

Programmable Shunt Regulator

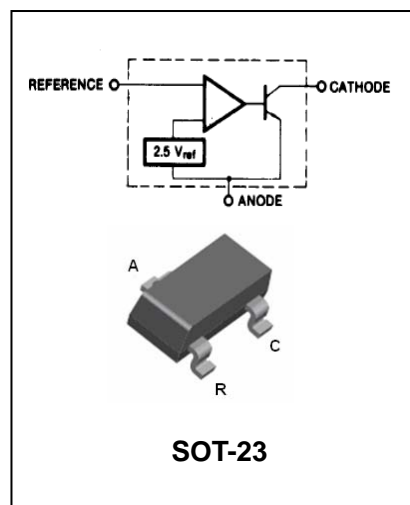
BL431

FEATURES

- Programmable output voltage to 36 volts.
- Low dynamic output impedance 0.20 typical
- Sink current capability of 1.0 to 100mA
- Equivalent full-range temperature coefficient of 50ppm/°C typical
- Temperature compensated for operation over full rated Operating temperature range
- Low output noise voltage
- Fast turn-on response



Lead-free



ORDERING INFORMATION

Type No.	Marking	Package Code
BL431	431	SOT-23

MAXIMUM RATING @ Ta=25°C unless otherwise specified

Parameter	symbol	limits	unit
Cathode Voltage	V_{KA}	37	V
Cathode current Range(Continuous)	I_{KA}	-100~+150	mA
Reference Input Current Range	I_{REF}	0.05~-10	mA
Power dissipation D,Z Suffix Package N Suffix Package	P_D	770 1000	mW
Operating temperature Range	T_{OPR}	-25~+85	°C
Storage temperature Range	T_{STG}	-65to+150	°C

Recommended Operating Conditions

Parameter	symbol	Min	Typ	Max	Unit
Cathode Voltage	V_{KA}	V_{REF}	-	36	V
Cathode Current	I_{KA}	1.0	-	100	mA

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ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

Parameter	symbol	conditions	Min.	Typ.	Max.	unit
Reference Input voltage	V_{REF}	$V_{KA}=V_{REF}, I_{KA}=10mA$	2.44	2.495	2.55	V
Deviation of Reference Input Voltage Over-Temperature (Note1)	$\frac{\Delta V_{REF}}{\Delta T}$	$V_{KA}=V_{REF}, I_{KA}=10mA,$ $T_{MIN} \leq T_A \leq T_{MAX}$		4.5	17	mV
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage	$\frac{\Delta V_{REF}}{\Delta V_{KA}}$	$I_{KA}=10mA$	$\Delta V_{KA}=10V-V_{REF}$	-10	-2.7	mV/V
			$\Delta V_{KA}=36V-10V$	-0.5	-2.0	
Reverse Input current	I_{REF}	$I_{KA}=10mA,$ $R_1=10K\Omega, R_2=\infty$		1.5	4	μA
Deviation of Reference Input Current Over Full Temperature Range	$\Delta I_{REF}/\Delta T$	$I_{KA}=10mA,$ $R_1=10K\Omega, R_2=\infty$ $T_A=Full\ Range$		0.4	1.2	μA
Minimun Cathode Current for Regulation	$I_{KA(MIN)}$	$V_{KA}=V_{REF}$		0.45	1.0	mA
Off-Stage Cathode Current	$I_{KA(OFF)}$	$V_{KA}=36V,$ $V_{REF}=0$		0.05	1.0	μA
Dynamic Impedance(Note2)	Z_{ZA}	$V_{KA}=V_{REF},$ $I_{KA}=1\ to\ 100mA$ $f \geq 1.0KHz$		0.15	0.5	Ω

• $T_{MIN}=-25^{\circ}C, T_{MAX}=+85^{\circ}C$

TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

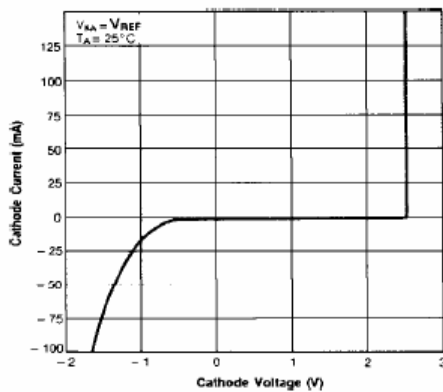


Figure 1. Cathode Current vs. Cathode Voltage

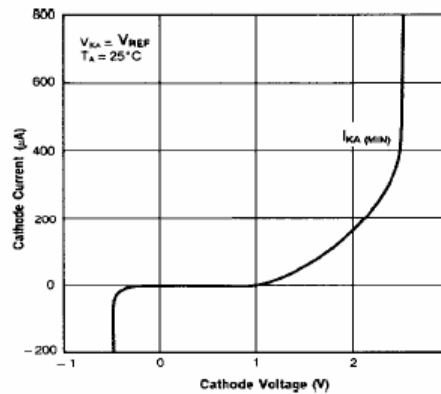


Figure 2. Cathode Current vs. Cathode Voltage

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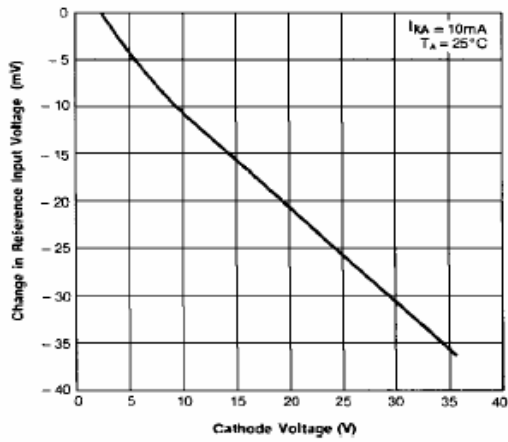


Figure 3. Change In Reference Input Voltage vs. Cathode Voltage

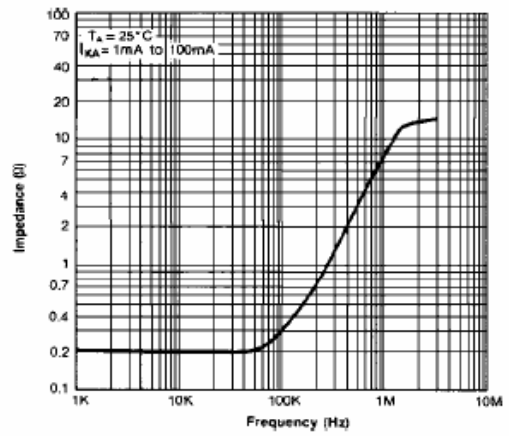


Figure 4. Dynamic Impedance Frequency

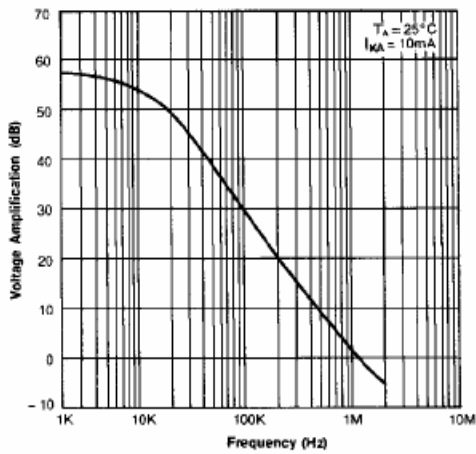


Figure 5. Small Signal Voltage Amplification vs. Frequency

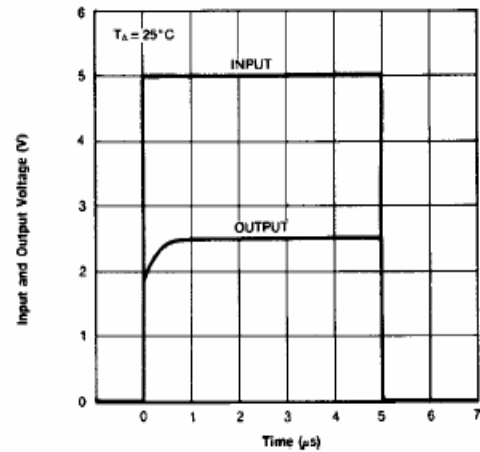


Figure 6. Pulse Response

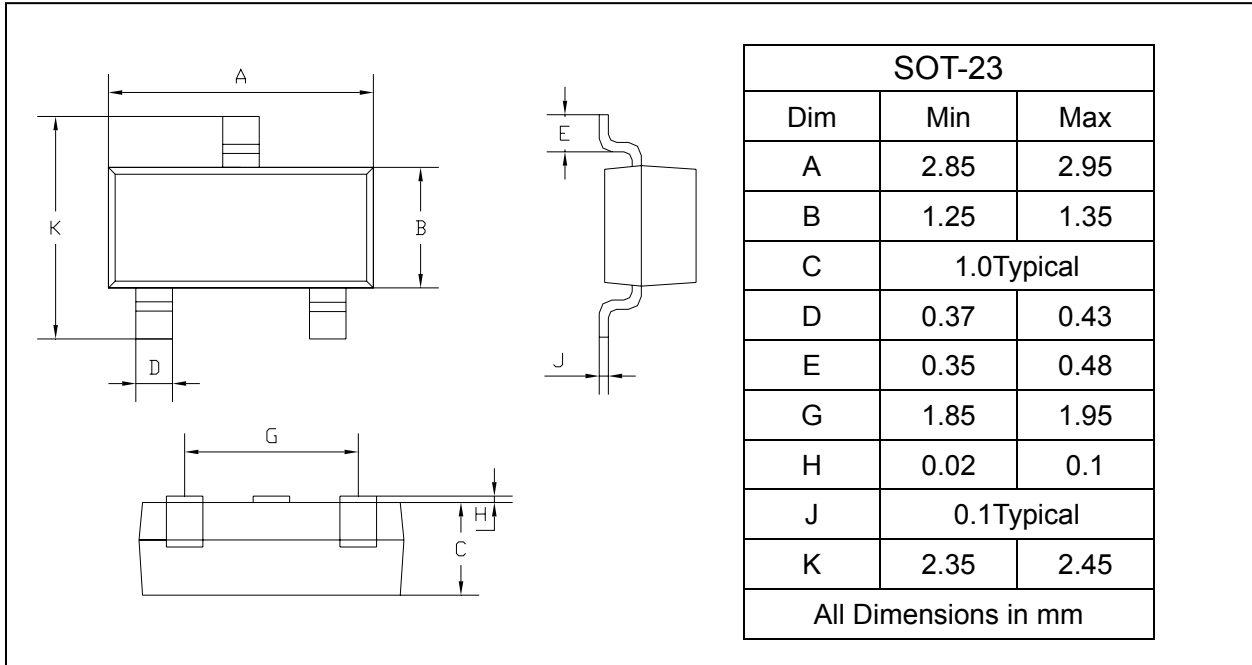
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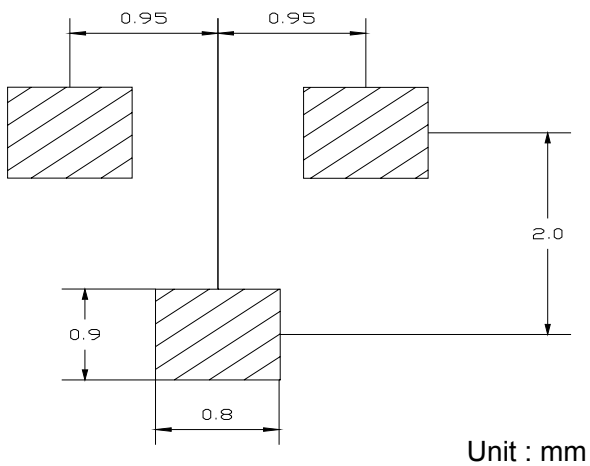
PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



SOLDERING FOOTPRINT



PACKAGE INFORMATION

Device	Package	Shipping
BL431	SOT-23	3000/Tape&Reel