General Description

The uP432BN is low voltage three-terminal adjustable regulator with guaranteed thermal stability over a full operation range. The IC features sharp turn-on characteristics, low temperature coefficient and low output impedance, which makes it ideal substitutes for Zener diodes in applications such as switching power supply, charger, motherboard and other adjustable regulators.

The output voltage can be set to any value between 1.25V and 22V with two external resistors.

The uP432BN precision reference is offered in two band- gap tolerance: ±1%.

The main packages have low thermal impedance which allows operation over a wide range of -40°C to 125°C.

Features

- Wide programmable precise output voltage from 1.25V to 22V
- High stability under capacitive load
- Low temperature deviation: 3mV typical
- Low equivalent full-range temperature coefficient: 20PPM/°C typical
- Low dynamic output resistance: 0.05Ω typical
- High sink current capacity from 55μA to 100 mA
- Low output noise
- Available in SOT23-3 package

Applications

- Graphic Card
- PC Motherboard
- Voltage Adapter
- Switching Power Supply
- Quick Charger, PD

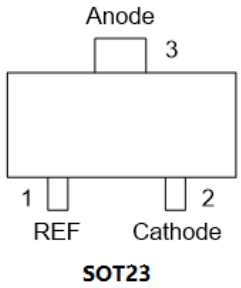

Figure 1. Package Types of uP432BN

Ordering Information

Device Name	Package Types	Accuracy	Mark ID	Operating Free-Air Temperature (TA)
uP432BN	SOT23	±1%	GL6	-40°C to 125°C

Functional Block Diagram

CATHODE

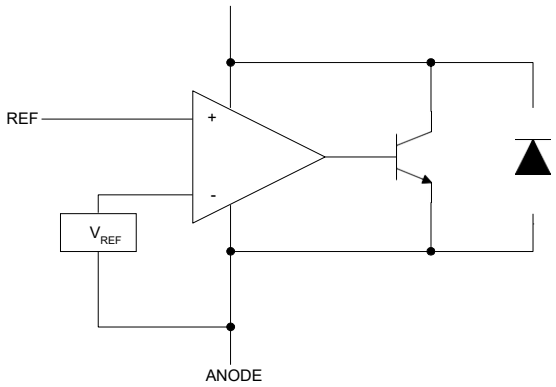

Figure 2. Functional Block Diagram of uP432BN

Absolute Maximum Ratings

(Operation temperature range applies unless otherwise specified.)

Parameter	Symbol	Range	Unit
Cathode voltage	V_{KA}	22	V
Continuous cathode current	I_{KA}	-100 to 100	mA
Reference input current range	I_{REF}	10	mA
Maximum junction temperature	T_{JMAX}	150	°C
Maximum lead temperature	T_{LEAD}	260	°C
Storage temperature	T_{STG}	-65 to 150	°C
Thermal resistance SOT23	θ_{JC}	76	°C/W
ESD rating	CDM	+/-1000	V

Note: 1. Absolute maximum ratings indicate stresses beyond which may cause permanent damage to the device.

Recommended Operation Ratings

Parameter	Symbol	Min.	Max.	Unit
Cathode Voltage	V_{KA}	V_{REF}	22	V
Cathode Current	I_{KA}	0.1	100	mA
Operating Ambient Temperature Range		-40	125	°C

Electrical Characteristics

(Typical and limits apply for T_J=25°C unless otherwise noted.)

Parameter		Test Circuit	Symbol	Conditions		Min.	Typ.	Max.	Unit
Reference Voltage	±1%	3	V_{REF}	$V_{KA}=V_{REF}$ I_{KA}=10mA		1.238	1.250	1.263	V
Deviation of Reference Voltage Over-Temperature		3	ΔV_{REF}	$V_{KA}=V_{REF}$ I_{KA}=10mA	-40°C ~ 85°C		3	10	mV
					-40°C~ 125°C		4	15	
Ratio of Change in V_{REF} to the Change in Cathode Voltage		4	$\frac{\Delta V_{REF}}{\Delta V_{KA}}$	I_{KA}=10mA ΔVz: V_{REF} to 16V			-0.5	-1.5	mV/V
Reference Input Current		4	I_{REF}	I_{KA}=10mA, R1=10KΩ, R2=∞			0.15	0.4	μA
Deviation of Reference Current Over Full Temperature Range		4	ΔI_{REF}	I_{KA}=10mA,R1=10KΩ, R2=∞T_A=-40 to 125°C			0.1	0.4	μA
Minimum Cathode Current for Regulation		3	I_{KA} (MIN)	$V_{KA}=V_{REF}$			55	80	μA
Off-State Cathode Current		5	I_{KA} (OFF)	V_{REF}=0, V_{KA}=18V			0.04	0.10	μA
				V_{KA}=6V, V_{REF}=0			0.01	0.05	
Dynamic Impedance		3	Z_{KA}	$V_{KA}=V_{REF}$, I_{KA}=1 to 100mA,f≤1.0kHz			0.05	0.15	Ω

Parameter Measurement Information

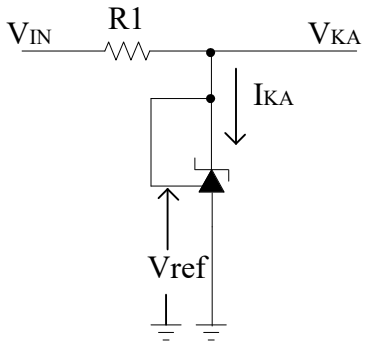

Figure 3. Test Circuit for V_{KA}=Vref

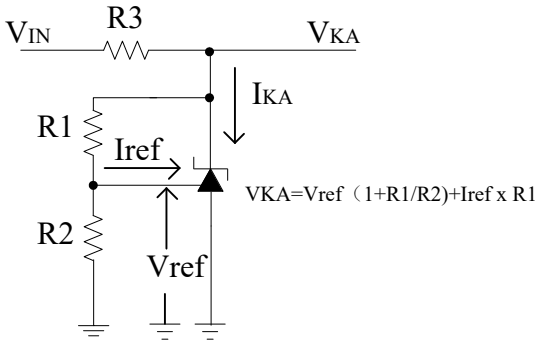

Figure 4. Test Circuit for V_{KA}>Vref

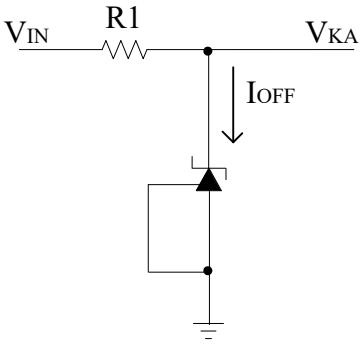

Figure 5. Test Circuit for I_{OFF}

Typical Characteristics

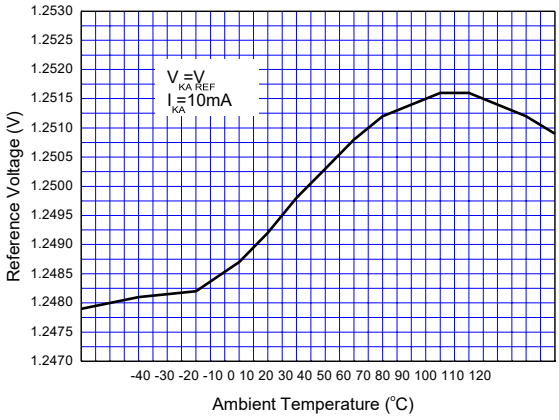

Figure 6. Reference Voltage vs. Ambient Temperature

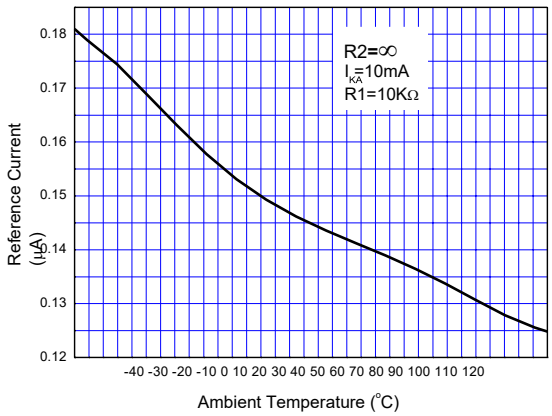

Figure 7. Reference Current vs. Ambient Temperature

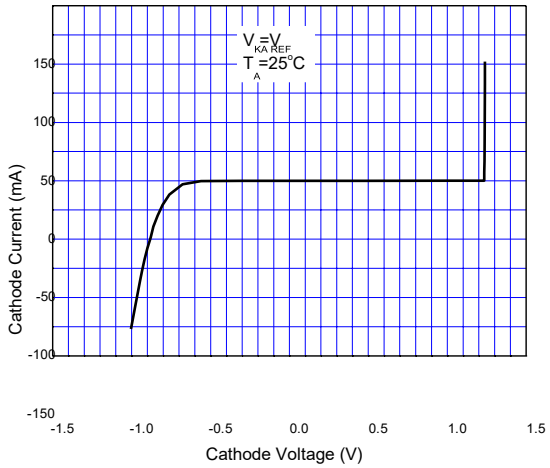

Figure 8. Cathode Current vs. Cathode Voltage

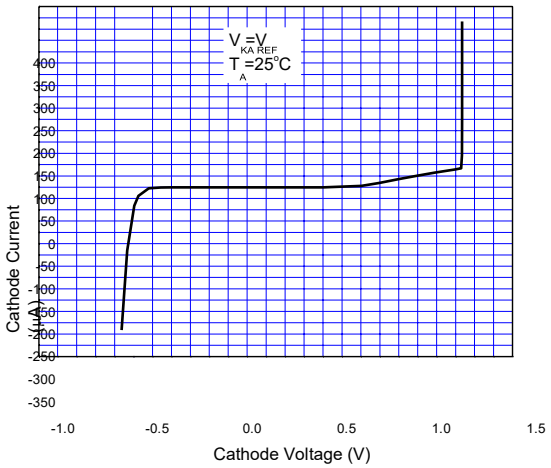

Figure 9. Cathode Current vs. cathode Voltage

Package Outline Dimensions：

SOT-23