

**Features**

- The Reference Input Voltage Tolerance is 1.0%
- Sink Current Capability of 0.1mA to 100 mA
- Programmable Output Voltage 36V
- Low Output Noise Voltage and Fast Turn On Response
- Temperature Compensated for Operation over Full Rated Operating Temperature Range
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Cathode Voltage	$V_{KA}$	37	V
Cathode Current Range	$I_K$	-100~150	mA
Reference Input Current Range	$I_{REF}$	0.05~10	mA
Power Dissipation at 25 °C	$P_D$	0.20	W
Thermal Resistance junction to ambient	$R_{\theta JA}$	625	°C/W
Junction Temperature	$T_J$	0~150	°C
Operating Temperature	$T_{opr}$	0~70	°C
Storage Temperature Range	$T_{STG}$	-55~150	°C

**Recommended Operating Conditions**

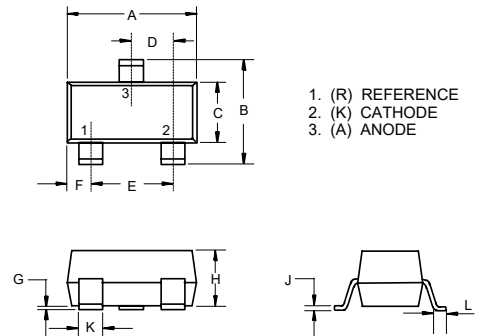
Parameter	Symbol	Min	Max	Unit
Cathode Voltage	$V_{KA}$	$V_{REF}$	36	V
Cathode Current Range	$I_K$	1.0	100	mA

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

**Marking Code: 431**

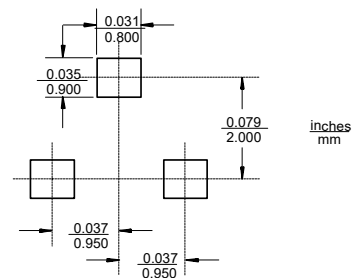
**Programmable Precision Regulator**

**SOT-23**



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	

**Suggested Solder Pad Layout**



**Electrical Characteristics @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Reference Input Voltage	$V_{ref}$		2.475	2.5	2.525	V
Deviation of reference Input Voltage	$V_{ref(dev)}$	$T_{min} \leq T_a \leq T_{max}$		3.0	17	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage	$\frac{\Delta V_{ref}}{\Delta V_{KA}}$	$\Delta V_{KA}=10V \sim V_{ref}$		-1.4	-2.7	
		$\Delta V_{KA}=36V \sim 10V$		-1.0	-2.0	
Reference Input Current	$I_{ref}$	$I_{KA}=10mA,$ $R_1=10K\Omega, R_2=\infty$		1.8	4.0	$\mu A$
Deviation of Reference Input Current Over Full Temperature Range	$\frac{\Delta I_{ref}}{\Delta T}$	$I_{KA}=10mA,$ $R_1=10K\Omega, R_2=\infty$ $T_A=full\ Temperature$		0.4	1.2	$\mu A$
Minimum Cathode Current for Regulation	$I_{KA(min)}$			0.50	1.0	mA
Off-State Cathode Current	$I_{KA(off)}$	$V_{KA}=36V, V_{REF}=0V$		0.26	1.0	$\mu A$
Dynamic Impedance	$Z_{KA}$	$I_{KA}=10\ to\ 100mA,$ $f \leq 1.0KHz$		0.22	0.5	$\Omega$

Curve Characteristics

Figure 1. Test Circuit for  $V_{KA} = V_{ref}$

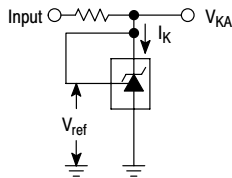


Figure 2. Test Circuit for  $V_{KA} > V_{ref}$

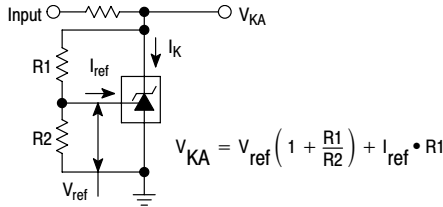


Figure 3. Test Circuit for  $I_{off}$

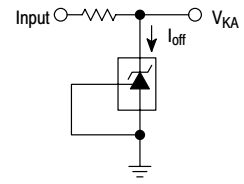


Figure 4. Cathode Current versus Cathode Voltage

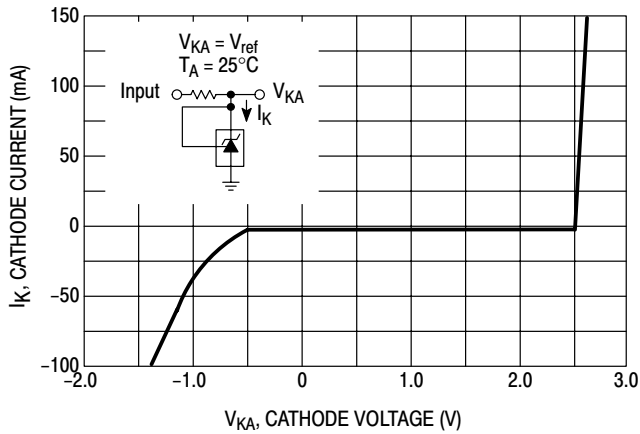


Figure 5. Cathode Current versus Cathode Voltage

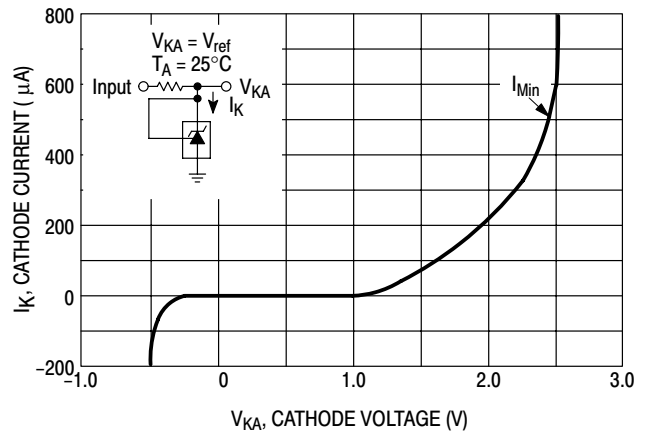


Figure 6. Reference Input Voltage versus Ambient Temperature

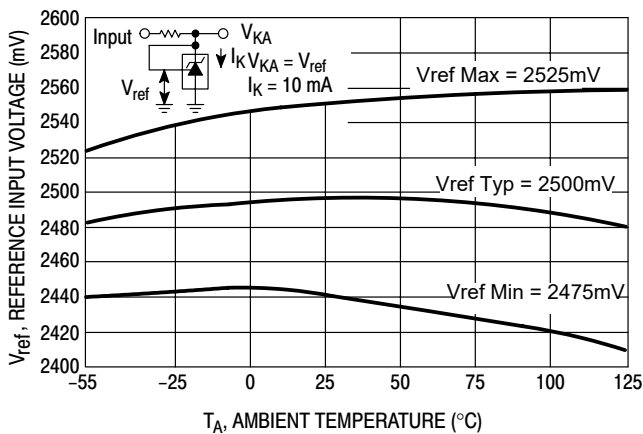
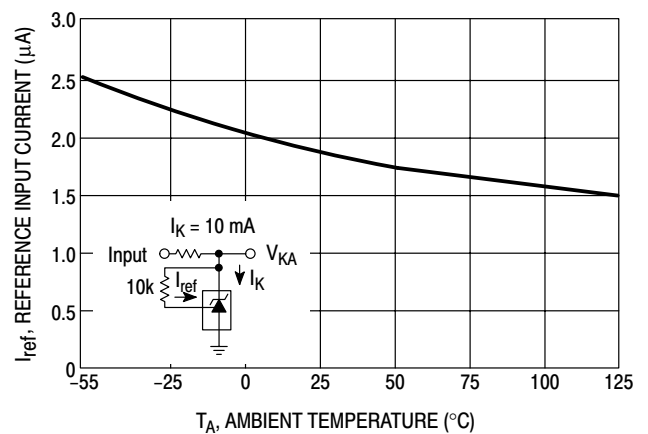


Figure 7. Reference Input Current versus Ambient Temperature



Curve Characteristics

Figure 8. Change in Reference Input Voltage versus Cathode Voltage

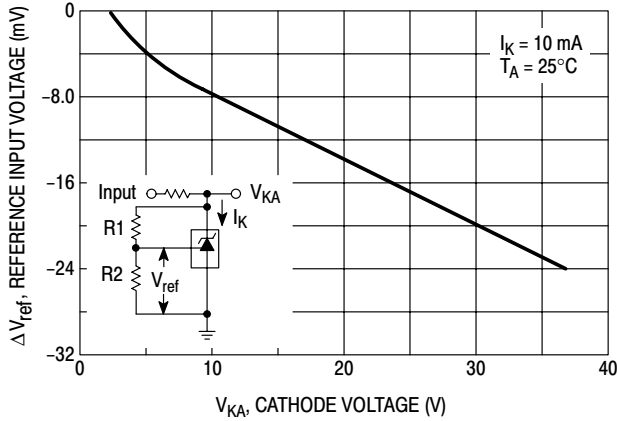


Figure 9. Off-State Cathode Current versus Ambient Temperature

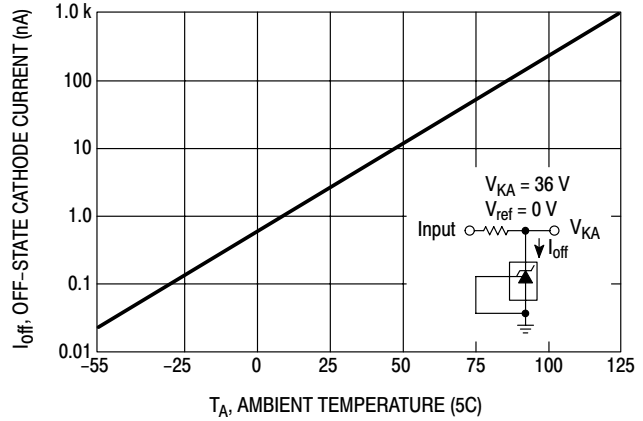


Figure 10. Dynamic Impedance versus Frequency

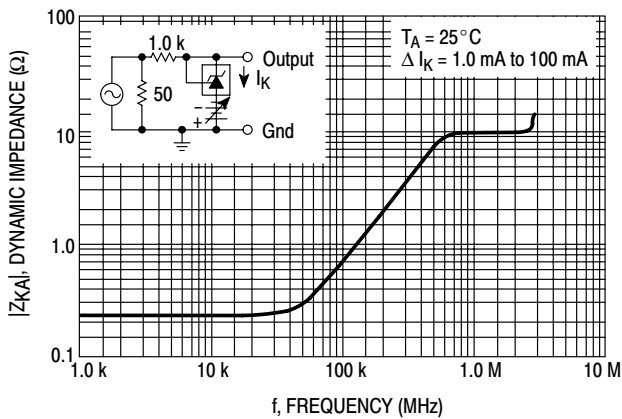


Figure 11. Dynamic Impedance versus Ambient Temperature

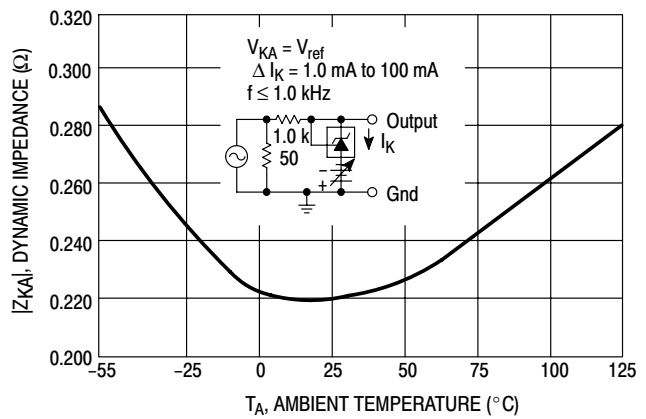


Figure 12. Open-Loop Voltage Gain versus Frequency

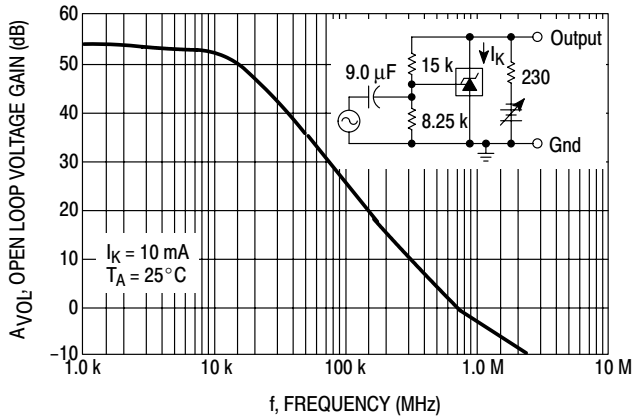


Figure 13. Spectral Noise Density

