



DESCRIPTION

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

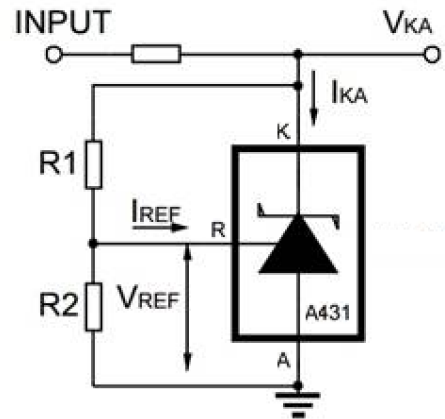
ORDERING INFORMATION

Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	A431E3R-A
		A431E3VR-A
SOT89-3 SPQ: 1,000pcs/Reel	K3	A431K3R-A
		A431K3VR-A
TO-92 A:SPQ: 2,000pcs/Box B:SPQ: 1,000pcs/Bag	Z	A431ZA-A
		A431ZVA-A
		A431ZB-B
		A431ZVB-B
Note	V: Halogen free Package R: Tape & Reel A: Ammo Pack B: Bulk Output Voltage Tolerance: -A: 0.5% -B: 1%	
AiT provides all RoHS products		

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.

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°C, 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 _{θJA} , Thermal Resistance from Junction to Ambient	SOT89-3	250°C/W
	TO-92	162°C/W
T _{OPR} , Operating Temperature Range	-25°C~+85°C	
T _J , Junction Temperature	150°C	
T _{STG} , Storage Temperature Range	-65°C~ +150°C	

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

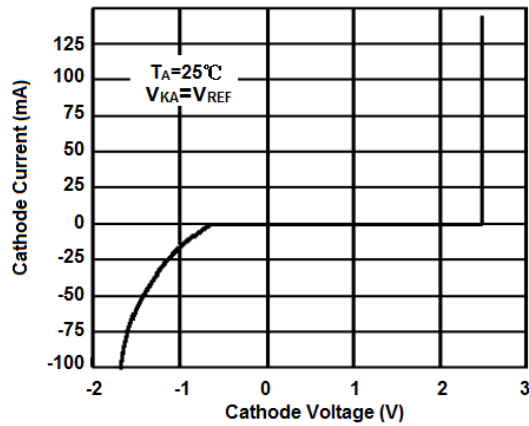
$T_A=25^{\circ}\text{C}$

Parameter	Symbol	Conditions		Min	Typ.	Max	Unit
Reference Input Voltage	V _{REF}	V _{KA} =V _{REF} , I _{KA} =10mA	0.5%	2.487	2.50	2.513	V
			1%	2.475	2.50	2.525	
Deviation of Reference Input Voltage Over Temperature	ΔV _{REF} / ΔT	V _{KA} =V _{REF} , I _{KA} =10mA -25°C ≤ T _A ≤ +85°C		-	4.5	17	mV
Ratio of Change in Reference Input Voltage to the change in Cathode Voltage	ΔV _{REF} / ΔV _{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	ΔI _{REF} / ΔT	I _{KA} =10mA, R ₁ =10kΩ R ₂ =∞ -25°C ≤ T _A ≤ +85°C		-	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

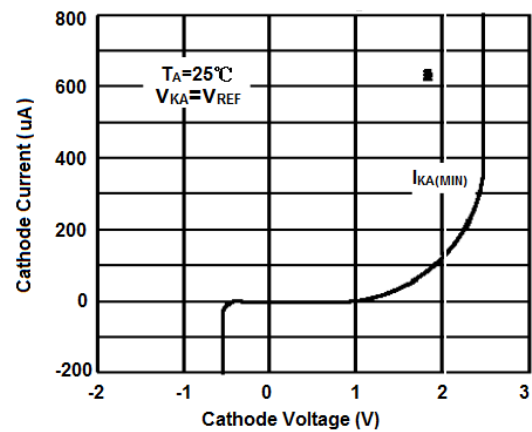


TYPICAL PERFORMANCE CHARACTERISTICS

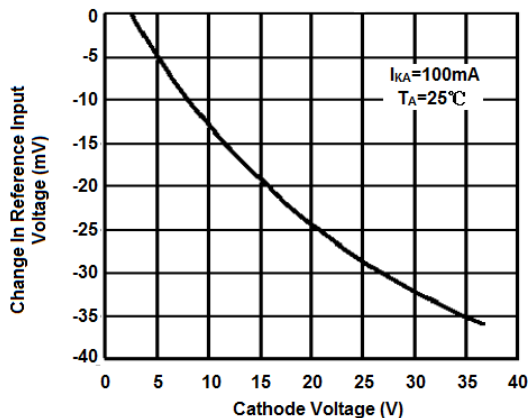
1. Cathode Current vs. Cathode Voltage



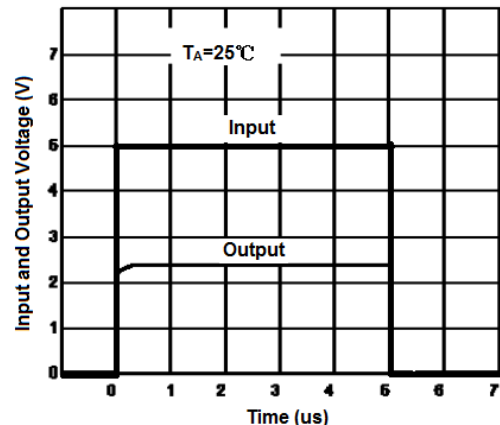
2. Cathode Current vs. Cathode Voltage



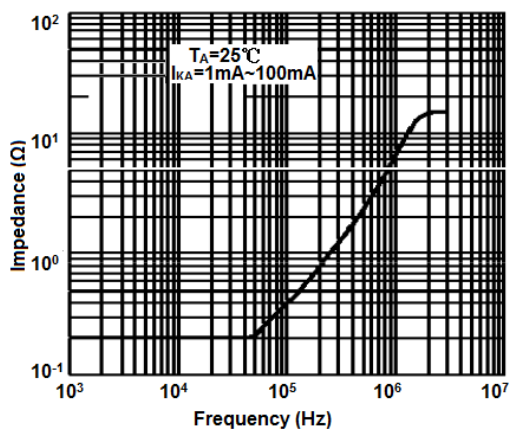
3. Change in Reference input voltage vs. Cathode Voltage



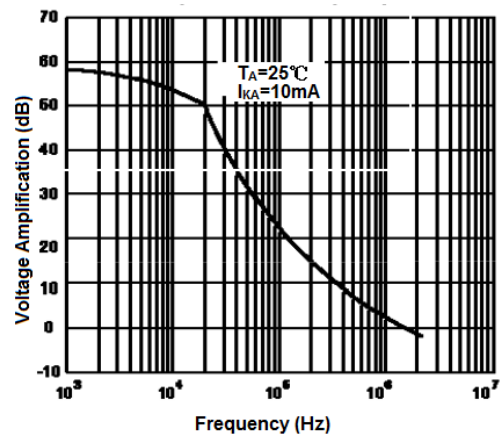
4. Pulse Response



5. Dynamic Impedance vs. Frequency



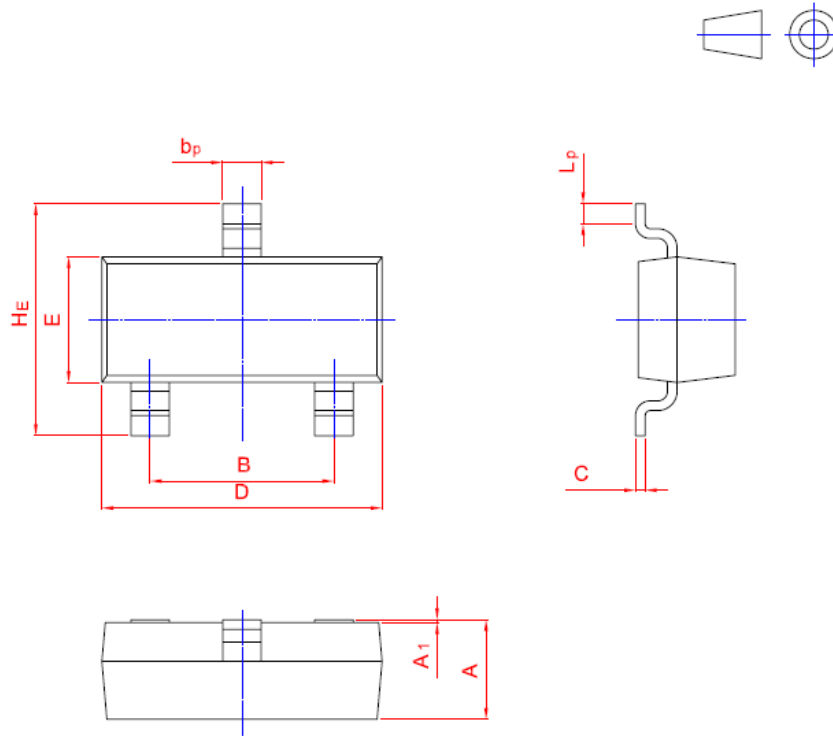
6. Small Signal Voltage Amplification vs. Frequency





PACKAGE INFORMATION

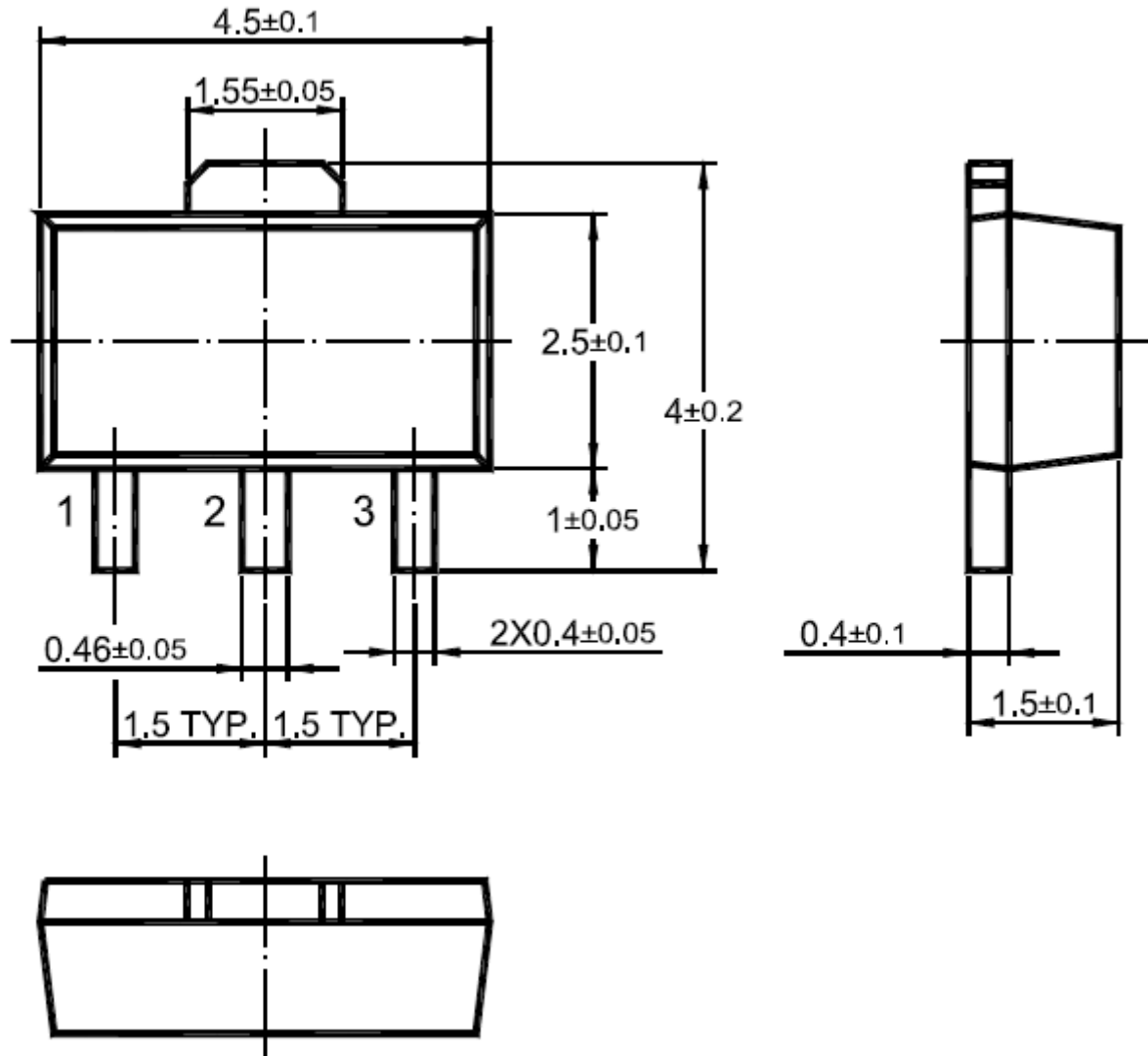
Dimension in SOT-23 Package (Unit: mm)



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

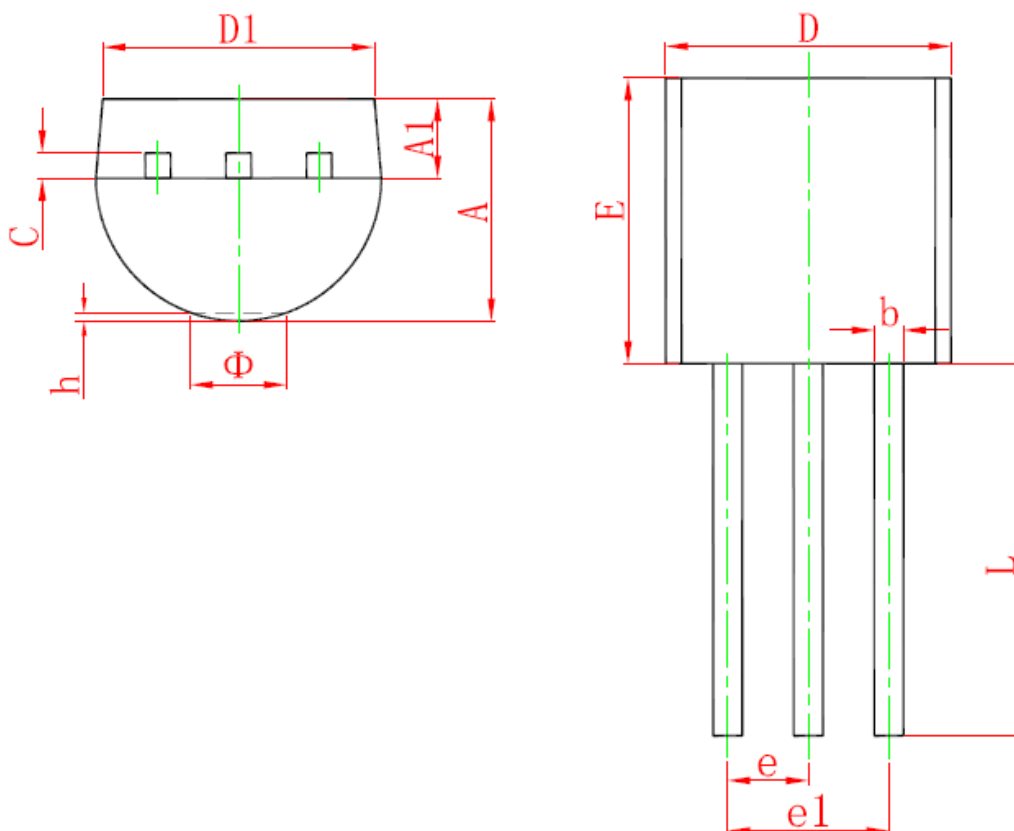


Dimension in SOT89-3 Package (Unit: mm)





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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