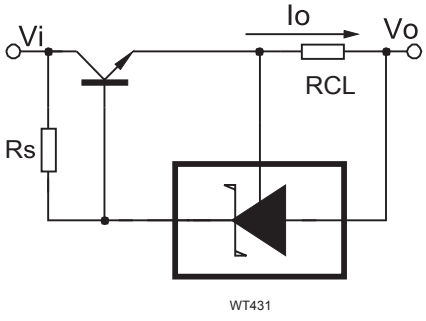


Fig 14 Current Limiting or Current Source