

Features

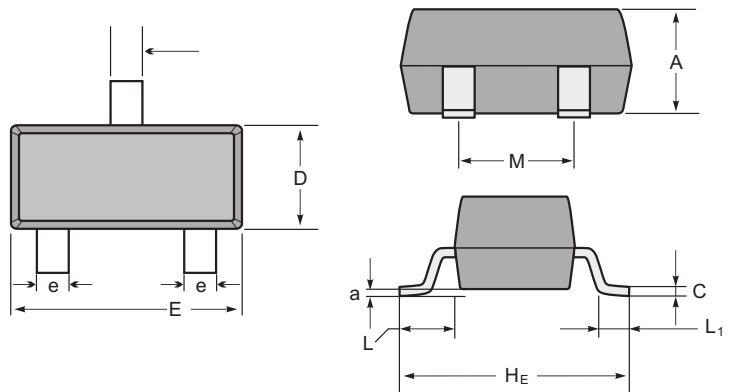
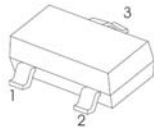
- Wide Programmable Precise Output Voltage from 1.25V to 18V
- High Stability under Capacitive Load
- Low Temperature Deviation: 3mV Typical
- Low Equivalent Full-Range Temperature Coefficient: 20PPM/°C Typical
- Low Dynamic Output Resistance: 0.05Ω Typical
- High Sink Current Capacity from 0.1mA to 100mA
- Low Output Noise
- Wide Operating Range of 0 to +70 °C

Applications

- Graphic Card
- PC Motherboard
- Voltage Adapter
- Switching Power Supply
- Charger

SOT-23

1. REFERENCE
2. CATHODE
3. ANODE



SOT-23 mechanical data

UNIT		A	C	D	E	H _E	e	M	L	L ₁	a
mm	max	1.1	0.15	1.4	3.0	2.6	0.5	1.95	0.55 (ref)	0.36 (ref)	0.0
	min	0.9	0.08	1.2	2.8	2.2	0.3	1.7			0.15
mil	max	43	6	55	118	102	20	77	22 (ref)	14 (ref)	0.0
	min	35	3	47	110	87	12	67			6

Marking

Type number	Marking code
TL432	432

Absolute Maximum Ratings (Note 2)

Symbol	Parameter	Rating	Unit
V _{KA}	Cathode Voltage	20	V
I _{KA}	Cathode Current Range (Continuous)	-100 to 100	mA
I _{REF}	Reference Input Current Range	10	mA
P _D	Power Dissipation	Z, R Package	770
		N, K Package	370
T _{STG}	Storage Temperature Range	-65 to +150	°C

Note 2: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V _{KA}	Cathode Voltage	V _{REF}	18	V
I _{KA}	Cathode Current	0.1	100	mA
-	Operating Ambient Temperature Range	0	+70	°C

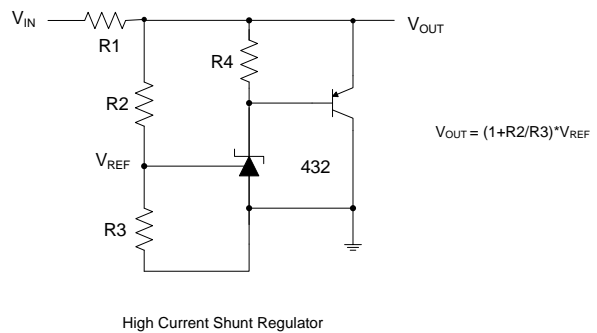
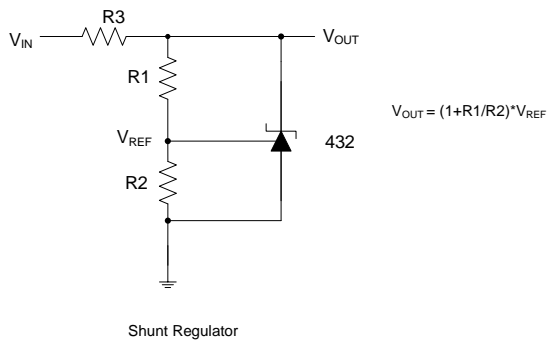
TL432

ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

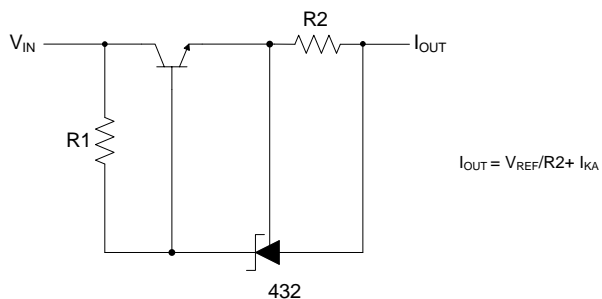
Symbol	Parameter	Test Circuit	Conditions	Min	Typ	Max	Unit	
V _{REF}	Reference Voltage	4	V _{KA} = V _{REF} , I _{KA} = 10mA	0.5%	1.244	1.250	1.256	V
				1.0%	1.238	1.250	1.262	
ΔV _{REF}	Deviation of Reference Voltage Over Full Temperature Range	4	V _{KA} = V _{REF} , I _{KA} = 10mA	0 to +70°C	-	2	10	mV
				-40 to +85°C	-	3	10	
				-40 to +125°C	-	4	15	
$\frac{\Delta V_{REF}}{\Delta V_{KA}}$	Ratio of Change in V _{REF} to the Change in Cathode Voltage	5	I _{KA} = 10mA, ΔV _{KA} : V _{REF} to 16V	-	-0.5	-1.5	mV/V	
I _{REF}	Reference Input Current	5	I _{KA} = 10mA, R1 = 10KΩ, R2 = ∞	-	0.15	0.4	μA	
ΔI _{REF}	Deviation of Reference Current Over Full Temperature Range	5	I _{KA} = 10mA, R1 = 10KΩ, R2 = ∞, T _A = -40 to +125°C	-	0.1	0.4	μA	
I _{KA} (Min)	Minimum Cathode Current for Regulation	4	V _{KA} = V _{REF}	-	55	80	μA	
I _{KA} (Off)	Off-state Cathode Current	6	V _{REF} = 0, V _{KA} = 18V	-	0.04	0.10	μA	
			V _{KA} = 6V, V _{REF} = 0	-	0.01	0.05		
Z _{KA}	Dynamic Impedance	4	V _{KA} = V _{REF} , I _{KA} = 1 to 100mA, f ≤ 1.0KHz	-	0.05	0.15	Ω	
θ _{JC}	Thermal Resistance (Junction to Case)	-	SOT-23	-	84.84	-	°C/W	
			SOT-23-5	-	84.84	-		
			TO-92	-	140.80	-		
			SOT-89	-	29.80	-		

CLASSIFICATION OF V_{ref}

Rank	0.5%	1.0%
Range	1.244~1.256	1.238~1.262

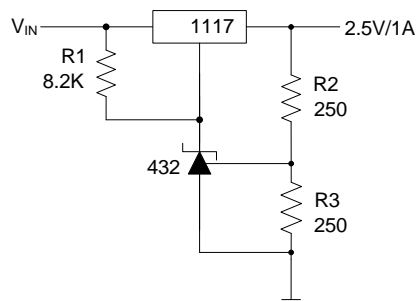


TL432

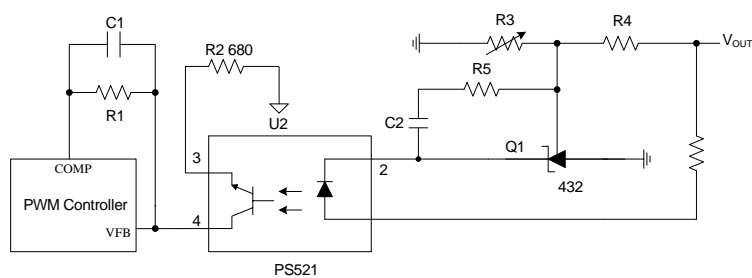


Current Source or Current Limit

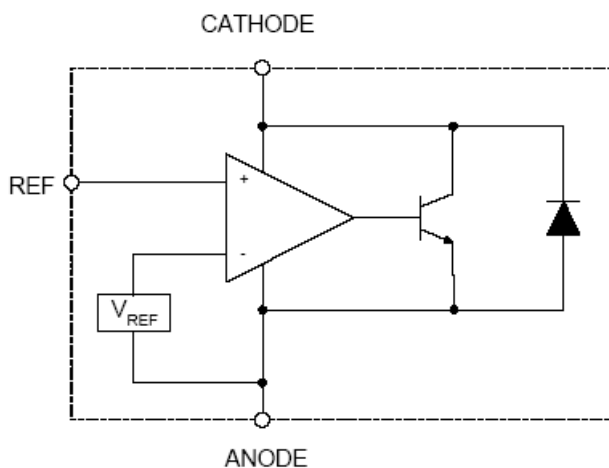
$$I_{OUT} = V_{REF}/R_2 + I_{KA}$$



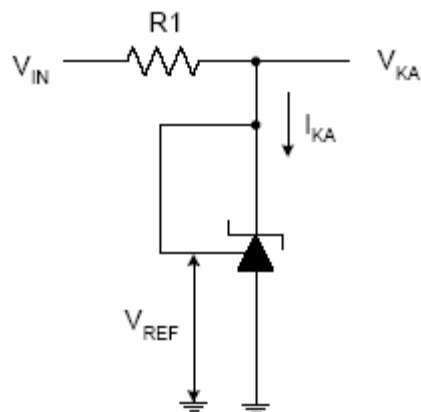
Precision 2.5V/1A Regulator



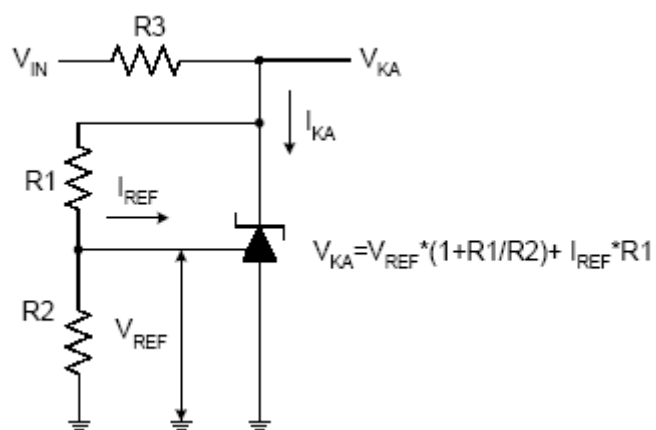
PWM Converter with Reference



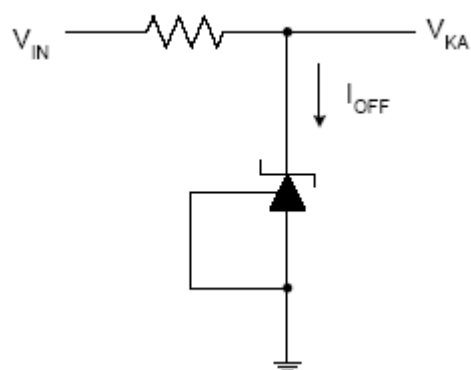
TL432



Test Circuit 4 for $V_{KA} = V_{REF}$



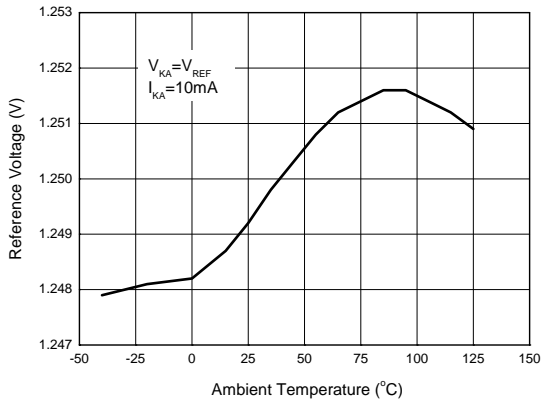
Test Circuit 5 for $V_{KA} > V_{REF}$



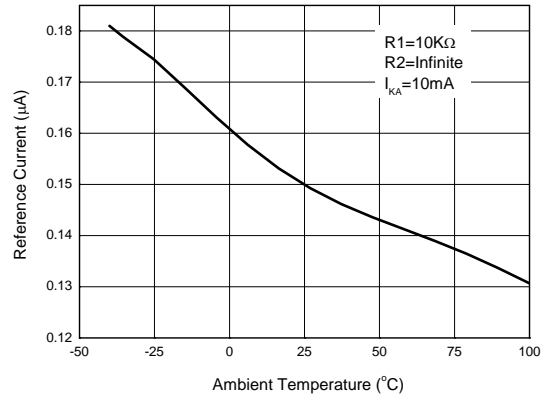
Test Circuit 6 for I_{OFF}

RATING AND CHARACTERISTIC CURVES (TL432)

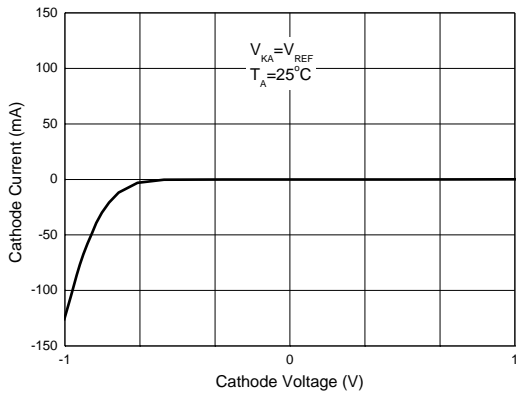
Reference Voltage vs. Ambient Temperature



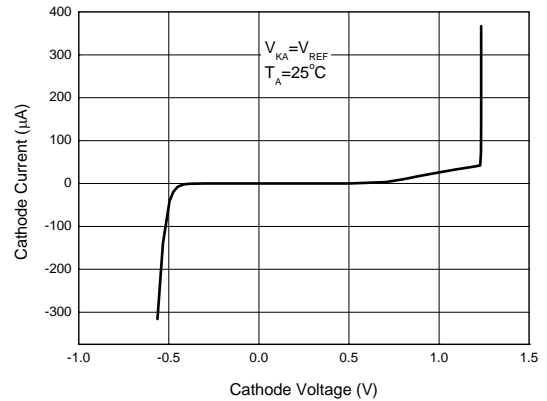
Reference Current vs. Ambient Temperature



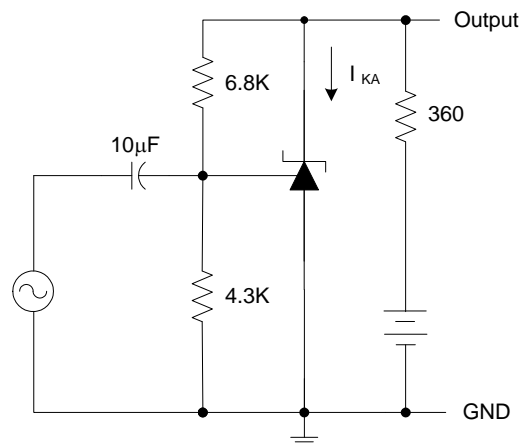
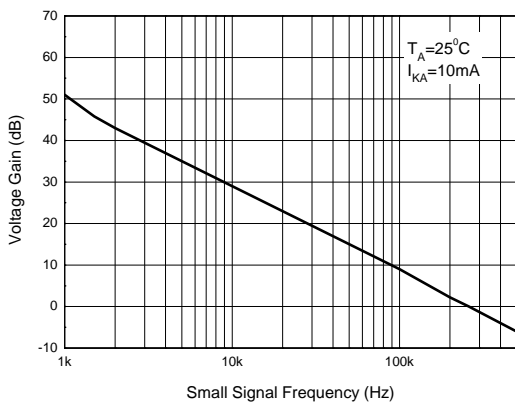
Cathode Current vs. Cathode Voltage



Cathode Current vs. Cathode Voltage

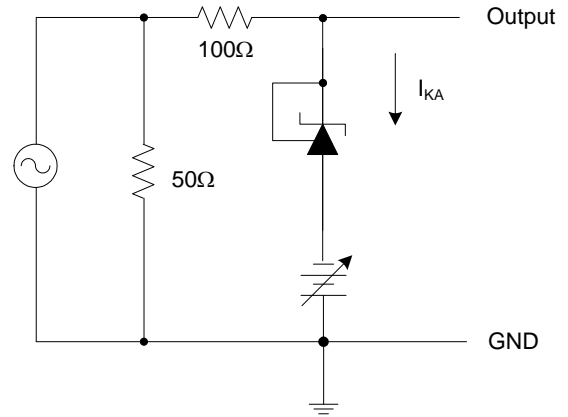
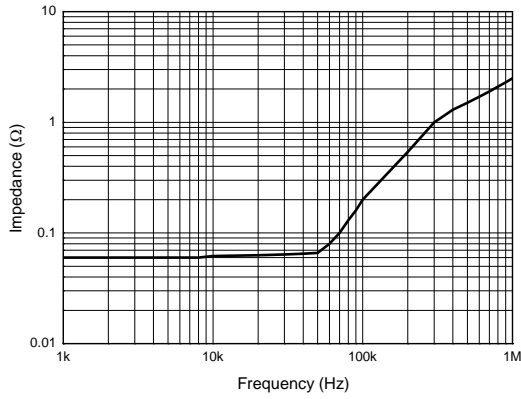


Small Signal Voltage Gain vs. Frequency

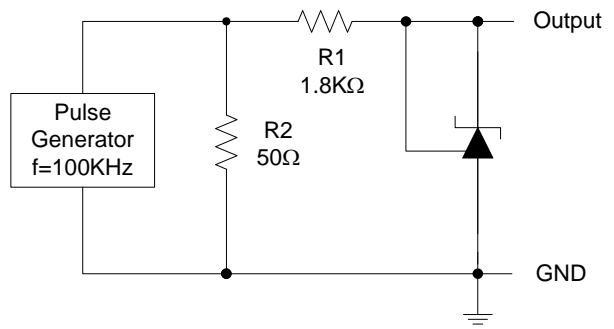
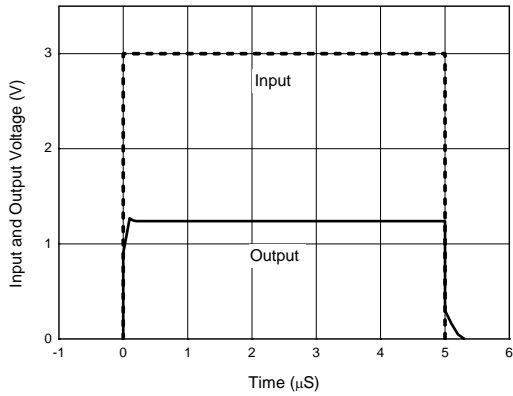


RATING AND CHARACTERISTIC CURVES (TL432)

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

