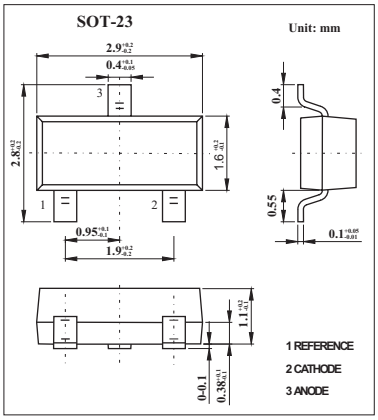
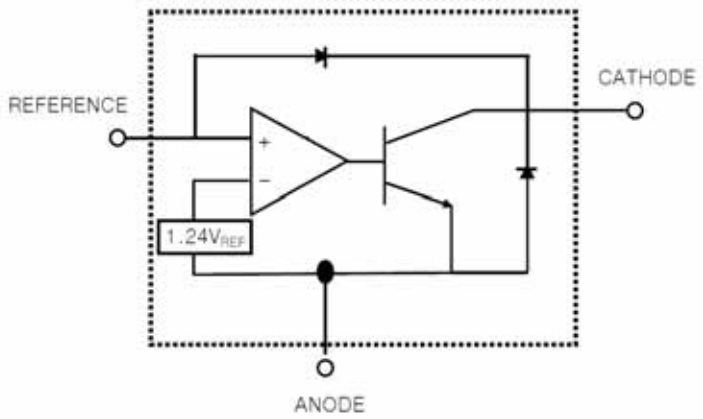
Low Voltage Adjustable Precision Shunt Regulator
TL432

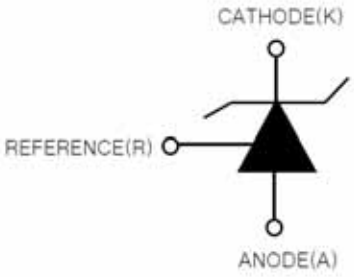
■ Features

- ●Low Voltage Operation : 1.24 V
- ●Programmable Out Voltage to 15V
- ●Sink Current Capability of 1 mA to 100 mA
- ●Equivalent Full-Range Temperature Coefficient of 50ppm/℃
- ●Temperature Compensated for Operation over Full Rated Operating Temperature Range
- ● Trimmed Bandgap to 5%
- ● Reference Input Voltage: 1.24±0.5%



■ Function Block Diagran





■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Cathode Voltage	V_{KA}	15	V
Continuous Cathode Current Range	I_{KA}	100	mA
Reference Input Current Range	I_{REF}	-0.05 to 3	mA
Total Power Dissipation	P_D	370	mW
Junction Temperature	T_J	-40 to 150	℃
Operating Temperature	T_{OPR}	0 to 70	℃
Storage Temperature	T_{STG}	-65 to 150	℃

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Testconditons	Min	Typ	Max	Unit
Reference Input Voltage	Vref	$V_{KA}=V_{REF}$, I_{KA}=10mA	1.233	1.24	1.247	V
Deviation of reference Input Voltage Over Full Temperature Range	△Vref/△T	$V_{KA}=V_{REF}$, I_{KA}=10mA		10	25	mV
		TA=Full Range				
Ratio Of Change in Reference Input Voltage to the change in Cathode Voltage	$\triangle V_{ref}/\triangle V_{KA}$	V_{KA}=1.25V to 14.5V		1.0	2.7	mV/V
Reference input Current	Iref	R_1=10KΩ R2=∞		0.5	1	μA
Deviation Of Reference Input Current Over Full Temperature Range	△Iref/△T	R_1=10KΩ R2=∞ TA=fullTemperature		0.05	0.3	μA
Minimum cathode current for regulation	I_{KA}(min)	$V_{KA}=V_{REF}$		60	80	μA
Off-state cathode Current	$I_{KA(OFF)}$	V_{KA}=15V ,V_{REF}=0		0.04	0.5	μA
Dynamic impedance	Z_{KA}	$V_{KA}=V_{REF}$, I_{KA}=0.1 to 20mA f≤1.0KHz		0.2	0.4	Ω

Fig. 1 Test Circuit for $V_{KA}=V_{REF}$

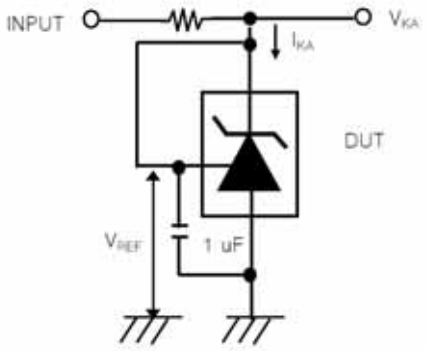


Fig. 2 Test Circuit for $V_{KA}\geq V_{REF}$

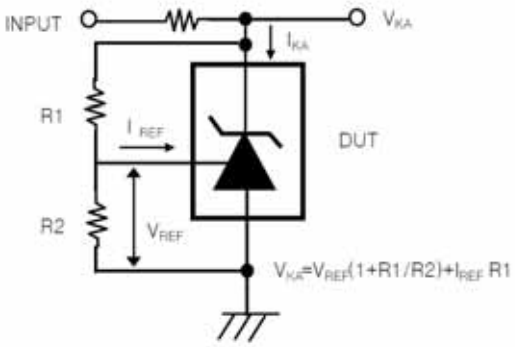
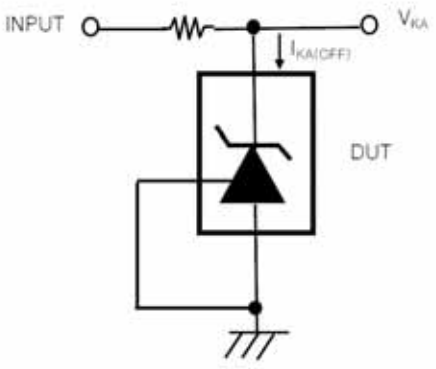


Fig. 3 Test Circuit for I_{KA} (off)



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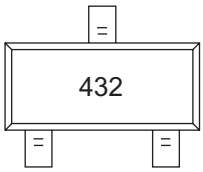
■ Ordering Information

Deviece	Packaging	Shipping
TL432	SOT23	3000/Tape & Reel

■ Marking Information



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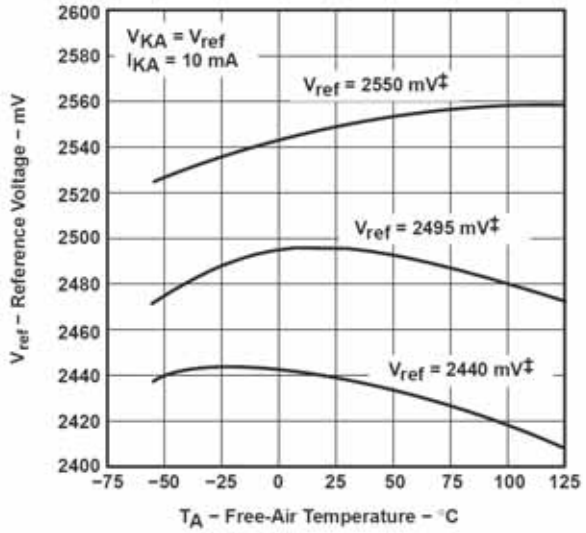
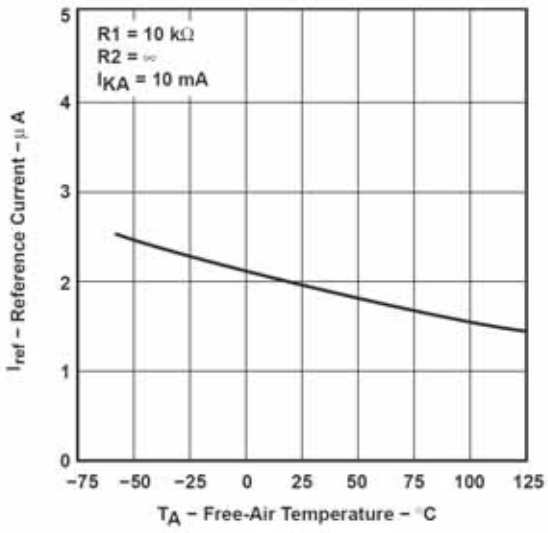
■ Typlacl Characteristics

REFERENCE VOLTAGE
vs
FREE-AIR TEMPERATURE

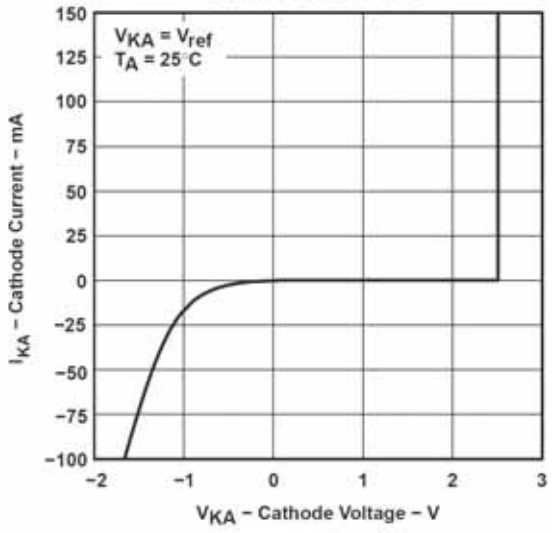


‡ Data is for devices having the indicated value of V_{ref} at I_{KA} = 10 mA, T_A = 25°C.

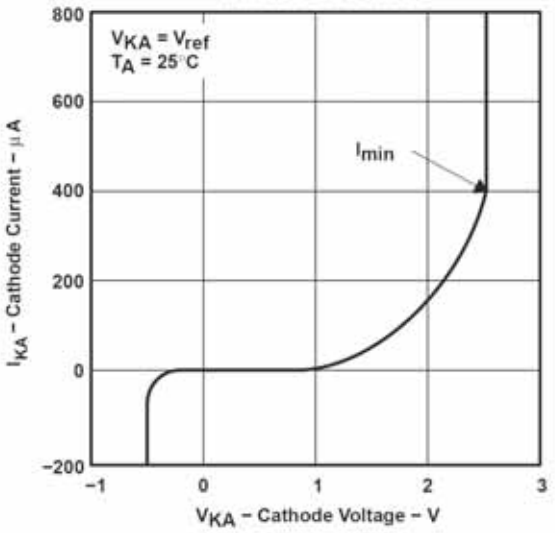
REFERENCE CURRENT
vs
FREE-AIR TEMPERATURE



CATHODE CURRENT
vs
CATHODE VOLTAGE



CATHODE CURRENT
vs
CATHODE VOLTAGE



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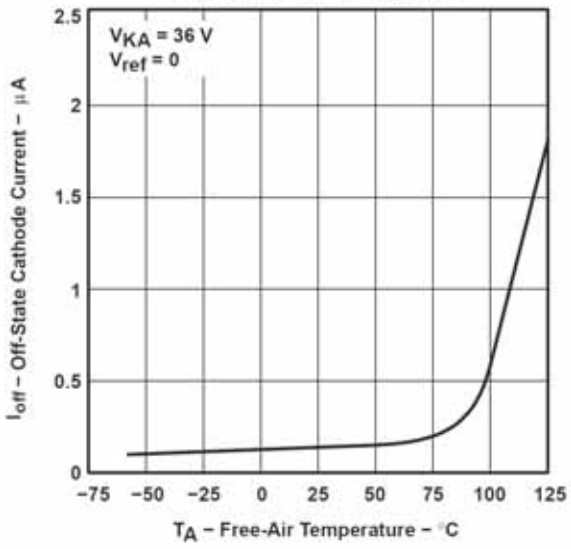
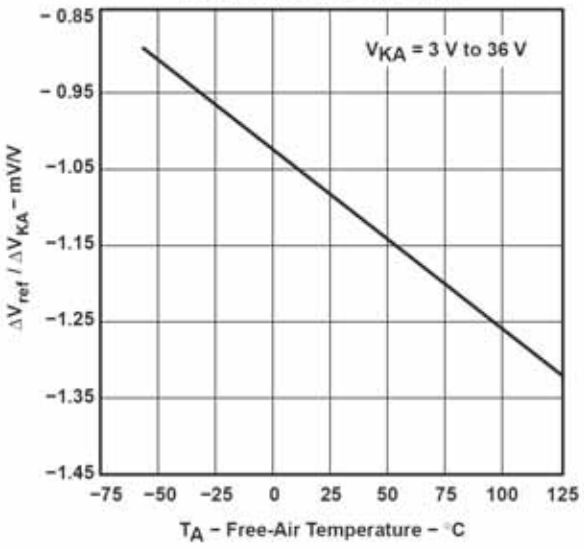
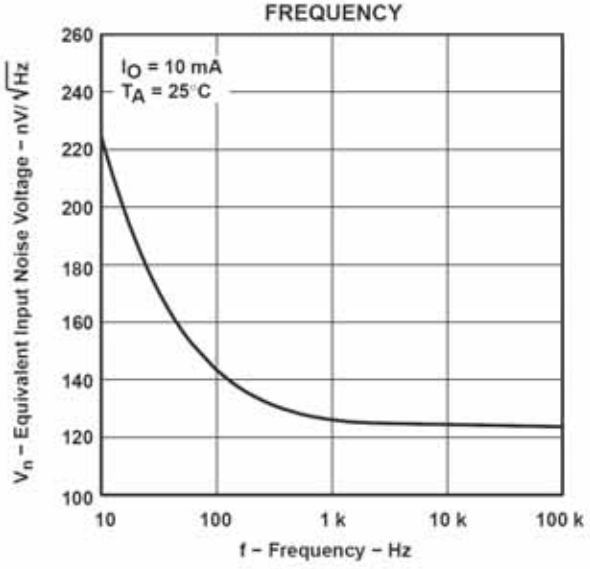
OFF-STATE CATHODE CURRENT
vs
FREE-AIR TEMPERATURE



RATIO OF DELTA REFERENCE VOLTAGE TO
DELTA CATHODE VOLTAGE
vs
FREE-AIR TEMPERATURE



EQUIVALENT INPUT NOISE VOLTAGE
vs
FREQUENCY



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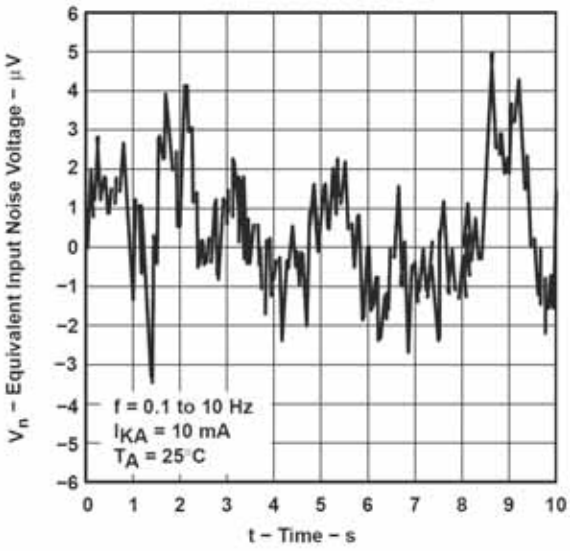
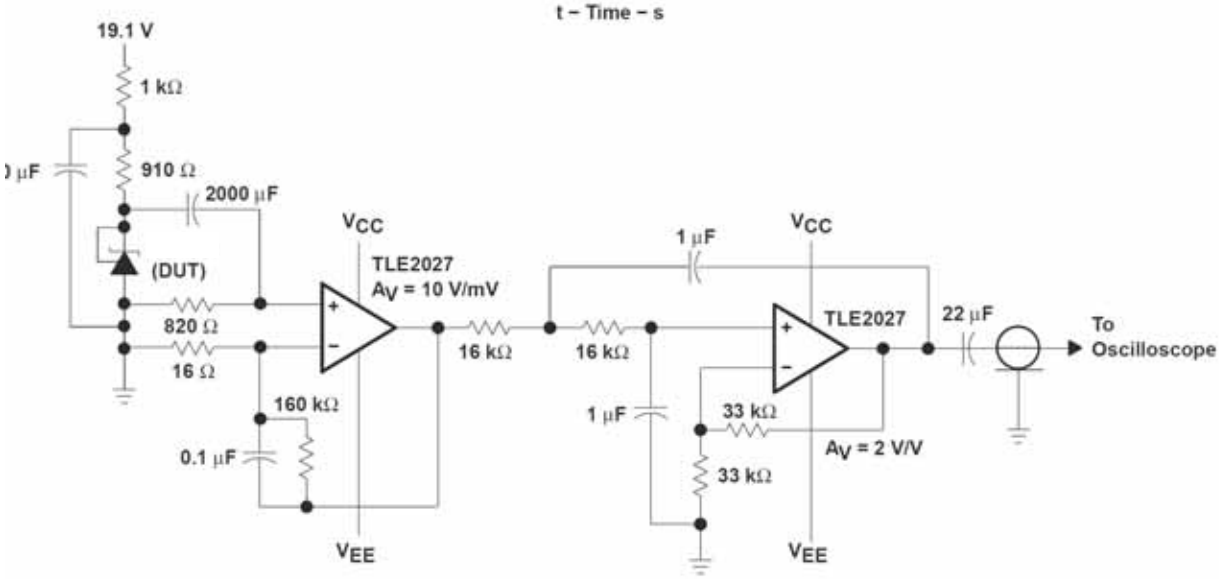
TYPICAL CHARACTERISTICS

EQUIVALENT INPUT NOISE VOLTAGE
OVER A 10-S PERIOD





Test Circuit for Equivalent Input Noise Voltage

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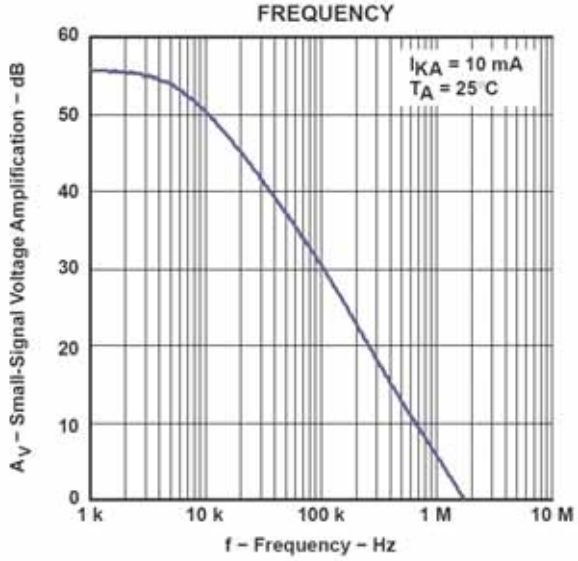
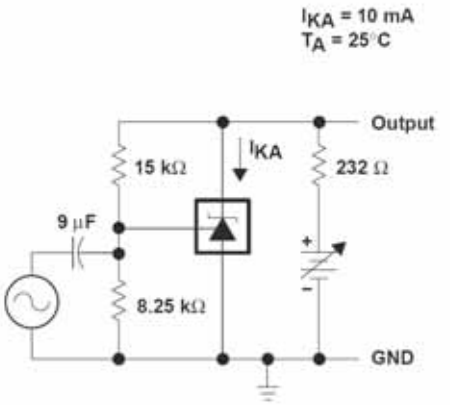
TYPICAL CHARACTERISTICS

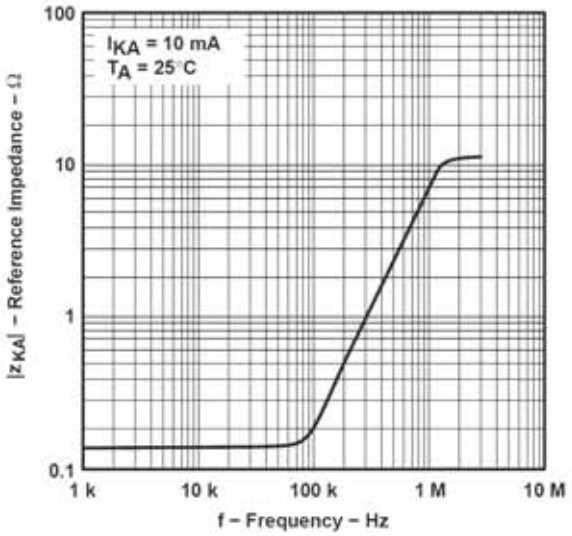
SMALL-SIGNAL VOLTAGE AMPLIFICATION
vs
FREQUENCY

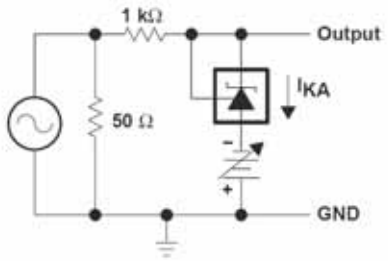




TEST CIRCUIT FOR VOLTAGE AMPLIFICATION

REFERENCE IMPEDANCE
vs
FREQUENCY





TEST CIRCUIT FOR REFERENCE IMPEDANCE

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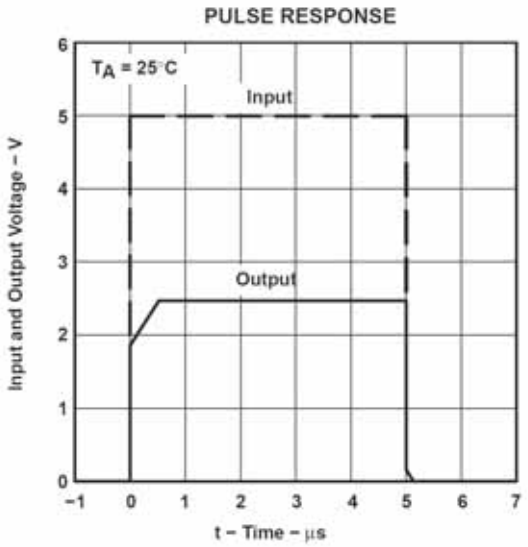

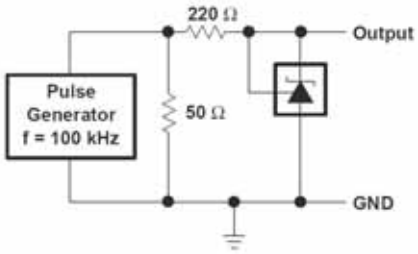

TEST CIRCUIT FOR PULSE RESPONSE