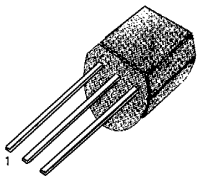
## PROGRAMMABLE SHUNT REGULATOR

The KA336-5.0/B integrated circuits are precision 5.0V shunt regulators. The monolithic IC voltage references operate as a low temperature co-efficient 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℃ to 85℃. and the KA336 from 0℃ to 70℃.

TO-92



1:ADJ, 2: +, 3: -

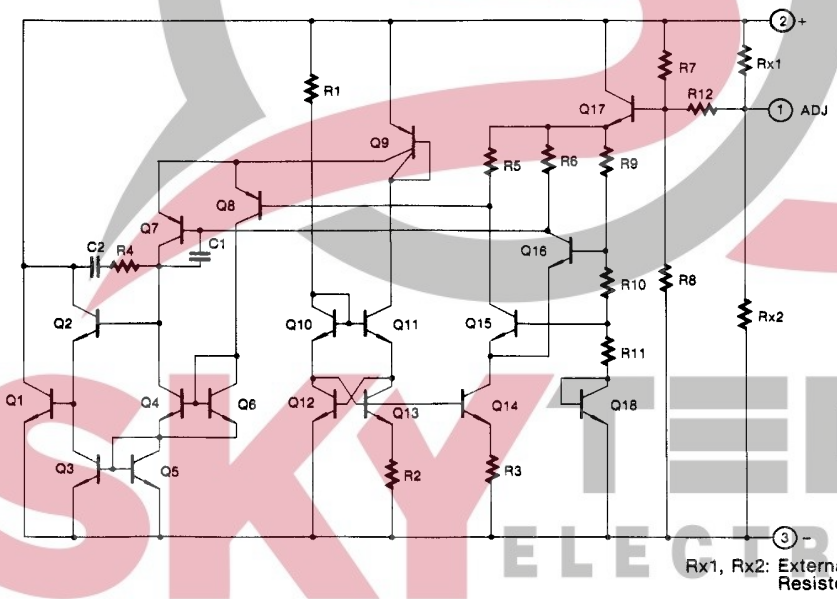
## FEATURES

- Low temperature coefficient
- Adjustable 4V to 6V
- Wide operating range current of 400 $\mu$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℃ |
| KA336-5.0B | | |
| KA236-5.0 | | -25 ~ +85℃ |

## SCHEMATIC DIAGRAM




Rx1, Rx2: External Resistors





FAIRCHILD SEMICONDUCTOR™

## ABSOLUTE MAXIMUM RATINGS

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

## ELECTRICAL CHARACTERISTICS

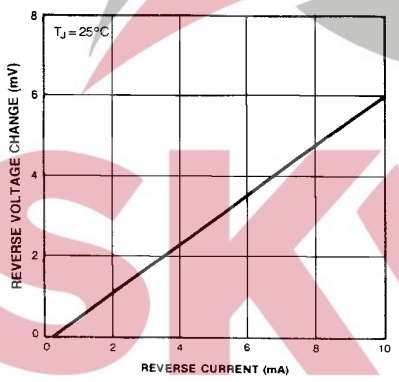
($T_{MIN} \leq T_A \leq T_{MAX}$ unless otherwise specified)

| Characteristic | Symbol | Test Conditions | KA336/236 | | | KA336B | | | Unit |
|---|---|---|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | Min | Typ | Max | |
| Reverse Breakdown Voltage | $V_R$ | $T_A$ = 25℃, $I_R$ = 1mA | 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℃<br>600 $\mu$A ≤ $I_R$ ≤ 10mA | — | 6 | 20 | — | 6 | 20 | mV |
| Reverse Dynamic Impedance | $Z_D$ | $T_A$ = 25℃, $I_R$ = 1mA | — | 0.6 | 2 | — | 0.6 | 2 | Ω |
| Temperature Stability | $ST_T$ | $I_R$ = 1mA<br>$T_{MIN} \leq T_A \leq T_{MAX}$ | — | 4 | 12 | — | 4 | 12 | mV |
| Reverse Breakdown Change with Current | $\Delta V_R / \Delta I_R$ | 600 $\mu$A ≤ $I_R$ ≤ 10mA<br>$T_{MIN} \leq T_A \leq T_{MAX}$ | — | 6 | 24 | — | 6 | 24 | mV |
| Reverse Dynamic Impedance | $Z_D$ | $I_R$ = 1mA<br>$T_{MIN} \leq T_A \leq T_{MAX}$ | — | 0.8 | 2.5 | — | 0.8 | 2.5 | Ω |
| Long Term Stability | ST | $I_R$ = 1mA<br>$T_{MIN} \leq T_A \leq T_{MAX}$ | — | 20 | — | — | 20 | — | ppm |

* KA236: $T_{MIN}$ = -25℃, $T_{MAX}$ = 85℃
KA336: $T_{MIN}$ = 0℃, $T_{MAX}$ = 70℃

## TYPICAL PERFORMANCE CHARACTERISTICS

Fig. 1 REVERSE VOLTAGE CHANGE



## TYPICAL PERFORMANCE CHARACTERISTICS

Fig. 2 REVERSE CHARACTERISTICS

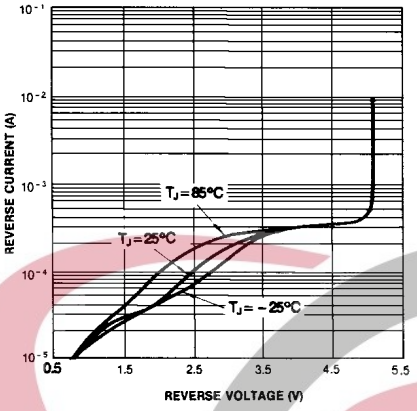



Fig. 3 TEMPERATURE DRIFT

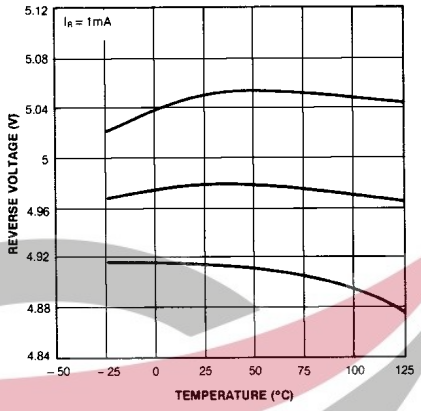
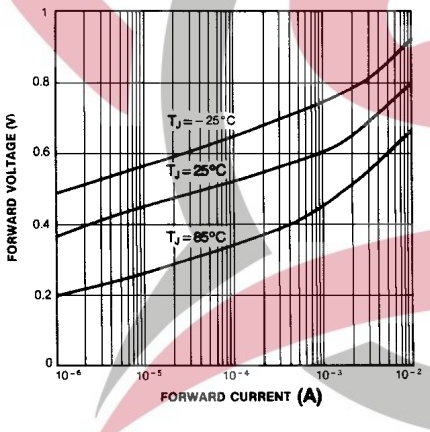



Fig. 4 FORWARD CHARACTERISTICS



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|---|---|---|
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