

**TO-92 Encapsulate Adjustable Reference Source**

**CJ432** Adjustable Accurate Reference Source

**DEVICE DESCRIPTION**

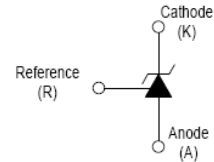
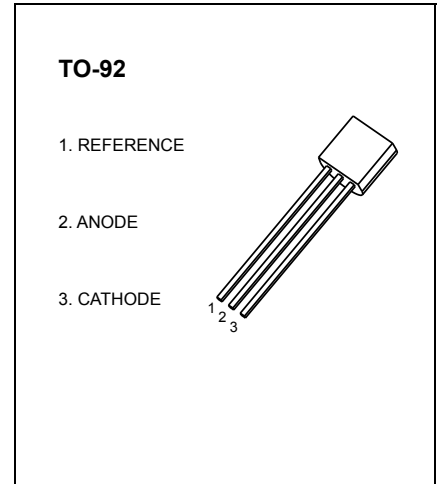
The CJ432 is a three-terminal Shunt Voltage Reference providing a highly accuracy 1.24V. The CJ432 thermal stability and wide operating current, makes is sritable for all variety of applications that are looking for a low cost solution with high performance.

**FEATURES**

- Low dynamic output impedance
- The effective temperature compensation in the working range of full temperature
- Low output noise voltage
- Fast on -state response
- Sink current capability of 0.1mA to100mA

**APPLICATION**

- Shunt Regulator
- High-Current Shunt Regulator
- Precision Current Limiter



**ABSOLUTE MAXIMUM RATINGS (Operating temperature rangeapplies unless otherwise specified)**

Parameter	Symbol	Value	Unit
Cathode Voltage	$V_{KA}$	18	V
Cathode Current Range (continuous)	$I_{KA}$	100	mA
Reference Input Current Range	$I_{ref}$	6	$\mu A$
Power Dissipation	$P_D$	500	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	250	$^{\circ}C/W$
Operating Temperature	$T_{opr}$	0~+70	$^{\circ}C$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{stg}$	-65~+150	$^{\circ}C$

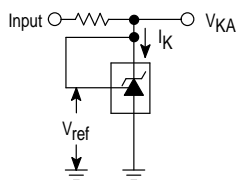
**ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$  unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Reference input voltage (Fig 1)	$V_{\text{ref}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$	1.2214		1.2586	V
Deviation of reference voltage over full temperature range (Fig 1)	$\Delta V_{\text{ref(DEV)}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=10\text{mA}$ $0^{\circ}\text{C}\leq T_a\leq 70^{\circ}\text{C}$			16	mV
Ratio of change in reference input voltage to the change in cathode voltage (Fig 2)	$\Delta V_{\text{ref}}/\Delta V_{\text{KA}}$	$I_{\text{KA}}=10\text{mA}$ , $\Delta V_{\text{KA}}=1.25\text{V}\sim 15\text{V}$			2.4	mV/V
Deviation of reference input current over full temperature range (Fig 2)	$\Delta I_{\text{ref}}/\Delta T$	$I_{\text{KA}}=10\text{mA}$ , $R_1=10\text{K}\Omega$ , $R_2=\infty$ , $0^{\circ}\text{C}\leq T_a\leq 70^{\circ}\text{C}$			0.6	$\mu\text{A}$
Minimum cathode current for regulation (Fig 1)	$I_{\text{KA(min)}}$	$V_{\text{KA}}=V_{\text{REF}}$			0.1	mA
Off-state cathode current (Fig 3)	$I_{\text{off}}$	$V_{\text{KA}}=15\text{V}, V_{\text{REF}}=0$			0.5	$\mu\text{A}$
Dynamic impedance	$Z_{\text{KA}}$	$V_{\text{KA}}=V_{\text{REF}}, I_{\text{KA}}=0.1\sim 20\text{mA}$ , $f\leq 1.0\text{kHz}$			0.5	$\Omega$

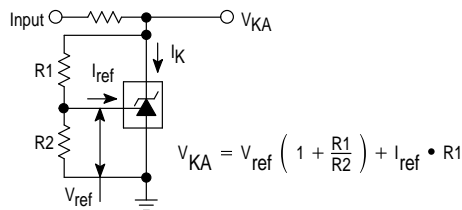
**CLASSIFICATION of  $V_{\text{ref}}$**

Rank	1%	1.5%
Range	1.2276~1.2524	1.2214~1.2586

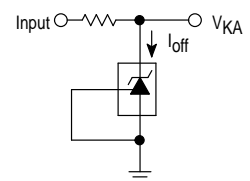
**Figure 1. Test Circuit for  $V_{\text{KA}} = V_{\text{ref}}$**



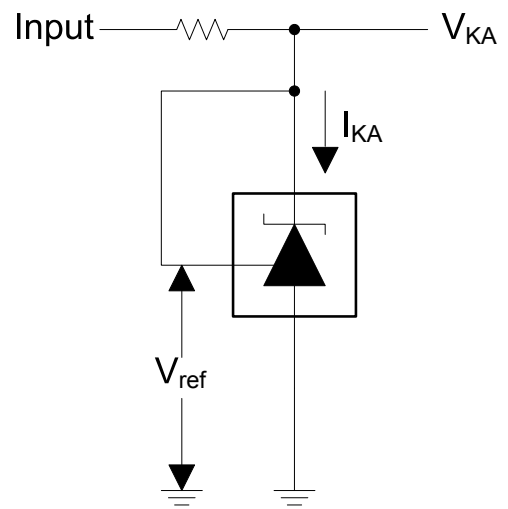
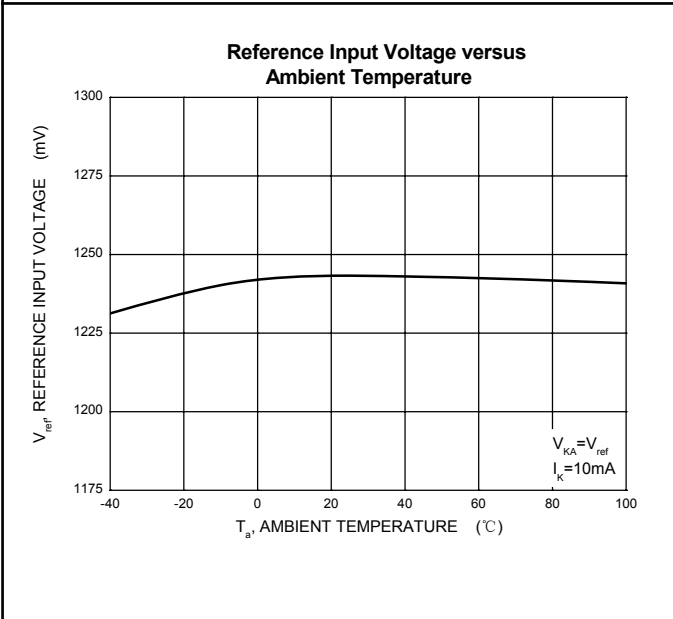
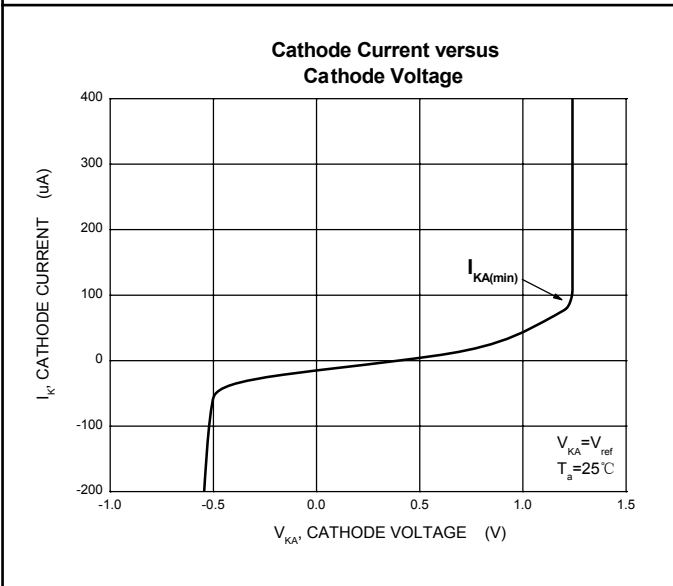
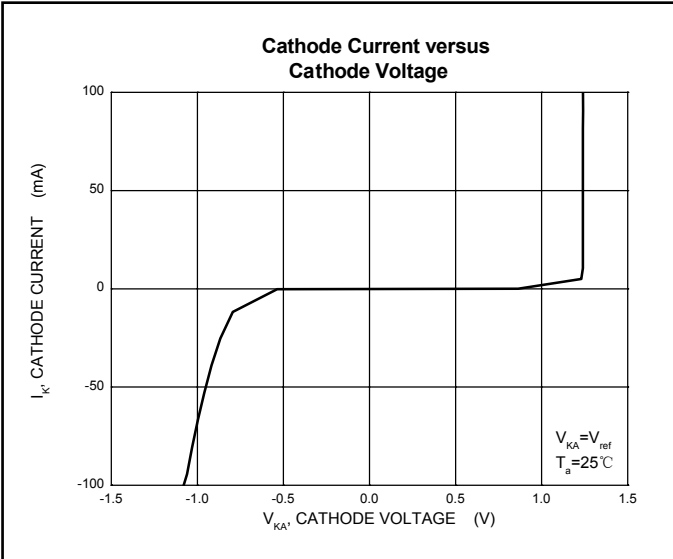
**Figure 2. Test Circuit for  $V_{\text{KA}} > V_{\text{ref}}$**



**Figure 3. Test Circuit for  $I_{\text{off}}$**



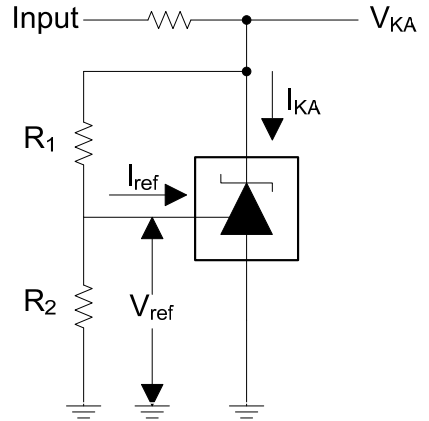
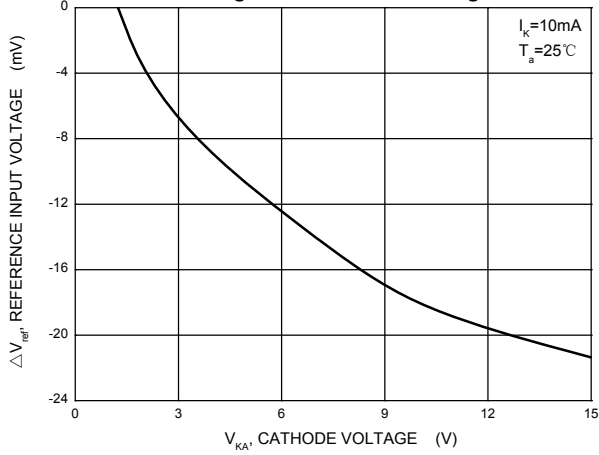
# Typical Characteristics



Test Circuit for  $V_{KA} = V_{ref}$

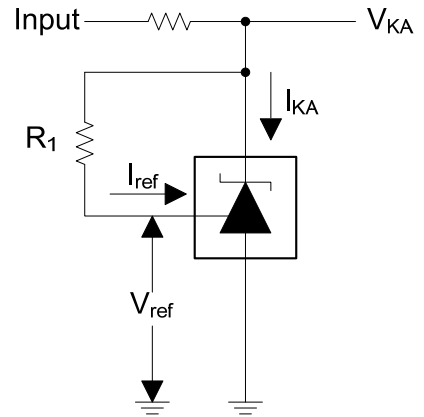
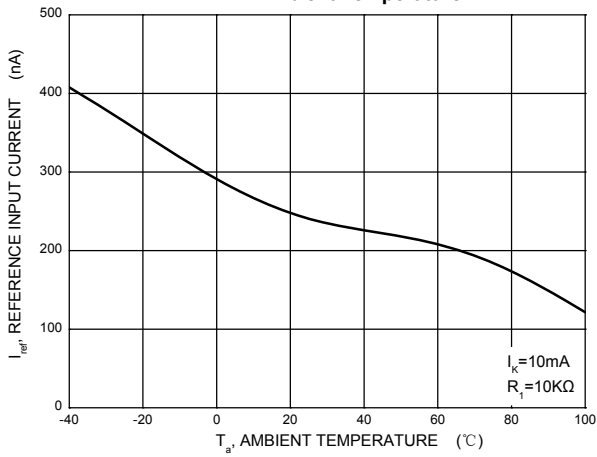
# Typical Characteristics

**Change in Reference Input Voltage versus Cathode Voltage**



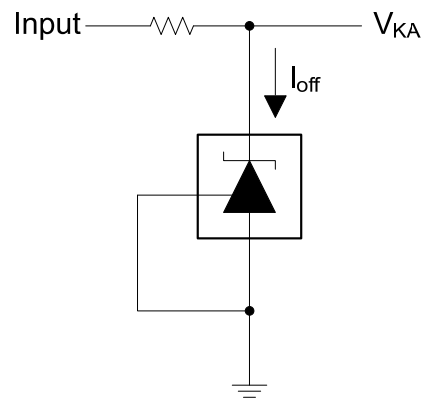
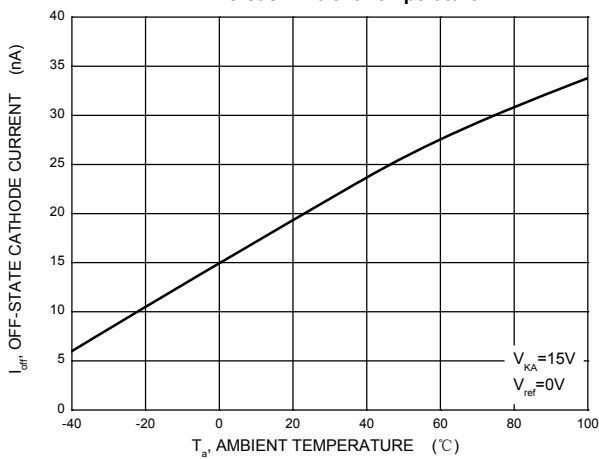
Test Circuit for  $V_{KA} = V_{ref}(1 + R_1/R_2) + R_1 \cdot I_{ref}$

**Reference Input Current versus Ambient Temperature**



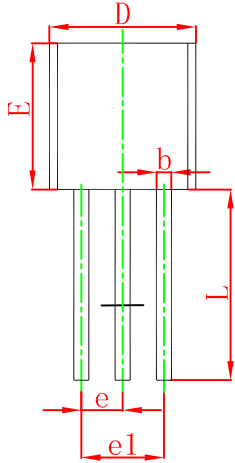
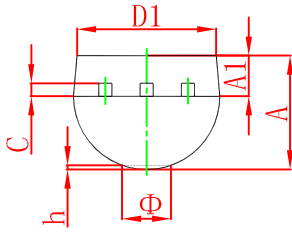
Test Circuit for I<sub>ref</sub>

**Off-State Cathode Current versus Ambient Temperature**



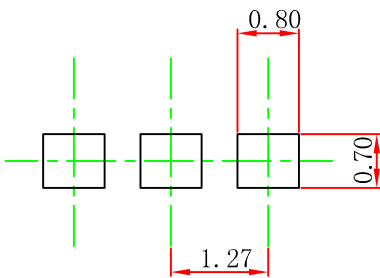
Test Circuit for I<sub>off</sub>

## TO-92 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In 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

## TO-92 Suggested Pad Layout



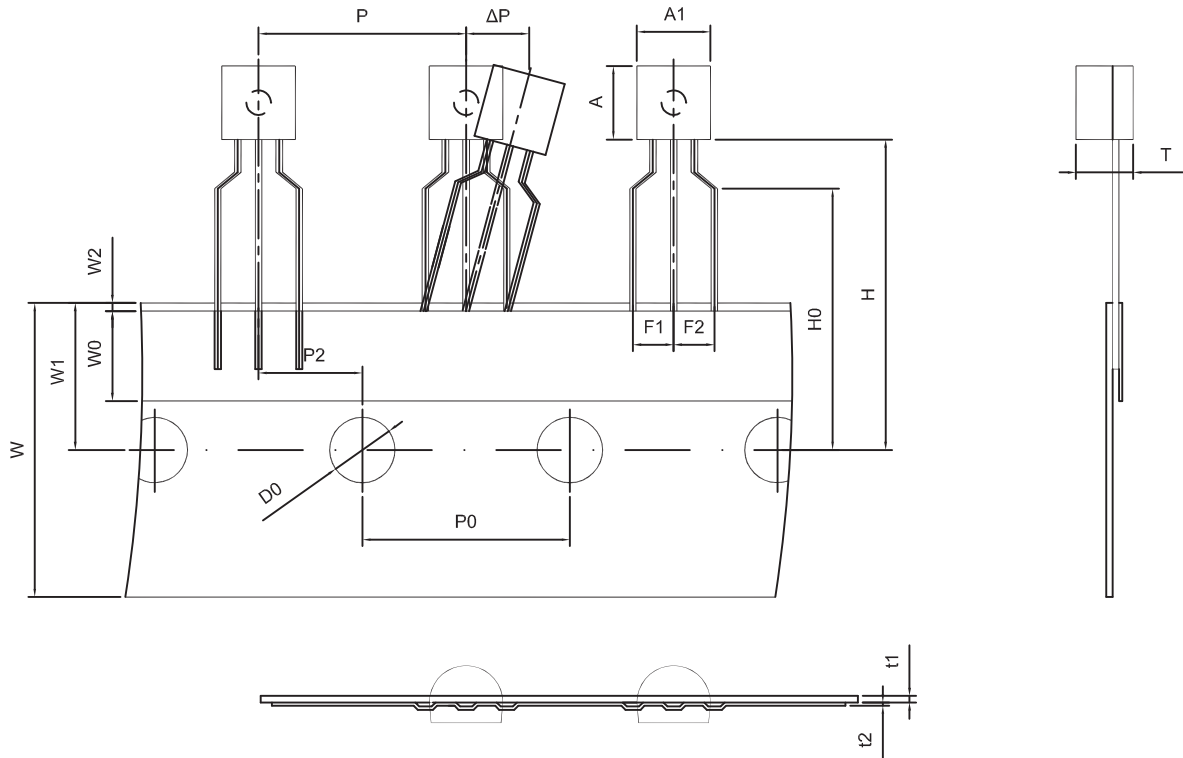
### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

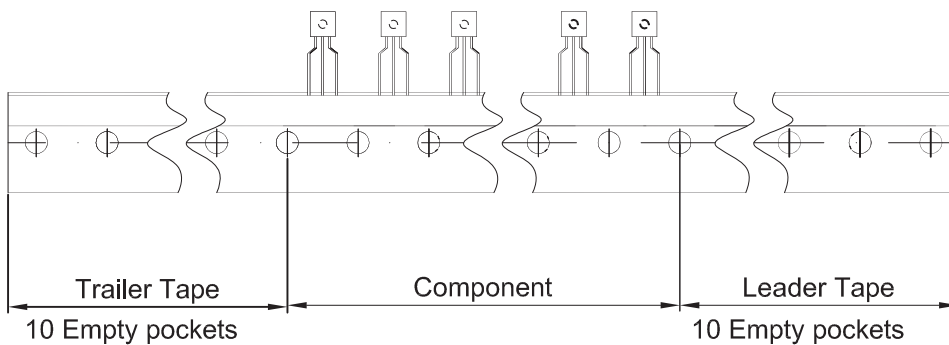
### NOTICE

JCET reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JCET does not assume any liability arising out of the application or use of any product described herein.

TO-92 PACKAGE TAPEING DIMENSION



Dimiensions are in millimeter								
A1	A	T	P	P0	P2	F1	F2	W
4.5	4.5	3.5	12.7	12.7	6.35	2.5	2.5	18.0
W0	W1	W2	H	H0	D0	t1	t2	ΔP
6.0	9.0	1.0 MAX.	19.0	16.0	4.0	0.4	0.2	0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92	2000 pcs	333×162×43	20,000 pcs	350×340×250