

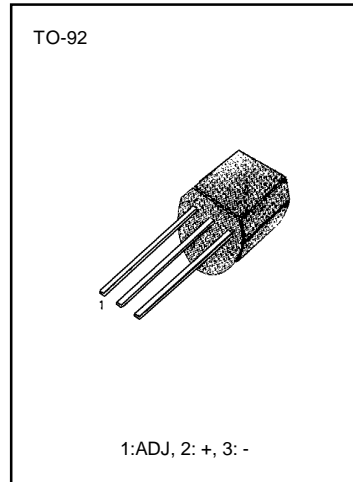
**PROGRAMMABLE SHUNT REGULATOR**

The KA336-5.0/B integrated circuits are precision 5.0V shunt regulators. The monolithic IC voltage references operate as a low temperature coefficient 5.0V zener with 0.6ohm dynamic impedance. A third terminal on the KA336-5.0/B allow the reference voltage and temperature coefficient to be trimmed easily.

The KA336-5.0/B are useful as a precision 5.0V low voltage references it convenient in obtaining a stable reference from low voltage supplies. Further, since the KA336-5.0/B operate as shunt regulators, they can be used as either a positive or negative voltage reference. The KA236 is characterized for operation from - 25°C to 85°C . and the KA336 from 0°C to 70°C .

**FEATURES**

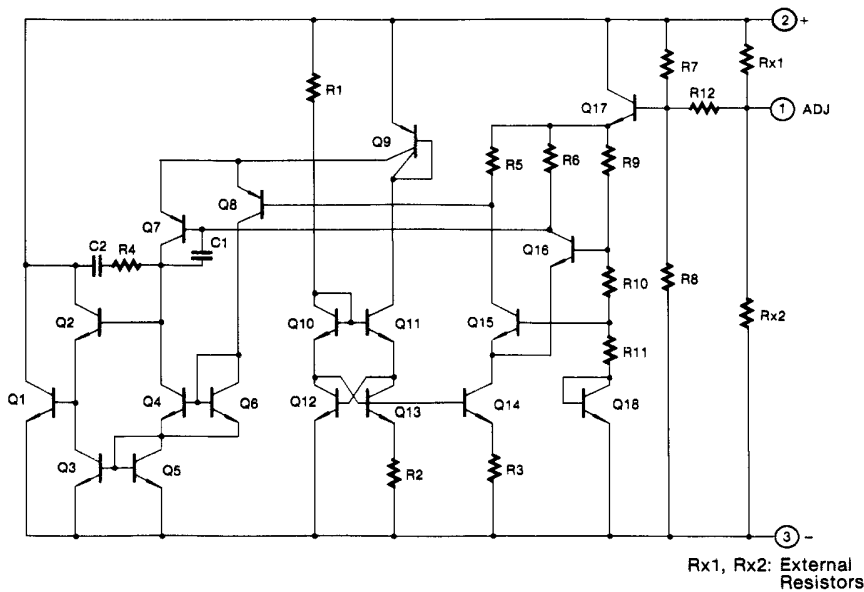
- Low temperature coefficient
- Adjustable 4V to 6V
- Wide operating range current of 400 μ A to 10mA
- Three lead transistor package (TO-92)
- 0.6 ohm dynamic impedance
- ± 1.0% initial tolerance available
- Guaranteed temperature stability
- Easily trimmed for minimum temperature drift
- Fast turn on



**ORDERING INFORMATION**

Device	Package	Operating Temperature
KA336-5.0	TO-92	0 ~ 70°C
KA336-5.0B		
KA236-5.0		-25 ~ +85°C

**SCHEMATIC DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS**

Characteristic	Symbol	Value	Unit
Reverse Current	$I_R$	15	mA
Forward current	$I_F$	10	mA
Operating Temperature Range KA336-5.0/B KA236-5.0	$T_{OPR}$	0 ~ +70 -25 ~ +85	°C
Storage Temperature Range	$T_{STG}$	-60 ~ +150	°C

**ELECTRICAL CHARACTERISTICS**

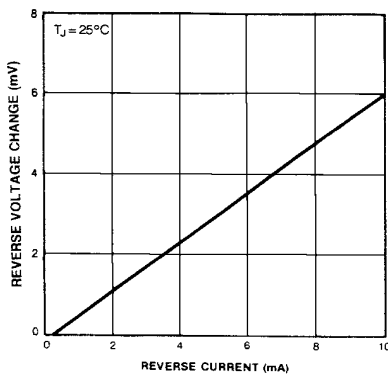
( $T_{MIN} \leq T_A \leq T_{MAX}$  unless otherwise specified)

Characteristic	Symbol	Test Conditions	KA336/236			KA336B			Unit
			Min	Typ	Max	Min	Typ	Max	
Reverse Breakdown Voltage	$V_R$	$T_A = 25^\circ\text{C}, I_R = 1\text{mA}$	4.8	5.0	5.2	4.9	5.0	5.1	V
Reverse Breakdown Change with Current	$\Delta V_R / \Delta I_R$	$T_A = 25^\circ\text{C}$ $600 \mu\text{A} \leq I_R \leq 10\text{mA}$	—	6	20	—	6	20	mV
Reverse Dynamic Impedance	$Z_D$	$T_A = 25^\circ\text{C}, I_R = 1\text{mA}$	—	0.6	2	—	0.6	2	$\Omega$
Temperature Stability	$ST_T$	$I_R = 1\text{mA}$ $T_{MIN} \leq T_A \leq T_{MAX}$	—	4	12	—	4	12	mV
Reverse Breakdown Change with Current	$\Delta V_R / \Delta I_R$	$600 \mu\text{A} \leq I_R \leq 10\text{mA}$ $T_{MIN} \leq T_A \leq T_{MAX}$	—	6	24	—	6	24	mV
Reverse Dynamic Impedance	$Z_D$	$I_R = 1\text{mA}$ $T_{MIN} \leq T_A \leq T_{MAX}$	—	0.8	2.5	—	0.8	2.5	$\Omega$
Long Term Stability	ST	$I_R = 1\text{mA}$ $T_{MIN} \leq T_A \leq T_{MAX}$	—	20	—	—	20	—	ppm

\* KA236:  $T_{MIN} = -25^\circ\text{C}, T_{MAX} = 85^\circ\text{C}$   
 KA336:  $T_{MIN} = 0^\circ\text{C}, T_{MAX} = 70^\circ\text{C}$

**TYPICAL PERFORMANCE CHARACTERISTICS**

Fig. 1 REVERSE VOLTAGE CHANGE



TYPICAL PERFORMANCE CHARACTERISTICS

Fig. 2 REVERSE CHARACTERISTICS

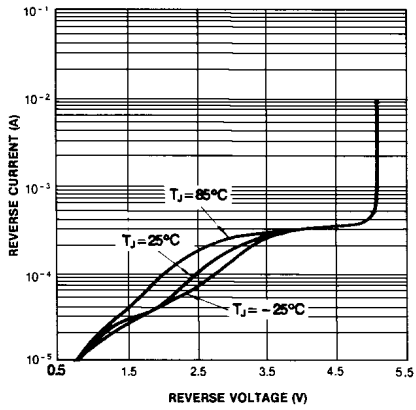


Fig. 3 TEMPERATURE DRIFT

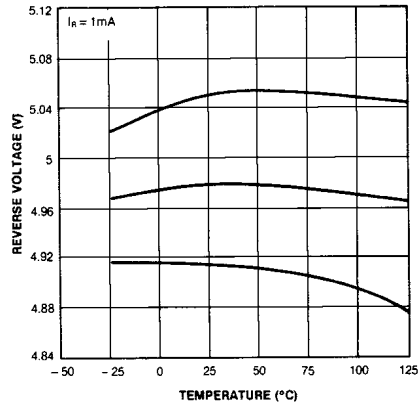


Fig. 4 FORWARD CHARACTERISTICS

