DESCRIPTION

The A431 is available in SOT-23, SOT89-3 and TO-92 packages.

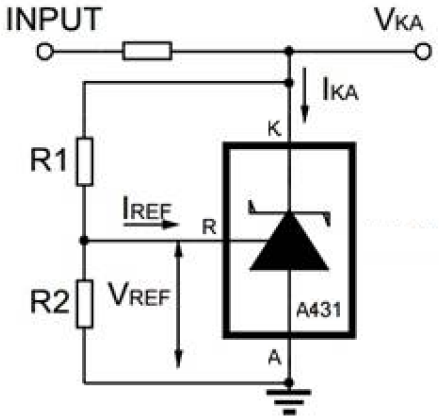
FEATURES

- Programmable output Voltage to 36V
- Low dynamic output impedance
- Sink current capability of 1 to 100mA
- Low output noise voltage
- Fast turn on response
- Available in SOT-23, SOT89-3 and TO-92 packages.

ORDERING INFORMATION

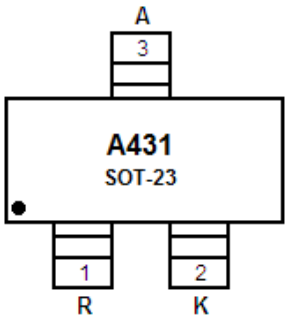
Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	A431E3R-X
		A431E3VR-X
SOT89-3 SPQ: 1,000pcs/Reel	K3	A431K3R-X
		A431K3VR-X
TO-92 A: SPQ: 2,000pcs/Box B: SPQ: 1,000pcs/Bag	Z	A431ZY-X
		A431ZVY-X
Note	X: Output Voltage Tolerance: A or B A=0.5%, B=1% R: Tape & Reel Y: Ammo or Bulk A=Ammo Packing B=Bulk Packing V: Halogen free Package	
AiT provides all RoHS products		

TYPICAL APPLICATION

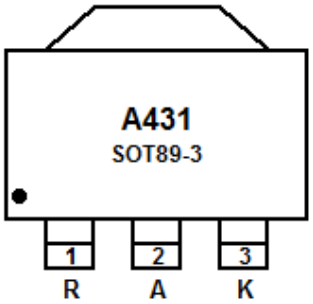


$V_{KA}=V_{REF} \times (1+R_1/R_2)+I_{REF} \times R_1$

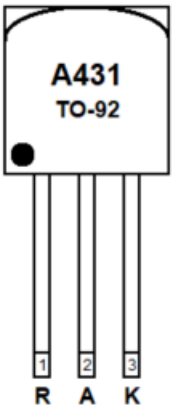
PIN DESCRIPTION



Top View



Top View



Top View

Pin #			Symbol	Function
SOT-23	SOT-89	TO-92		
1	1	1	R	REFERENCE
2	3	3	K	CATHODE
3	2	2	A	ANODE

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃, unless otherwise noted.

V_{KA}, Cathode Voltage	SOT-23, SOT89-3	37V
	TO-92	36V
I_{KA}, Cathode Current Range (Continuous)		-100mA~+150mA
I_{REF}, Reference Input Current Range		-0.05mA~+10mA
P_D, Power Dissipation	SOT-23	350mW
	SOT89-3	500mW
	TO-92	770mW
$R_{\theta JA}$, Thermal Resistance from Junction to Ambient	SOT89-3	250℃/W
	TO-92	162℃/W
T_{OPR}, Operating Temperature Range		-25℃~+85℃
T_J, Junction Temperature		150℃
T_{STG}, Storage Temperature Range		-65℃~ +150℃

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Cathode Voltage	V_{KA}		V_{REF}	-	36	V
Cathode Current	I_{KA}		1	-	100	mA

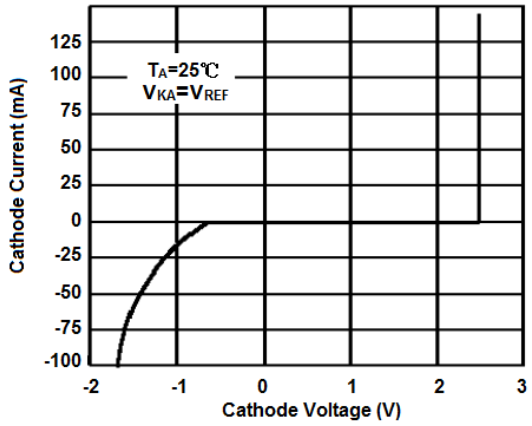
ELECTRICAL CHARACTERISTICS

T_A=25℃

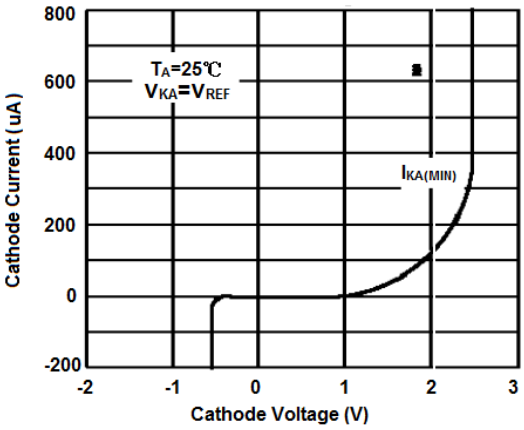
Parameter	Symbol	Conditions		Min	Typ.	Max	Unit
Reference Input Voltage	V_{REF}	$V_{KA}=V_{REF}$, I_{KA}=10mA	0.5%	2.487	2.5	2.513	V
			1%	2.475	2.5	2.525	
Deviation of Reference Input Voltage Over Temperature	$\Delta V_{REF}/\Delta T$	$V_{KA}=V_{REF}$, I_{KA}=10mA -25℃ ≤ T_A ≤ +85℃		-	4.5	17	mV
Ratio of Change in Reference Input Voltage to the change in Cathode Voltage	$\Delta V_{REF}/\Delta V_{KA}$	I_{KA}=10mA	ΔV_{KA} =10V~V_{REF}	-	-1.0	-2.7	mV/V
			ΔV_{KA} =36V~ 10V	-	-0.5	-2.0	mV/V
Reference Input Current	I_{REF}	I_{KA}=10mA, R_1=10kΩ, R_2=∞		-	1.5	4	μA
Deviation of Reference Input Current Over Full Temperature	$\Delta I_{REF}/\Delta T$	I_{KA}=10mA, R_1=10kΩ R_2=∞ -25℃ ≤ T_A ≤ +85℃		-	0.4	1.2	μA
Minimum 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}=0V		-	0.05	1.0	μA
Dynamic Impedance	Z_{KA}	$V_{KA}=V_{REF}$,I_{KA}=1 to 100mA, f≤1kHz		-	0.15	0.5	Ω

TYPICAL PERFORMANCE CHARACTERISTICS

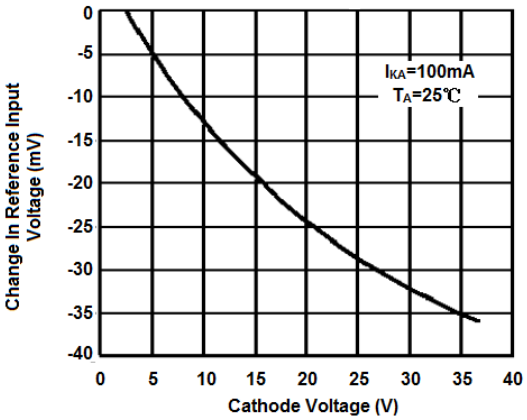
1. Cathode Current vs. Cathode Voltage



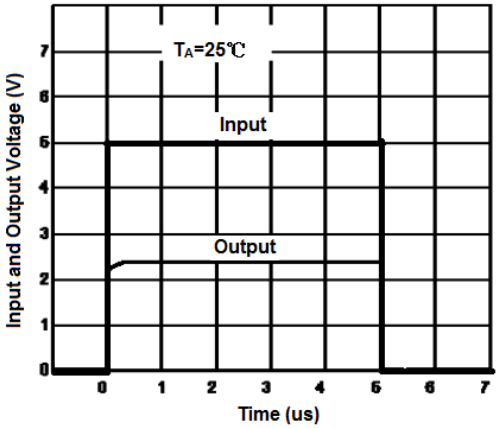
2. Cathode Current vs. Cathode Voltage



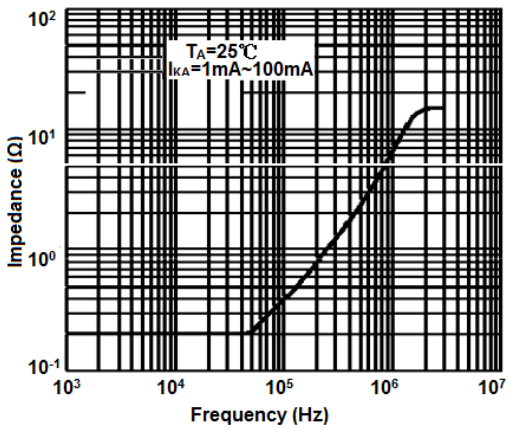
3. Change in Reference input voltage vs. Cathode Voltage



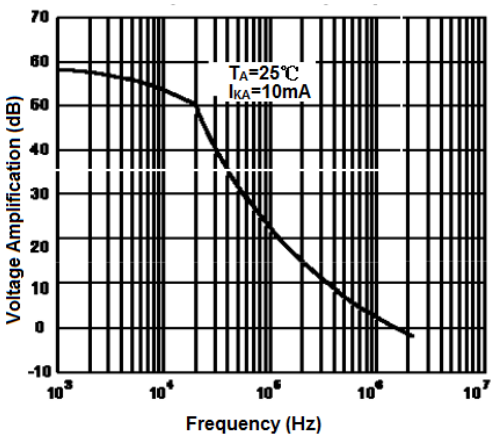
4. Pulse Response



5. Dynamic Impedance vs. Frequency

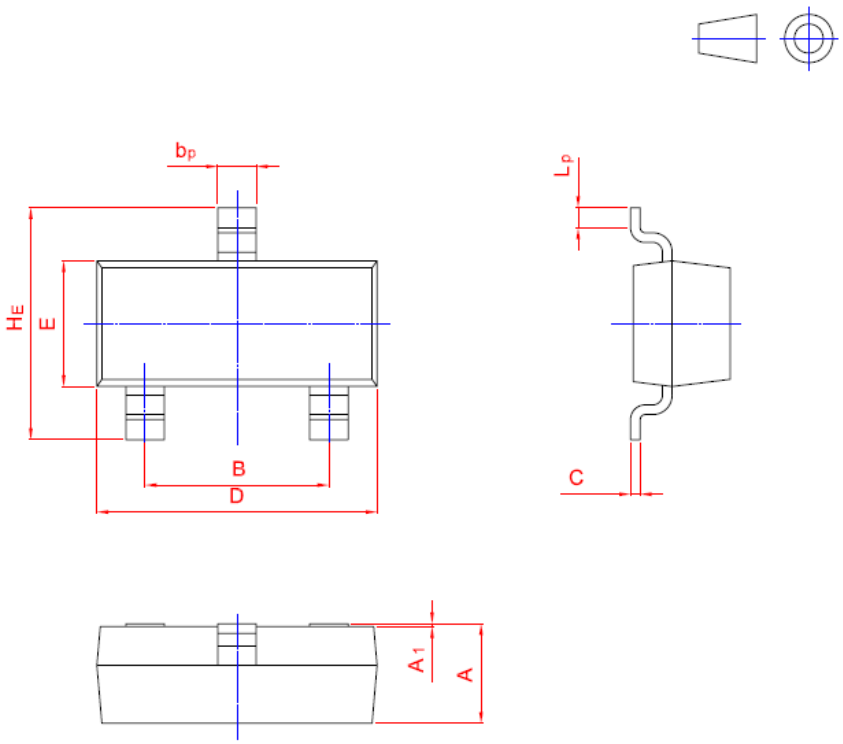


6. Small Signal Voltage Amplification vs. Frequency



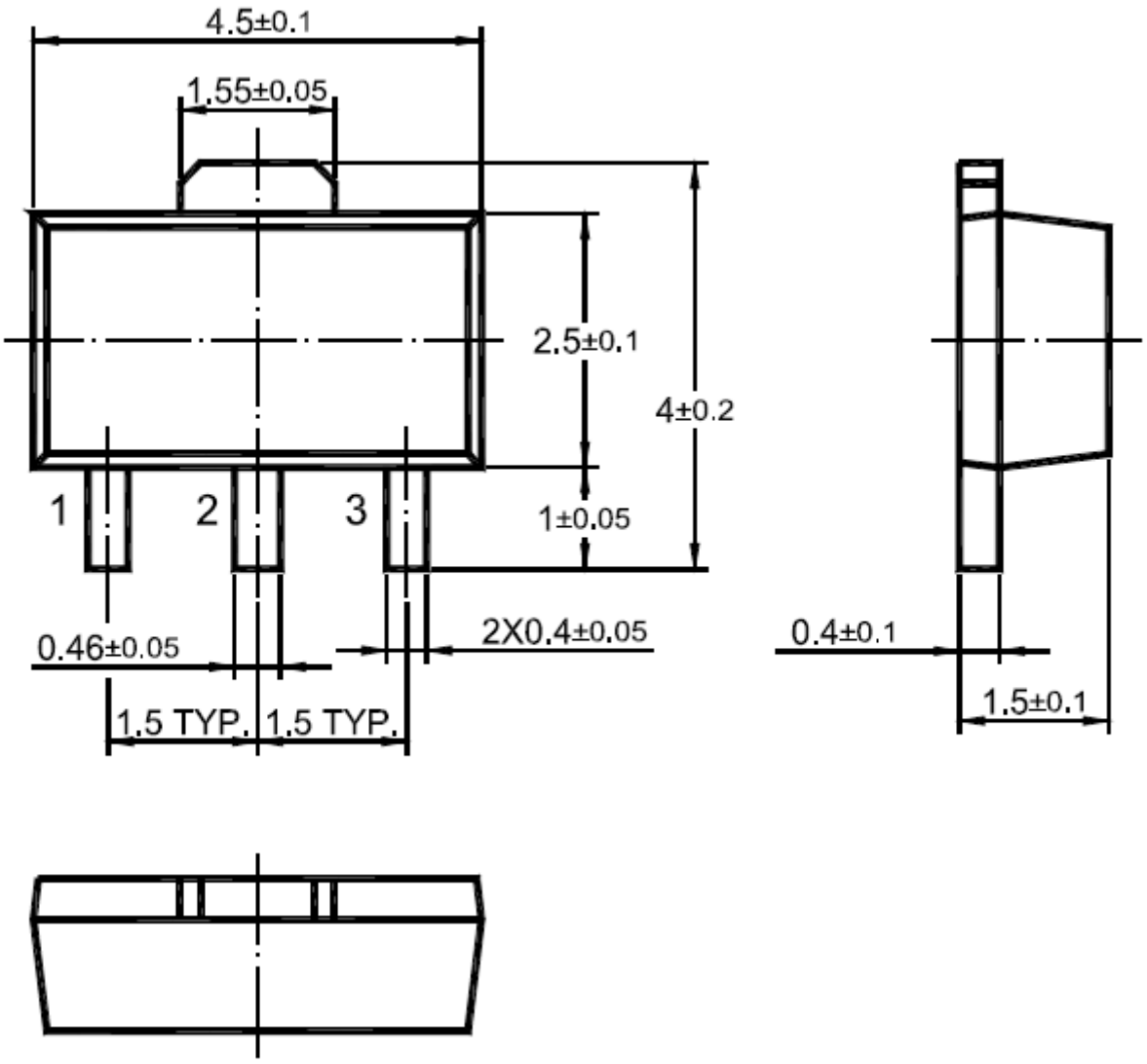
PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)

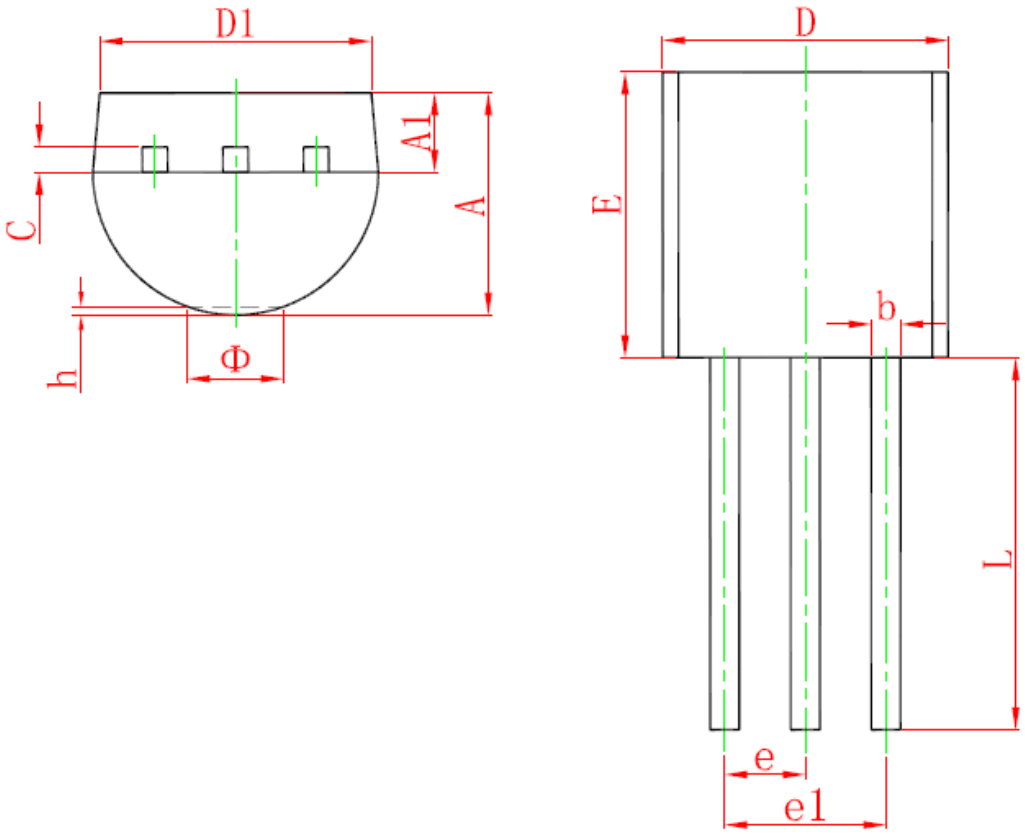


UNIT	A	B	b_p	C	D	E	H_E	A_1	L_p
mm	1.40	2.04	0.50	0.19	3.10	1.65	3.00	0.100	0.50
	0.95	1.78	0.35	0.08	2.70	1.20	2.20	0.013	0.20

Dimension in SOT89-3 Package (Unit: mm)



Dimension in TO-92 (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430	-	0.135	-
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ	-	1.600	-	0.063
h	0.000	0.380	0.000	0.015

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