

## DESCRIPTION

The JD432/JD432SWD is a three-terminal adjustable regulator with a guaranteed thermal stability over applicable temperature ranges.

The output voltage may be set to any value between VREF (approximately 1.24V) and 18V with two external resistors. It provides very wide applications, including shunt regulator, series regulator, switching regulator, voltage reference and others.

## Features

- Precise Reference Voltage to 1.24V
- The JD432/JD432SWD precision reference is offered in two voltage tolerance: 0.5% and 1.0%.
- Fast turn-on response
- Sink current capability 55uA to 100mA
- 0.05Ω Typical Output Impedance

## Application

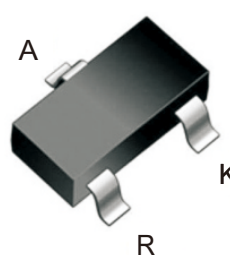
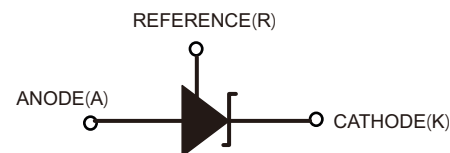
- Shunt regulator
- High-current shunt regulator
- Precision current limiter

## Absolute Maximum Ratings (Note 1)

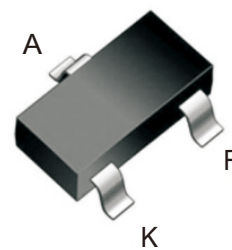
Symbol	Parameter		Rating	Unit
$V_{KA}$	Cathode Voltage		20	V
$I_{KA}$	Cathode Current Range (Continuous)		-100 to 100	mA
$I_{REF}$	Reference Input Current Range		10	mA
$P_D$	Power Dissipation		370	mW
$\theta_{JA}$	Thermal Resistance (Junction to Ambient)	SOT-23	380	°C/W
$T_J$	Junction Temperature		+150	°C
$T_{STG}$	Storage Temperature Range		-65 to +150	°C

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

## SOT-23



JD432WD



JD432SWD



## Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
$V_{KA}$	Cathode Voltage	$V_{REF}$	18	V
$I_{KA}$	Cathode Current	0.1	100	mA
$T_A$	Operating Ambient Temperature Range	-40	+125	°C

## Electrical Characteristics (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit			
$V_{REF}$	Reference Voltage	$V_{KA} = V_{REF}, I_{KA} = 10\text{mA}$		1.234	1.240	1.246	V		
								0.5%	JD432A
									JD432SA
								1%	JD432B
		JD432SB	1.228	1.240	1.252				
$\Delta V_{REF}$	Deviation of Reference Voltage Over Full Temperature Range	$V_{KA} = V_{REF}$ $I_{KA} = 10\text{mA}$	0 to 70 °C		2	10	mV		
			-20 to 125 °C		3	15			
			-40 to 125 °C		8	25			
$\frac{\Delta V_{REF}}{\Delta V_{KA}}$	Ratio of Change in Reference Voltage to the Change in Cathode Voltage	$I_{KA} = 10\text{mA}$ $\Delta V_{KA} = V_{REF}$ to 16V		-0.5	-1.5	mV/V			
$I_{REF}$	Reference Current	$I_{KA} = 10\text{mA}, R1 = 10\text{k}\Omega,$ $R2 = \infty$		1.5	0.4	$\mu\text{A}$			
$\Delta I_{REF}$	Deviation of Reference Current Over Full Temperature Range	$I_{KA} = 10\text{mA}, R1 = 10\text{k}\Omega$ $R2 = \infty, T = -20$ to 85 °C		0.1	0.4	$\mu\text{A}$			
$I_{KA}$ (Min)	Minimum Cathode Current for Regulation	$V_{KA} = V_{REF}$		55	80	$\mu\text{A}$			
$I_{KA}$ (Off)	Off-state Cathode Current	$V_{KA} = 18\text{V}, V_{REF} = 0$		0.04	0.50	$\mu\text{A}$			
		$V_{KA} = 6\text{V}, V_{REF} = 0$		0.01	0.05				
$Z_{KA}$	Dynamic Impedance	$V_{KA} = V_{REF}, I_{KA} = 1$ to 100mA, $f \leq 1.0\text{kHz}$		0.05	0.15	$\Omega$			



FIGURE 1. TEST CIRCUIT FOR  $V_{KA} = V_{REF}$

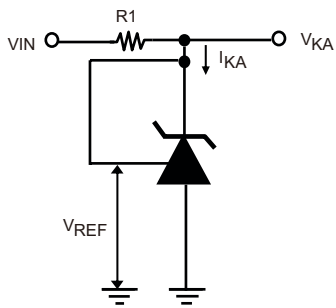


FIGURE 2. TEST CIRCUIT FOR  $V_{KA} > V_{REF}$

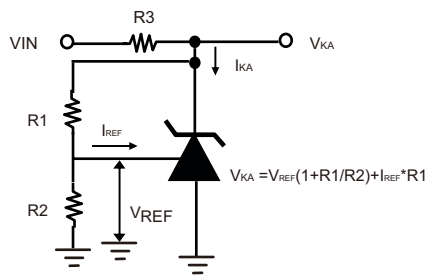
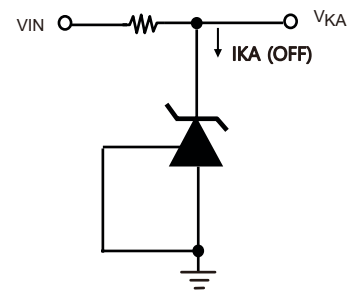


FIGURE 3. TEST CIRCUIT FOR  $I_{KA} \text{ (OFF)}$





Typical Characteristics

Fig.1 Cathode Current Vs Cathode Voltage

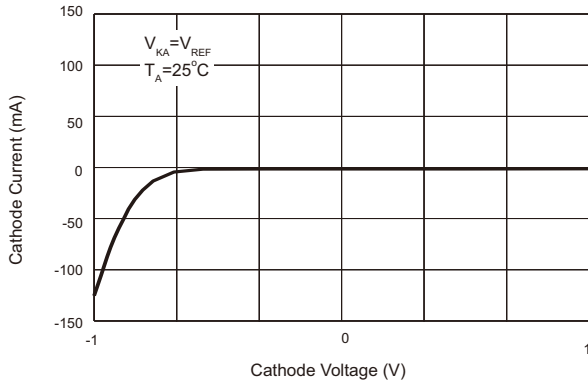


Fig.2 Cathode Current Vs Cathode Voltage

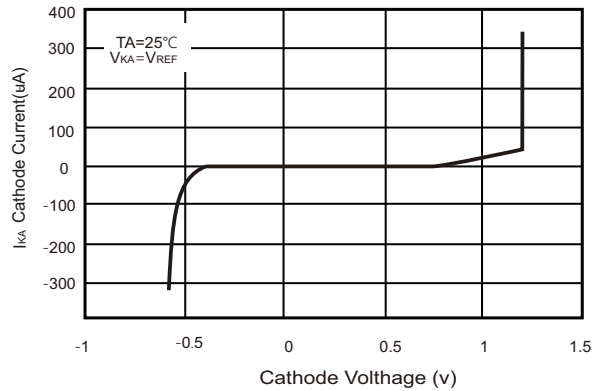


Fig.3 Reference Voltage vs. Ambient Temperature

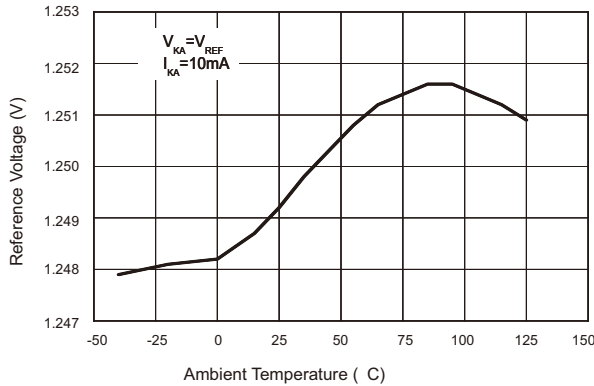


Fig.4 Pulse Response of Input and Output Voltage

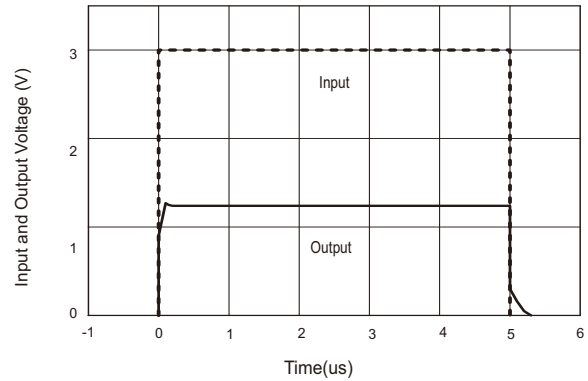


Fig.5 Dynamic Impedance vs. Frequency

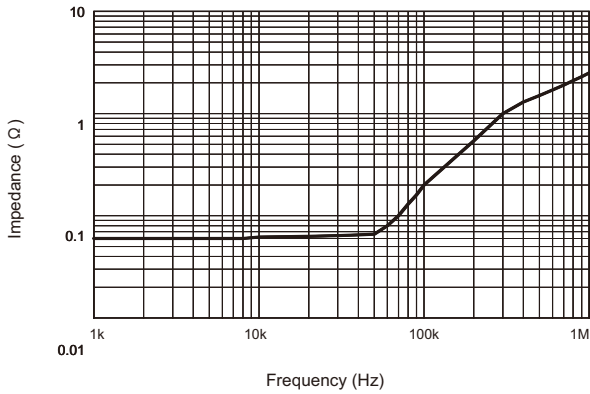


Fig.6 Small Signal Voltage Gain vs. Frequency

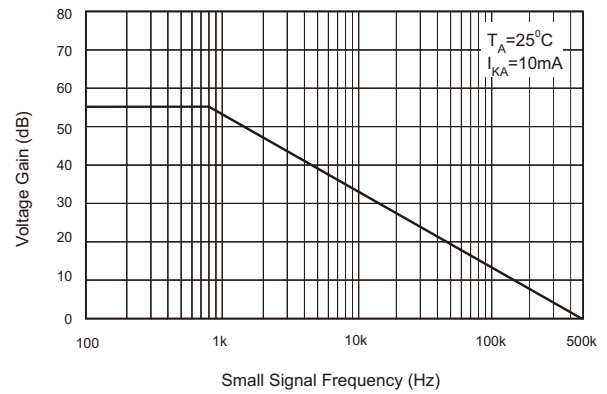


Fig.7 Ratio of Delta Reference Voltage to the Ratio of Delta Cathode Voltage vs. Ambient Temperature

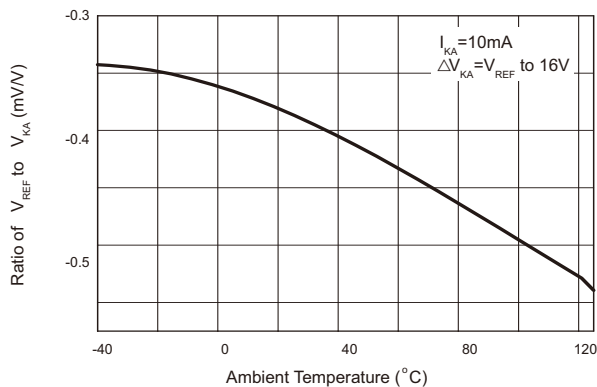
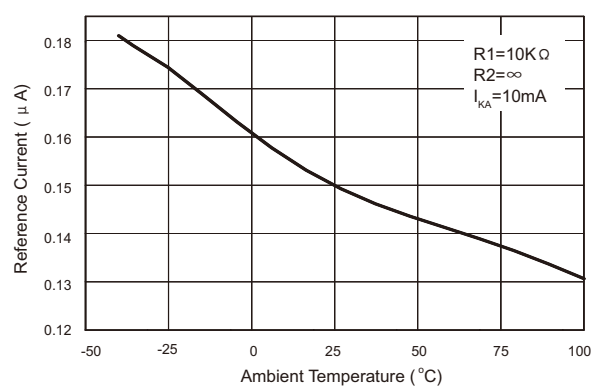
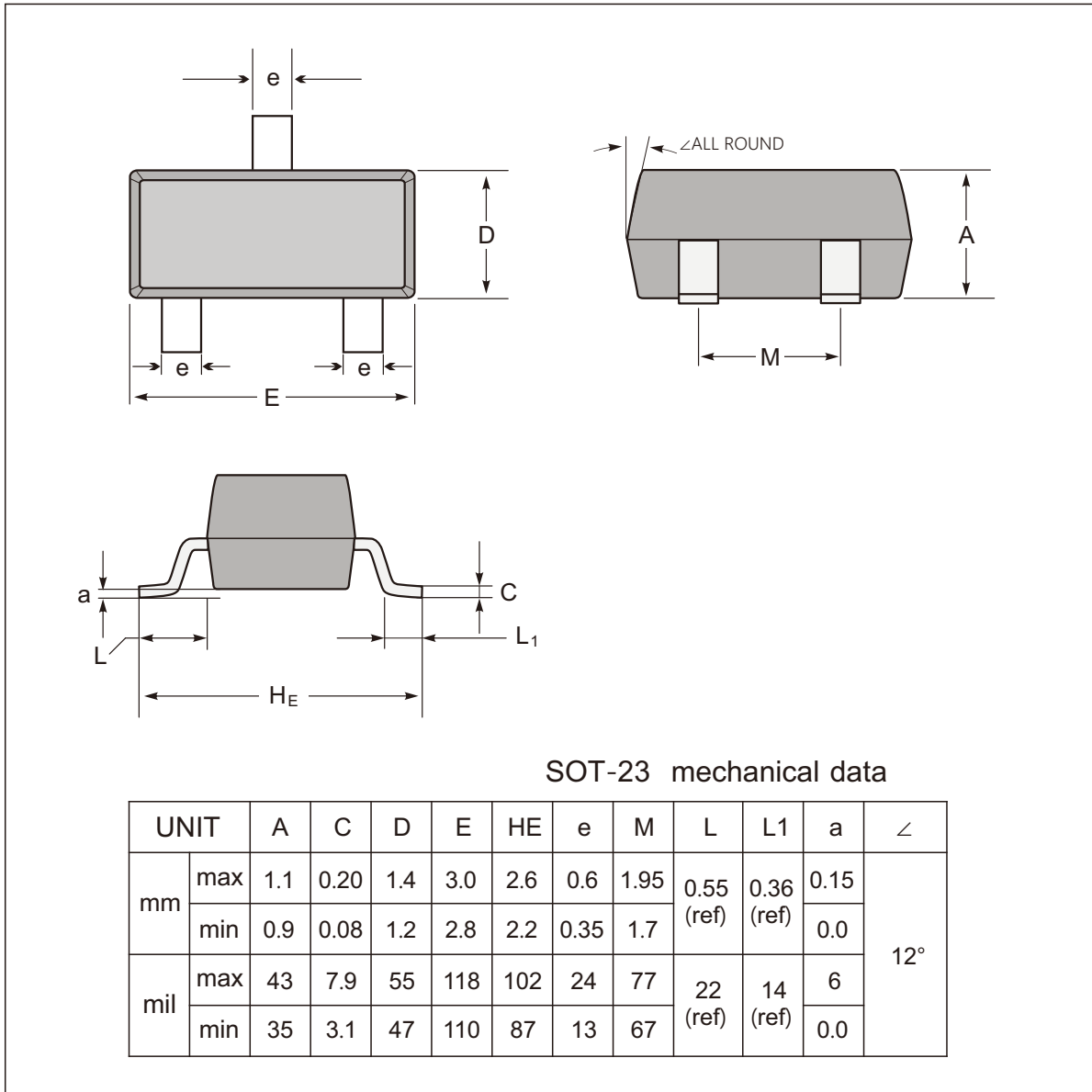


Fig.8 Reference Current vs. Ambient Temperature

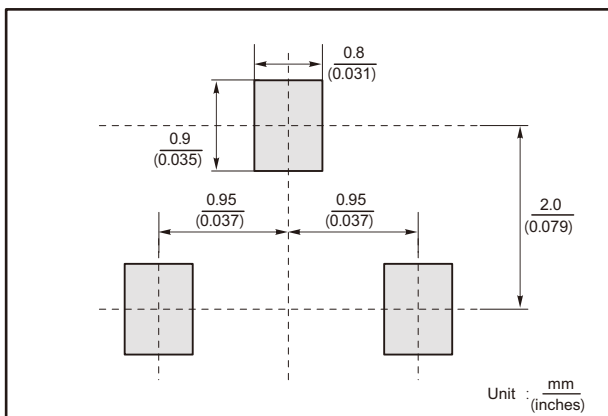




### SOT-23 Package Outline Dimensions



#### The recommended mounting pad size



#### Marking

Number Type	Marking code
JD432AWD	J432A
JD432BWD	J432B
JD432SAWD	432JA
JD432SBWD	432JB



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