DESCRIPTION

The RS432 series are three-terminal adjustable regulators with guaranteed thermal stability over applicable temperature ranges. The output voltage may be set to any value between V_{REF} (approximately 1.24 volts) and 18 volts with two external resistors. These devices have a typical dynamic output impedance of 0.2Ω. Active output circuitry provides a very sharp turn-on characteristic, making these devices excellent replacement for zener diodes in many applications. The RS432 is available in a small SOT-23 and TO-92 packages.

FEATURES

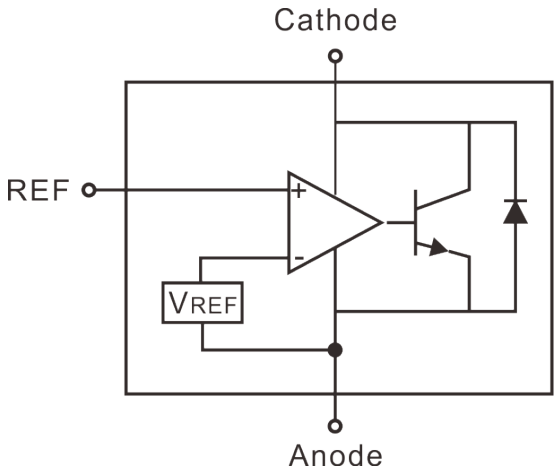
- Programmable precise output voltage from 1.24V to 16V
- High stability under capacitive load
- Low dynamic output resistance: 0.2Ω typical
- Fast turn on response
- Low output noise
- Wide operating range of -40 to 125 °C
- Low equivalent full-range temperature coefficient with 50ppm/ °C typical
- SOT-23 and TO-92 packages
- RoHS compliant and 100% lead (Pb)-free

APPLICATIONS

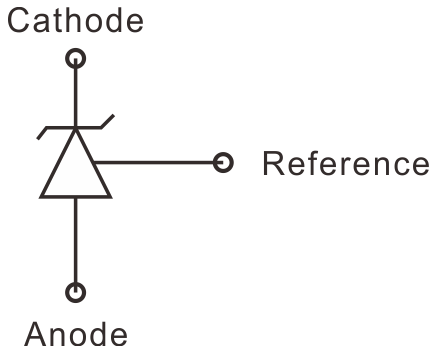
- Opto-coupler linearization
- Linear regulators
- Improved zener
- Variable reference

BLOCK DIAGRAM

FUNCTIONAL BLOCK DIAGRAM



SYMBOL



APPLICATION CIRCUITS

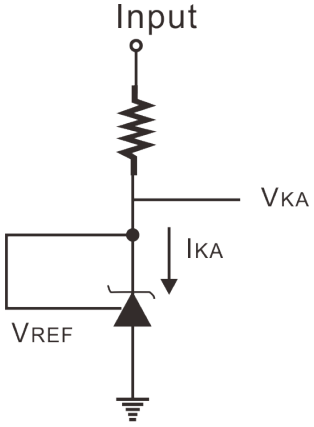
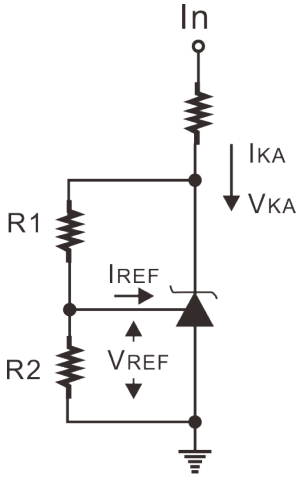


Fig 1. Test Circuit for $V_{KA}= V_{REF}$



Note: $V_{KA}=V_{REF}(1+R1/R2)+I_{REF}xR1$

Fig 2. Test Circuit for $V_{KA} > V_{REF}$

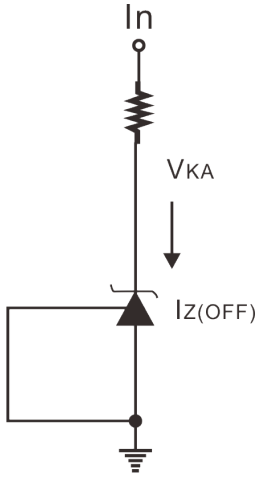


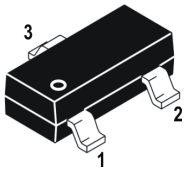
Fig 3. Test Circuit for Off-State Current

ORDERING INFORMATION

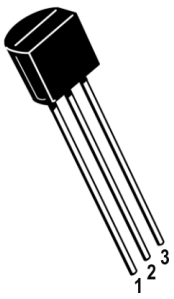
Device	Device Code
RS432 X YY Z	**X** is Reference voltage precision designator: B: 1.24V ±1.0% C: 1.24V ±0.5% **YY** is package designator : N: SOT-23 A: TO-92 **Z** is Lead Free designator : P: Commercial standard, Lead (Pb) Free and Phosphorous (P) Free package

PIN ASSIGNMENTS

SOT-23



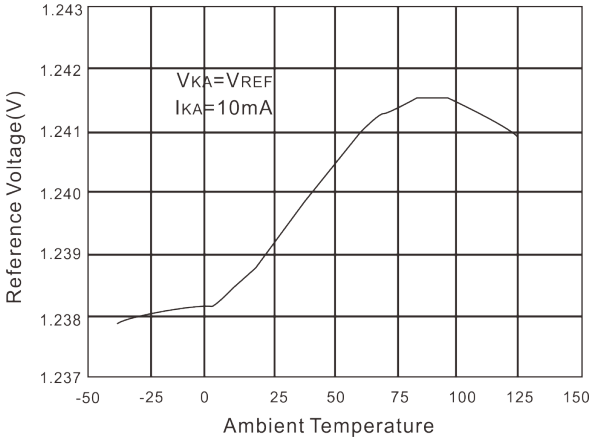
TO-92

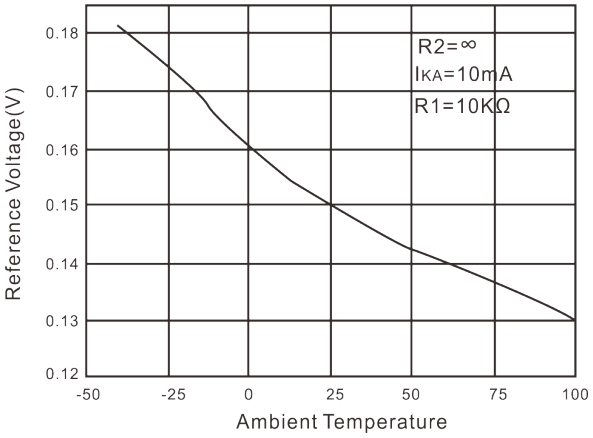


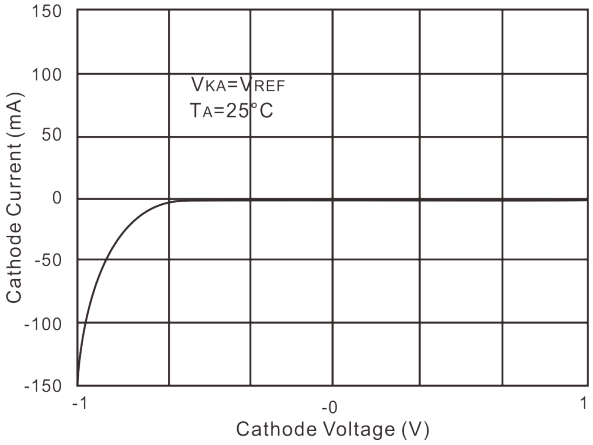
PIN DESCRIPTION

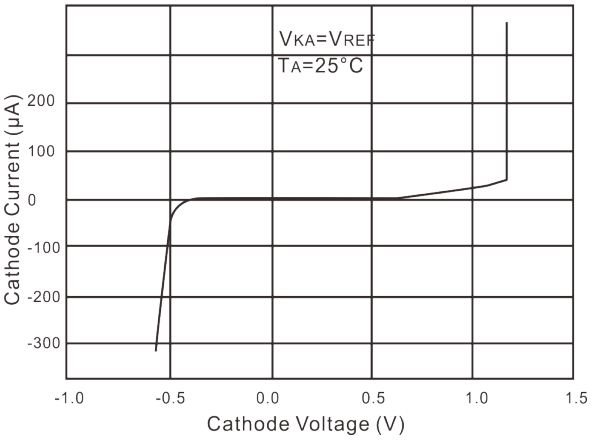
Description	Pin No.	
	SOT-23	TO92
REFERENCE	1	1
ANODE	3	2
CATHODE	2	3

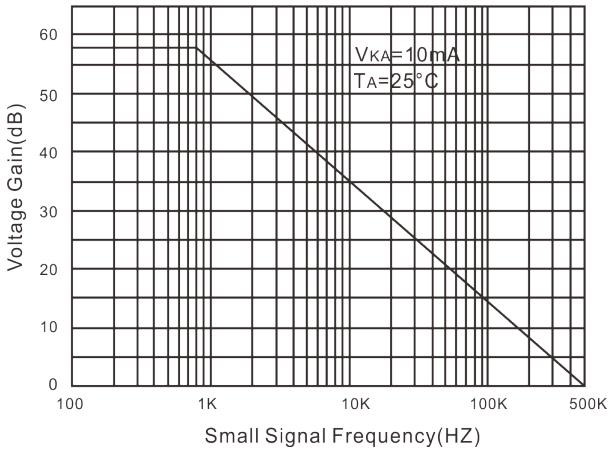
TYPICAL PERFORMANCE CHARACTERISTICS

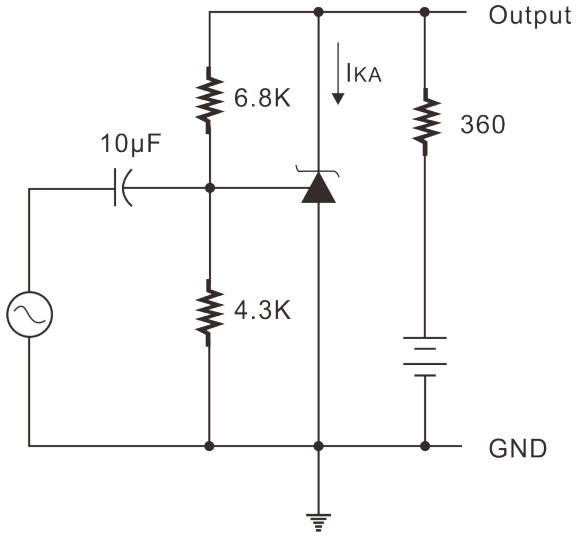


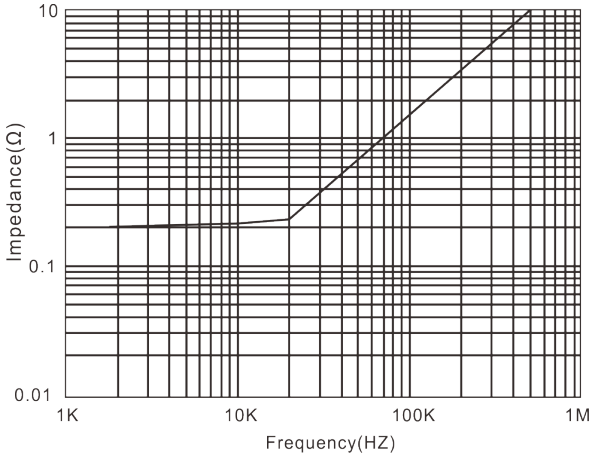


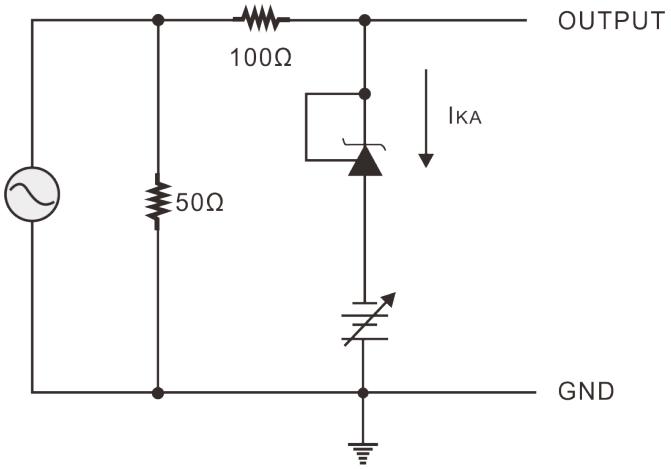


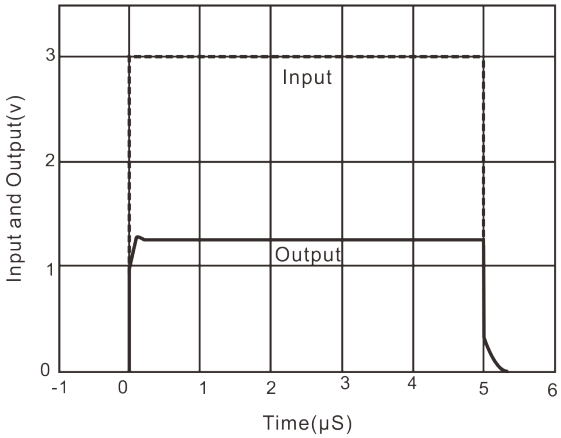


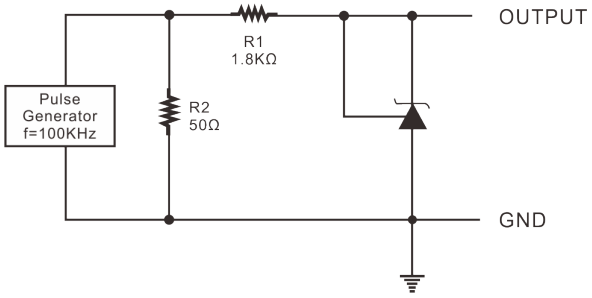





10
1
0.1
0.01
Impedance(Ω)
1K
10K
100K
1M
Frequency(HZ)


100Ω
OUTPUT
IKA
50Ω
GND


3
2
1
0
Input
Output
Input and Output(v)
-1
0
1
2
3
4
5
6
Time(μS)


R1
1.8KΩ
OUTPUT
Pulse
Generator
f=100KHz
R2
50Ω
GND

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Cathode Voltage		V_{KA}	18	V
Cathode Current Range (Continuous)		I_K	20	mA
Reference Input Current Range		I_{REF}	10	mA
Power Dissipation	SOT-23	P_D	770	mW
	TO-92		370	
Operating Temperature Range (Max.)		T_{OPR}	-40 to 150	°C
Storage Temperature Range		T_{STG}	-40 to 150	°C

OPERATING CONDITION

Parameter	Symbol	Min	Max	Unit
Cathode Voltage	V_{KA}	V_{REF}	16	V
Cathode Current Range (Continuous)	I_K	0.1	20	mA
Operating Ambient Temperature Range	T_{OPR}	-40	125	°C

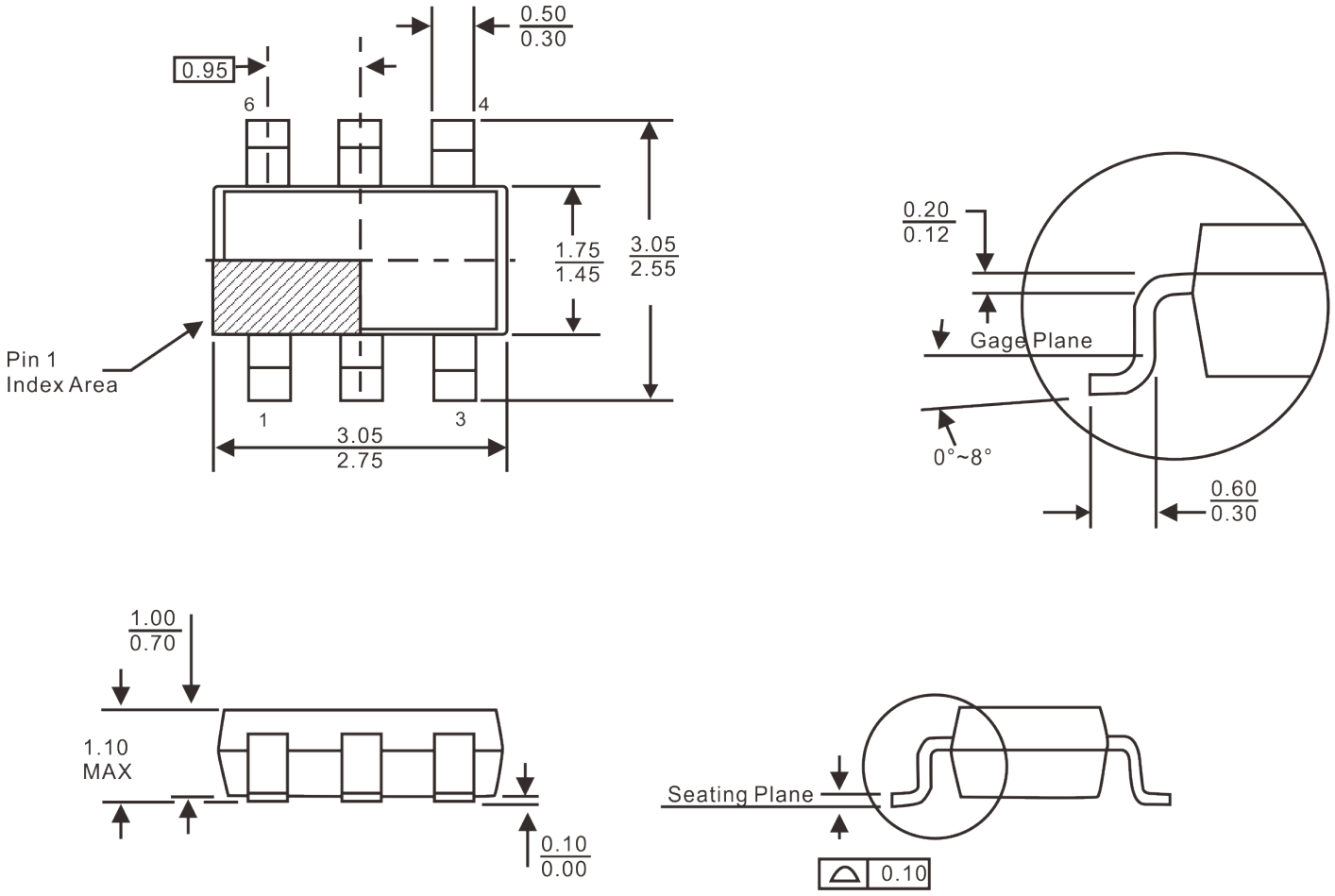
ELECTRICAL CHARACTERISTICS

(T_A=25℃, unless otherwise specified)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Reference Input Voltage (Fig1)	1.24V ±1.0%	V_{REF}	V_K=V_{REF}, I_K=10mA	1.228	1.24	1.252	V
	1.24V ±0.5%	V_{REF}		1.234	1.24	1.246	
Ratio of Change in Reference Input Voltage to the Change in Cathode Voltage (Fig2)		$\Delta V_{REF}/\Delta V_K$	I_K=10mA, ΔV_K=18V to V_{REF}	-	1.0	2.7	mV/V
Reference Input Current (Fig2)		I_{REF}	I_K=10mA, R1=10KΩ, R2=∞	-	0.15	0.5	μA
Minimum Cathode Current for Regulation (Fig1)		$I_{K(MIN)}$	V_K=V_{REF}	-	20	80	μA
Off-State Cathode Current (Fig3)		IK(off)	V_K=6V, V_{REF}=0	-	0.01	0.05	μA
			V_K=16V, V_{REF}=0		0.04	0.15	
Dynamic Output Impedance (Fig1)		Z_K	V_K=V_{REF}, f≤1KHz, I_K=100μA to 20mA	-	0.2	0.4	Ω

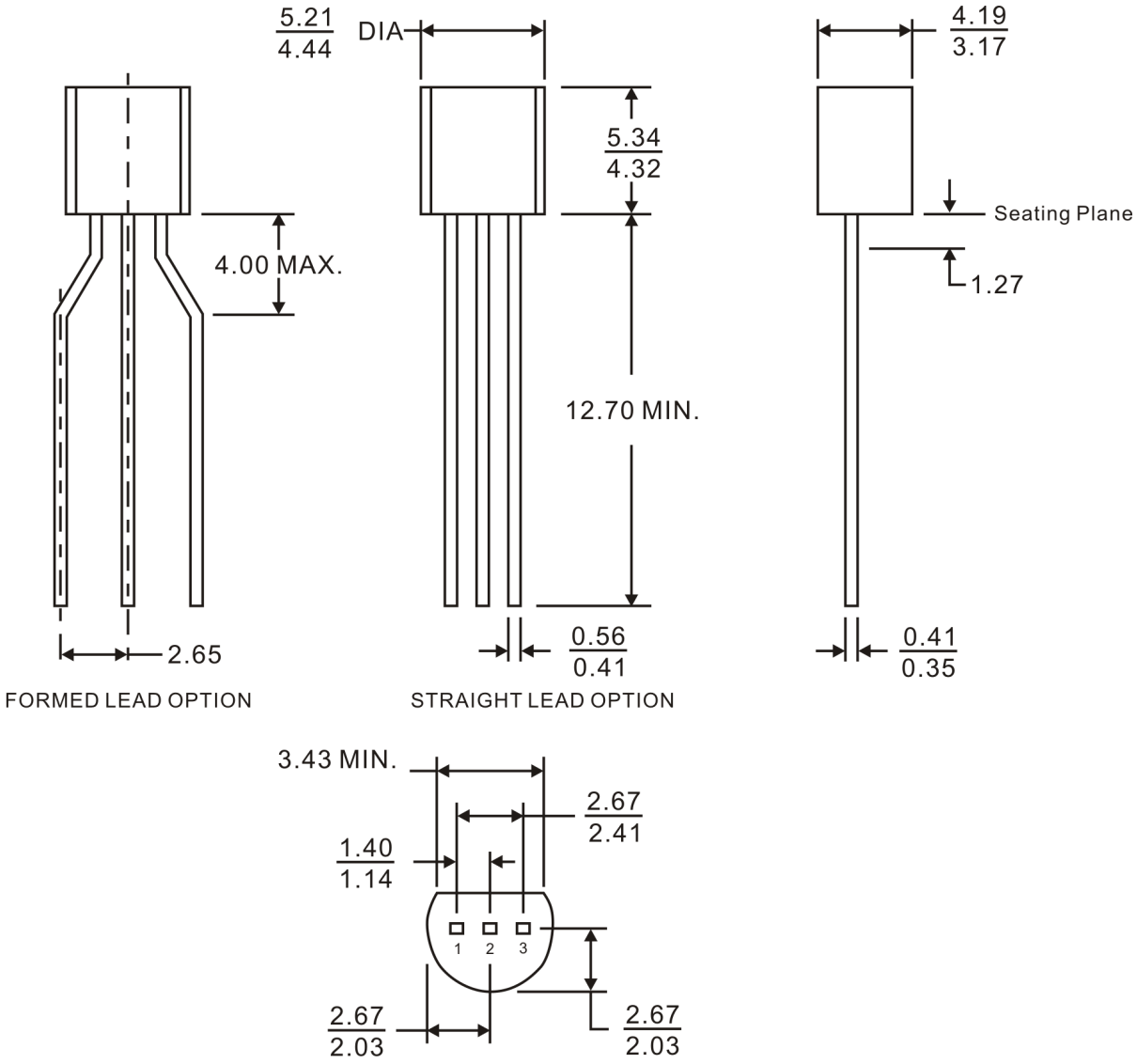
PACKAGE INFORMATION

6-PIN, SOT-23



Note: All dimensions are in millimeters.

3-PIN, TO-92



Notes:

1. Refer to JEDEC TO-226 AA.
2. All dimensions are in millimeter.

IMPORTANT NOTICE

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