

1.Description

The FL432 series ICs are three-terminal adjustable shunt regulators with guaranteed thermal stability over a full operation range. These ICs feature sharp turn-on characteristics, low temperature coefficient and low output impedance, which make them ideal substitutes for Zener diodes in applications such as switching power supply, charger and other adjustable regulators.

The output voltage can be set to any value between 1.25V and 18V with two external resistors.

The FL432 precision reference is offered in two voltage tolerance: 0.5% and 1.0%.

These ICs are available in 2 packages: SOT-23 and TO-92.

2.Features

- Wide Programmable Precise Output Voltage from 1.25V to 18V
- High Stability under Capacitive Load
- Low Temperature Deviation: 3mV Typical
- Low Equivalent Full-range Temperature Coefficient with 20PPM/°C Typical
- Low Dynamic Output Resistance: 0.05Ω Typical
- High Sink Current Capacity from 0.1mA to 100mA
- Low Output Noise
- Wide Operating Range of -40 to +125°C

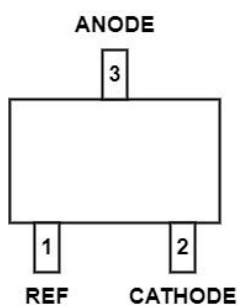
3.Applications

- Charger
- Voltage Adapter
- Switching Power Supply
- Graphic Card
- Precision Voltage Reference

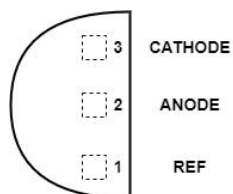
4.Order information

Mode	Package	voltage tolerances	Ordering Number	Packing Option
FL432	SOT-23	$\pm 0.5\%$	FL432MYSOT23G/TR	Tape and Reel,3000
	TO-92		FL432MYTO92G/TX	Box,2000
	SOT-23	$\pm 1.0\%$	FL432NYSOT23G/TR	Tape and Reel,3000
	TO-92		FL432NYTO92G/TX	Box,2000

5.Pin Assignments

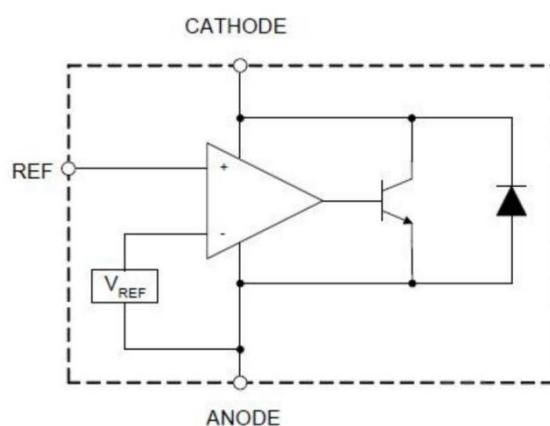


FL432 : SOT-23 (Top view)



FL432: TO-92 (Top view,Ammo Packing)

6.Functional Block Diagram



7.Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V_{KA}	Cathode Voltage	40	V
I_{KA}	Cathode Current Range (Continuous)	-100 to 100	mA
I_{REF}	Reference Input Current Range	10	mA
P_D	Power Dissipation	370	mW
T_J	Junction Temperature	+150	°C
T_{STG}	Storage Temperature Range	-65 to +150	°C

8.Recommended Operating Conditions

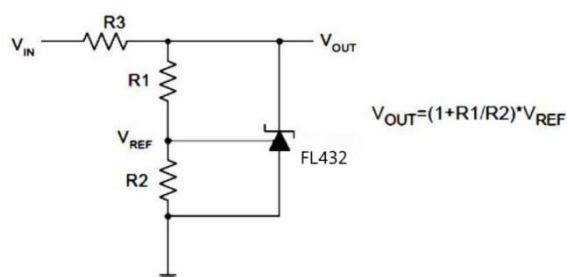
Symbol	Parameter	Min	Max	Unit
V_{KA}	Cathode Voltage	V_{REF}	18	V
I_{KA}	Cathode Current	0.1	100	mA
T_A	Operating Ambient Temperature Range	-40	+125	°C

9. Electrical Characteristics

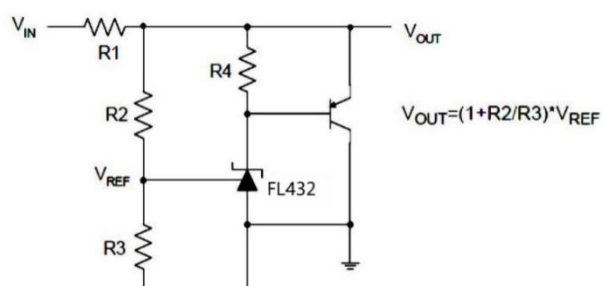
($T_A = +25^{\circ}\text{C}$, unless otherwise specified.)

Symbol	Parameter		Conditions		Min	Typ	Max	Unit
V _{REF}	Reference Voltage	0.5%	V _{KA} =V _{REF} , I _{KA} =10mA		1.244	1.25	1.256	V
		1.0%			1.238	1.25	1.262	
ΔV _{REF}	Deviation of Reference Voltage Over Full Temperature Range		V _{KA} =V _{REF} , I _{KA} =10mA	0 to +70℃	—	2	10	mV
				-40 to +85℃	—	3	10	
				-40 to +125℃	—	4	15	
ΔV _{REF} /ΔV _{KA}	Ratio of Change in Reference Voltage to the Change in Cathode Voltage		I _{KA} =10mA ΔV _{KA} = V _{REF} to 16V		—	-0.5	-1.5	mV/V
I _{REF}	Reference Current		I _{KA} =10mA, R1=10KΩ, R2=∞		—	0.12	0.4	μA
ΔI _{REF}	Deviation of Reference Current Over Full Temperature Range		I _{KA} =10mA, R1=10KΩ, R2=∞, T _A =-40 to +125℃		—	0.1	0.4	μA
I _{KA} (Min)	Minimum Cathode Current for Regulation		V _{KA} =V _{REF}		—	42	80	μA
I _{KA} (Off)	Off-state Cathode Current		V _{KA} =18V, V _{REF} =0		—	0.02	0.1	μA
			V _{KA} =6V, V _{REF} =0		—	0.001	0.05	μA
Z _{KA}	Dynamic Impedance		V _{KA} =V _{REF} , I _{KA} =1 to 100mA, f≤1.0kHz		—	0.05	0.15	Ω
θ _{JC}	Thermal Resistance		SOT-23		—	84	—	℃/W
			TO-92		—	140	—	

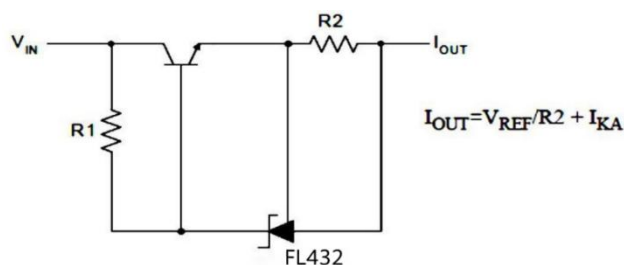
10. Typical Applications Circuit



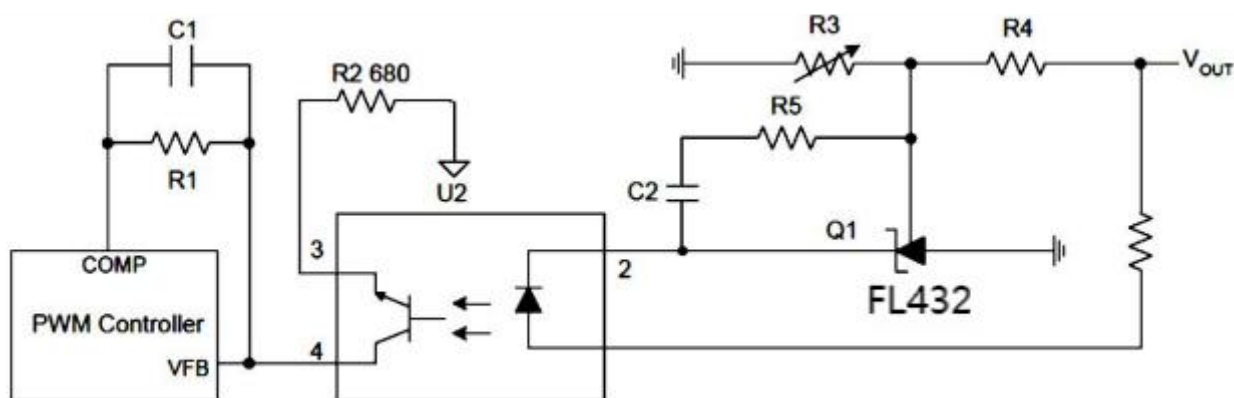
Shunt Regulator



High Current Shunt Regulator

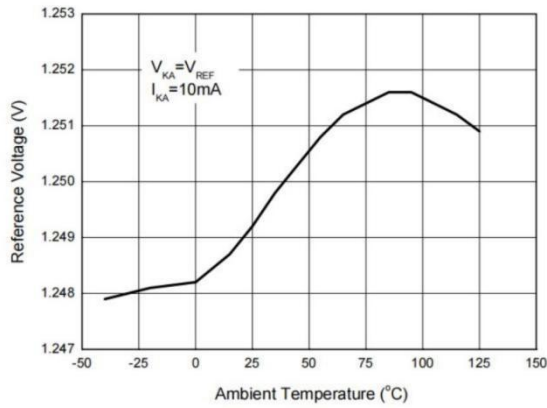


Current Source or Current Limit

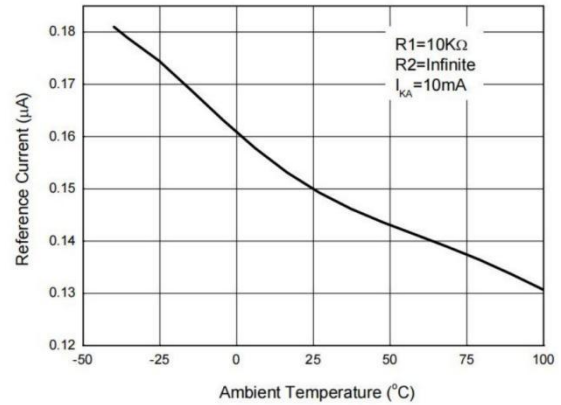


PWM Converter with Reference

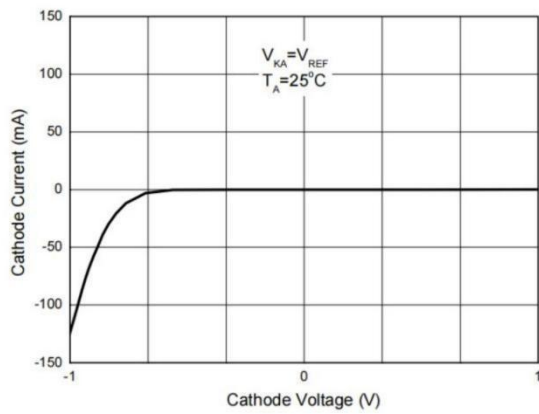
11. Performance Characteristics



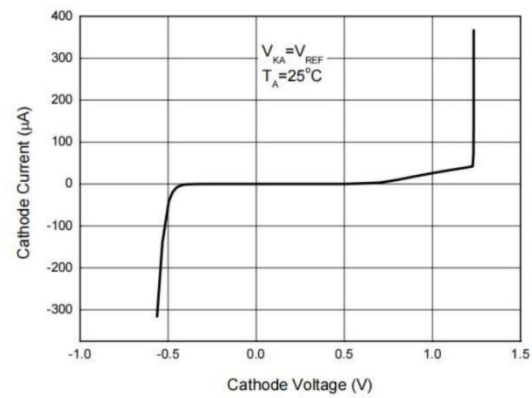
Reference Voltage vs. Ambient Temperature



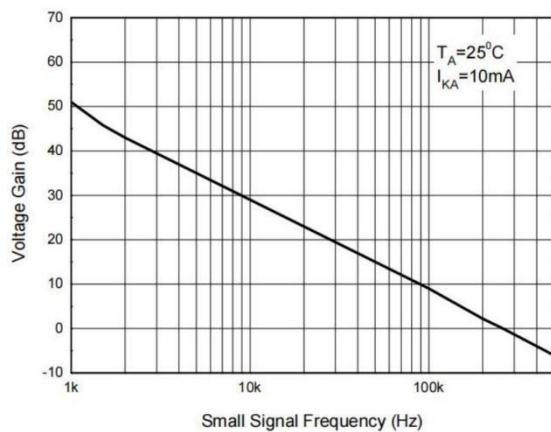
Reference Current vs. Ambient Temperature



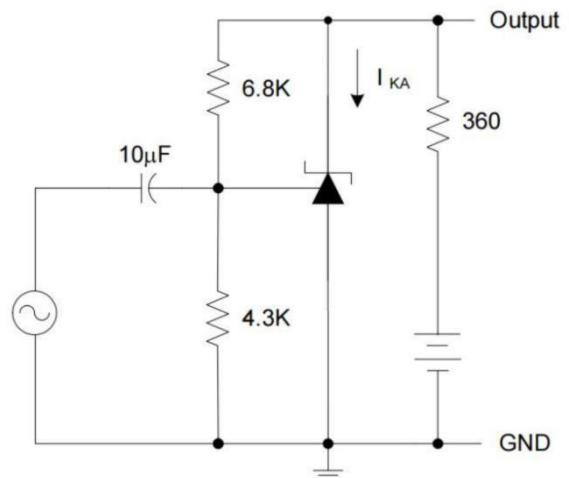
Cathode Current vs. Cathode Voltage

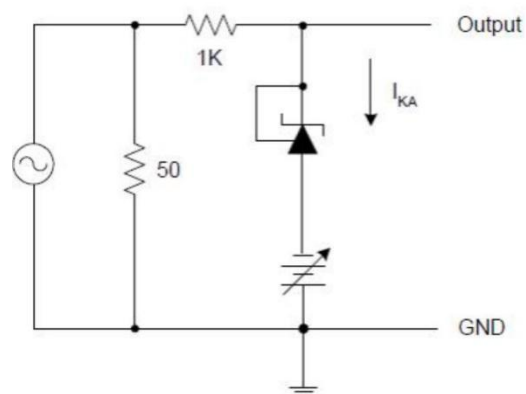
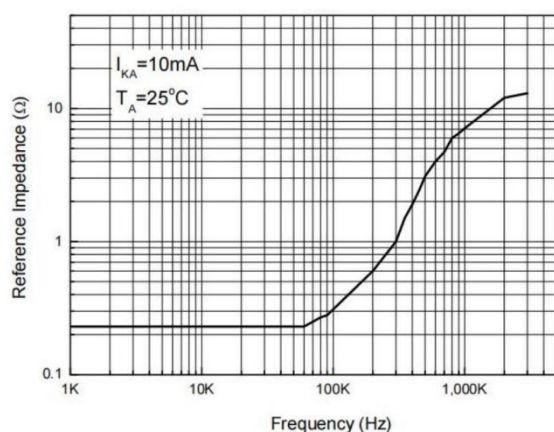


Cathode Current vs. Cathode Voltage

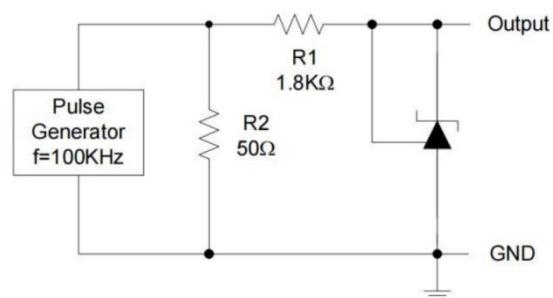
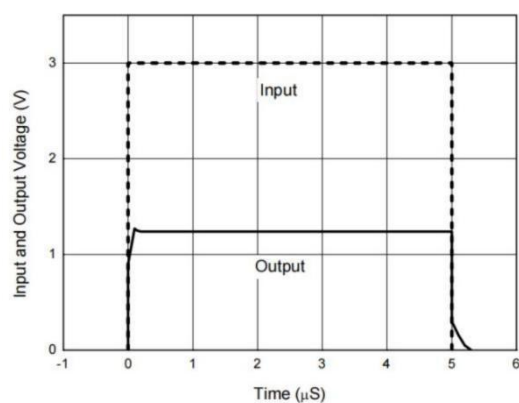


Small Signal Voltage Gain vs. Frequency

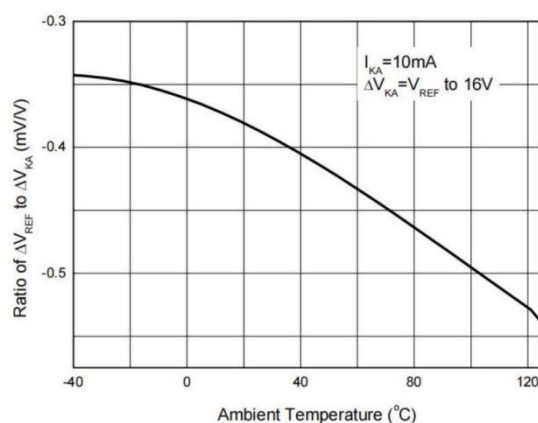




Dynamic Impedance vs. Frequency



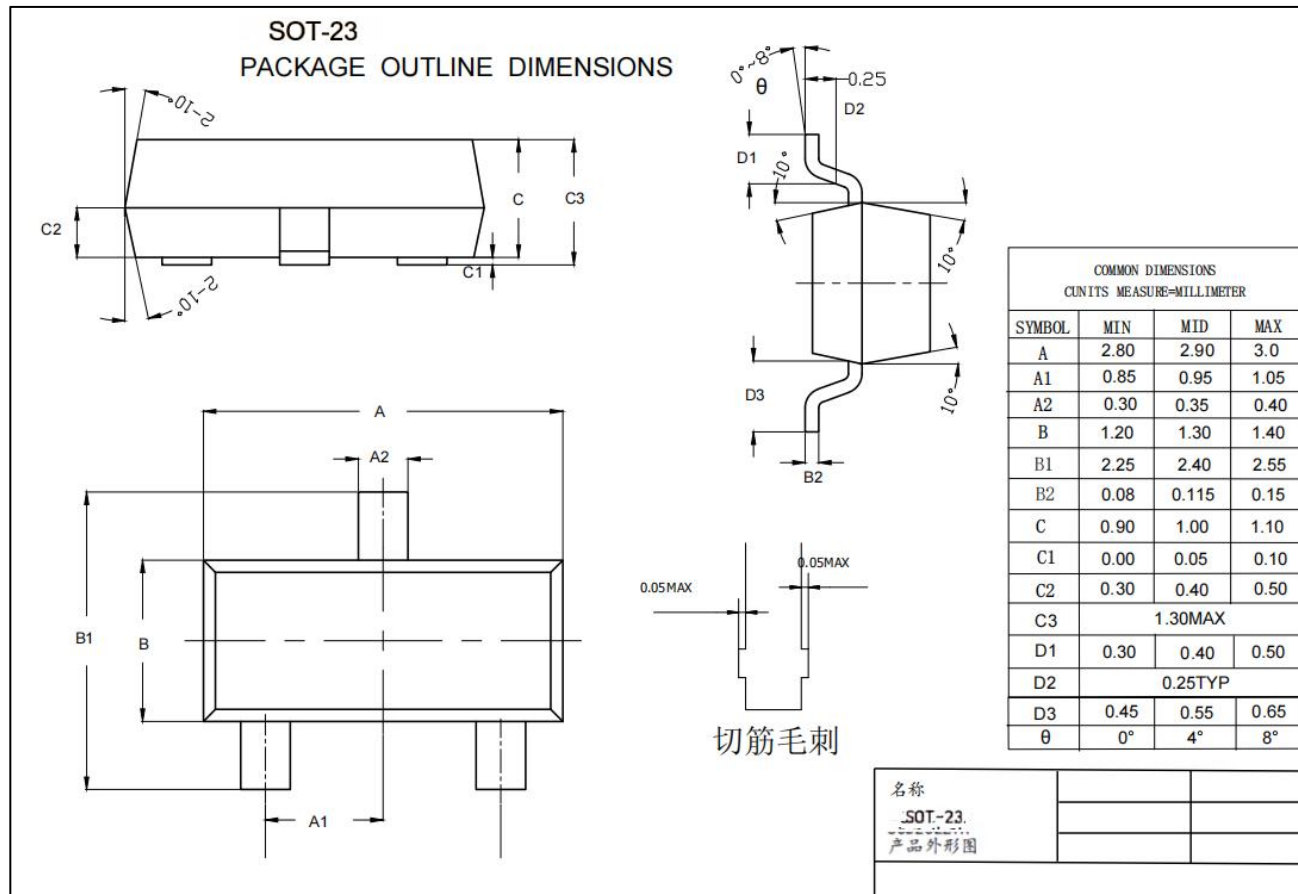
Pulse Response of Input and Output Voltage



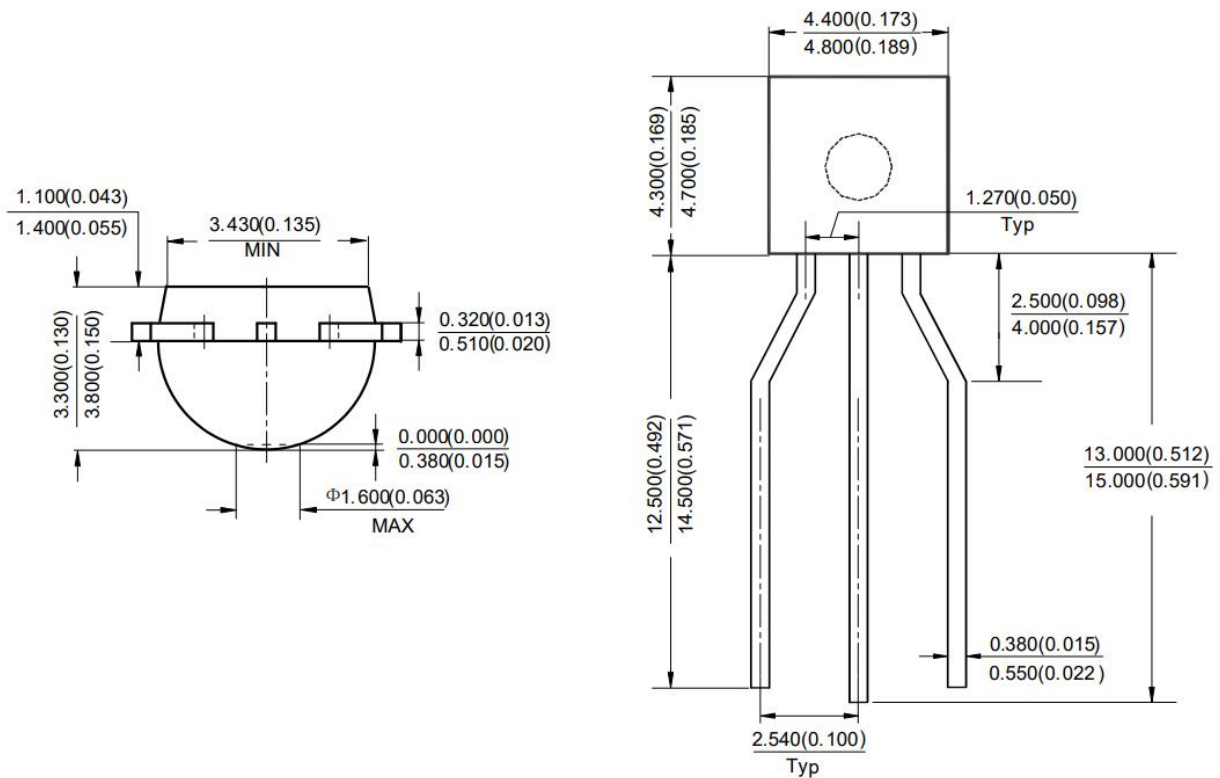
Ratio of Delta Reference Voltage to the Ratio of Delta Cathode Voltage vs. Ambient Temperature

12.Package Outline Dimensions

(1) Package Type: SOT-23 (All dimensions in mm.)



(2) Package Type: TO-92(Ammo Packing)



13.Important Notice And Disclaimer

- We reserves the right to change the instruction manual without prior notice.
- Any semiconductor product has a certain possibility of failure or malfunction under specific conditions. The buyer is responsible for complying with safety standards and taking safety measures when using our products for system design and overall manufacturing to avoid potential failure risks that may cause personal injury or property damage.
- The improvement of product quality is endless, our company will be dedicated to provide customers with better products.