



UATL431

LINEAR INTEGRATED CIRCUIT

PROGRAMMABLE PRECISION REFERENCE

DESCRIPTION

The UTC **UATL431** 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 2.5V) and 36V with two external resistors. It provides very wide applications, including shunt regulator, series regulator, switching regulator, voltage reference and others.

FEATURES

- * Programmable output Voltage to 36V.
- * Low dynamic output impedance 0.3Ω.
- * Sink current capability of 0.035mA to 100mA.
- * Equivalent full-range temperature coefficient of 50ppm/°C typical for operation over full rated operating temperature range.

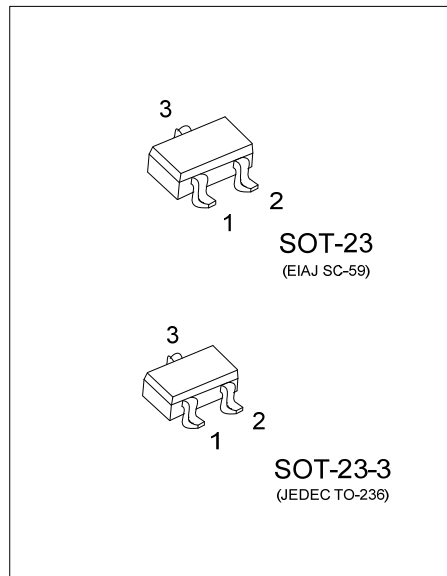
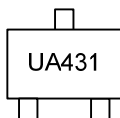
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UATL431L-AE2-R	UATL431G-AE2-R	SOT-23-3	K	R	A	Tape Reel
UATL431L-AE3-R	UATL431G-AE3-R	SOT-23	K	R	A	Tape Reel

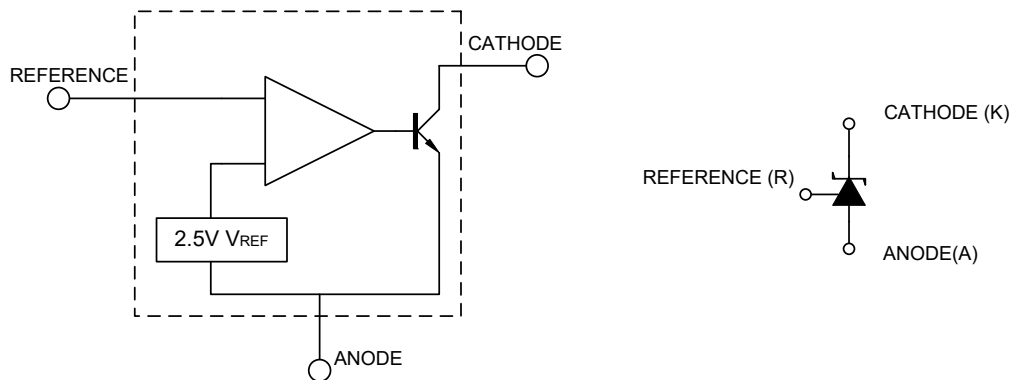
Note: Pin Code: K: Cathode R: Reference A: Anode

UATL431G-AE2-R	(1)Packing Type	(1) R: Tape Reel
	(2)Package Type	(2) AE2: SOT-23-3, AE3: SOT-23
	(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

MARKING



■ 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	350	mW
Operating Junction	T_J	+150	°C
Operating Ambient (Note 2)	T_{OPR}	-40 ~ +125	°C
Storage Temperature	T_{STG}	-65 ~ +150	°C

Notes: 1. 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.

2. It is guarantee by design, not 100% be tested.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Cathode Voltage	V_{KA}	V_{REF}		36	V
Cathode Current	I_{KA}	0.035		100	mA

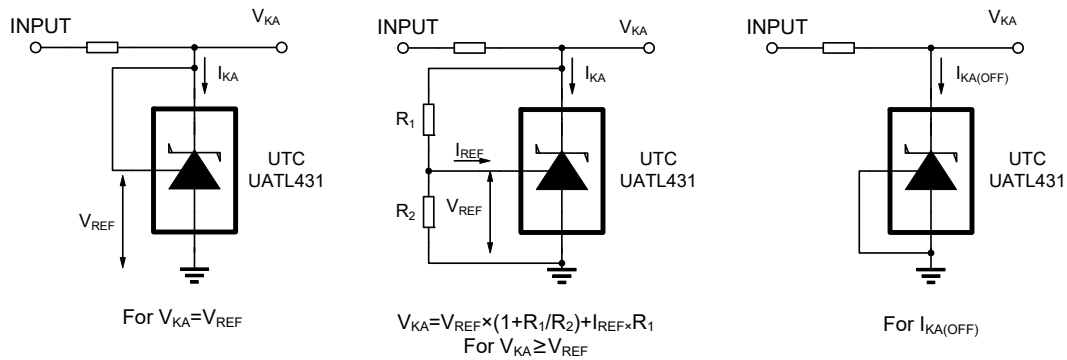
■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	300	°C/W
Junction to Case	θ_{JC}	90	°C/W

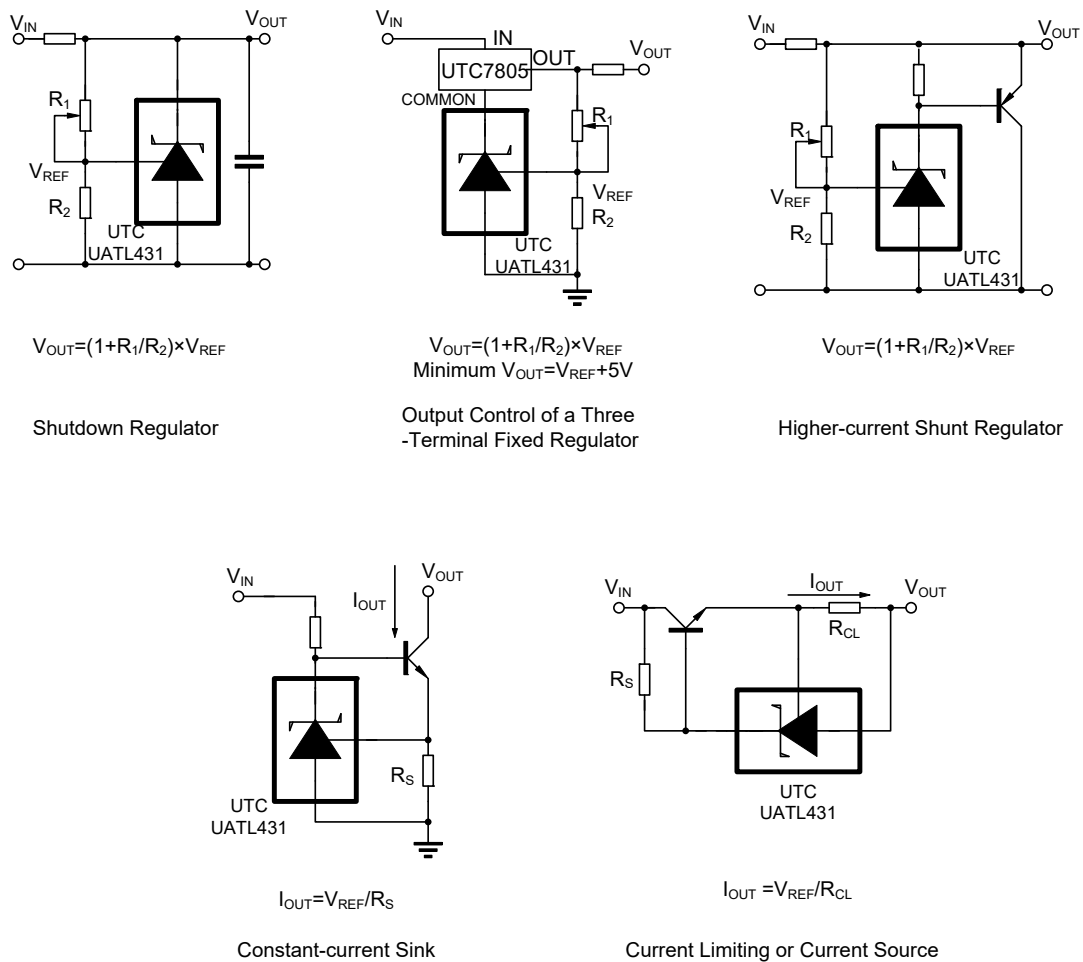
■ ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Reference Input Voltage	V _{REF}	V _{KA} =V _{REF} , I _{KA} =10mA	UATL431-A (±0.5%)	2.483	2.495	2.507	V
			UATL431-1 (±1%)	2.470	2.495	2.520	V
Deviation of reference Input Voltage Over temperature	$\frac{\Delta V_{REF}}{\Delta T}$	V _{KA} =V _{REF} , I _{KA} =10mA, -40°C ≤ T _A ≤ 125°C			10	34	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=∞			1	2	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	1.2	μA
Minimum Cathode Current for Regulation	I _{KA(MIN)}	V _{KA} =V _{REF}			10	35	μA
Off-State Cathode Current	I _{KA(OFF)}	V _{KA} =36V, V _{REF} =0			0.05	0.2	μA
Dynamic Impedance	Z _{KA}	V _{KA} =V _{REF} , I _{KA} =1~ 100mA,f≤1.0kHz			0.1	0.3	Ω

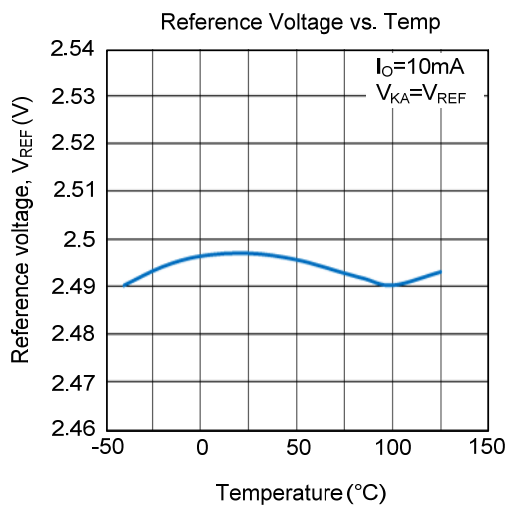
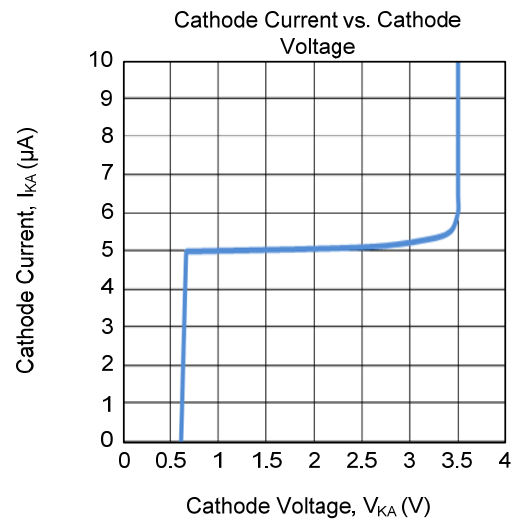
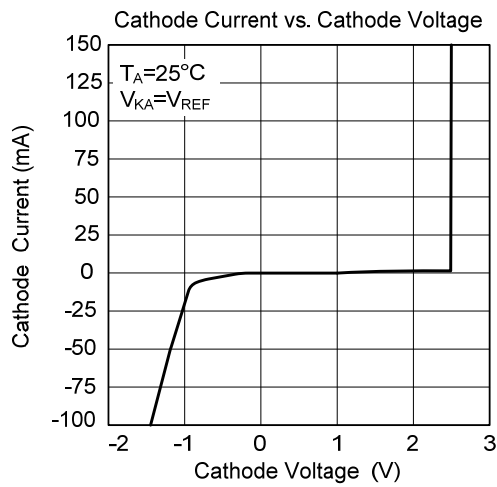
■ TEST CIRCUIT



■ APPLICATION CIRCUIT



■ TYPICAL CHARACTERISTICS



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