To learn more about ON Semiconductor, please visit our website at www.onsemi.com

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor’s system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.
KA33V
Voltage Stabilizer

Features
- Low Temperature Coefficient
- Low Dynamic Resistance
- Typical Reference Voltage 33 V

Description
The KA33V is a monolithic integrated voltage stabilizer designed as voltage supplier for electronic tuners.

Ordering Information

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Operating Temperature Range</th>
<th>Top Mark</th>
<th>Package</th>
<th>Packing Method</th>
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<tbody>
<tr>
<td>KA33VBU</td>
<td>-20 to +75°C</td>
<td>KA33V</td>
<td>TO-92 2L</td>
<td>Bulk</td>
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<tr>
<td>KA33VTA</td>
<td>-20 to +75°C</td>
<td></td>
<td></td>
<td>Ammo</td>
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</tbody>
</table>

Block Diagram

Figure 1. Block Diagram
**Absolute Maximum Ratings**
Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ C$ unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_Z$</td>
<td>Zener Current</td>
<td>10</td>
<td>mA</td>
</tr>
<tr>
<td>$P_D$</td>
<td>Power Dissipation ($T_A = 75^\circ C$)</td>
<td>200</td>
<td>mW</td>
</tr>
<tr>
<td>$T_{OPR}$</td>
<td>Operating Ambient Temperature Range</td>
<td>-20 to 75</td>
<td>°C</td>
</tr>
<tr>
<td>$T_{STG}$</td>
<td>Storage Temperature Range</td>
<td>-40 to 125</td>
<td>°C</td>
</tr>
</tbody>
</table>

**Electrical Characteristics**
Values are at $T_A = 25^\circ C$ unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Unit</th>
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</thead>
<tbody>
<tr>
<td>$V_Z$</td>
<td>Stabilized Voltage</td>
<td>$I_Z = 5$ mA</td>
<td>31</td>
<td>35</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>$\Delta V_Z / \Delta T$</td>
<td>Stabilized Voltage Temperature Drift</td>
<td>$I_Z = 5$ mA, $T_A = -20$ to 75°C</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>mV/°C</td>
</tr>
<tr>
<td>$R_Z$</td>
<td>Dynamic Resistance</td>
<td>$I_Z = 5$ mA, f = 1 kHz</td>
<td>10</td>
<td>25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Typical Performance Characteristics

Figure 2. Allowable Dissipation vs. Ambient Temperature

Figure 3. Dynamic Resistance vs. Zener Current

Figure 4. Stabilized Voltage Temperature Drift vs. Zener Current

Figure 5. Stabilized Voltage Variation vs. Time

Figure 6. Stabilized Voltage Variation & Supply Voltage Variation vs. Zener Current
Test Circuit

Figure 7. Measuring Circuit for Stabilized Voltage $V_Z$

Figure 8. Measuring Circuit for Dynamic Resistance
Typical Application

1) **UHF Tuner**

![Figure 9. Electronic Tuner](image)

- **TR1**: RF AMP: KSC1393
  - KSC1070 (Under development)
- **TR2**: OSC: KSC1730
- **D1-D4**: 1S220
- **D5**: MIXER: 1S816

*Channel setting variable resistor

* to tuning diodes (varactor) in case of Ych on

2) **VHF Tuner**

![Figure 10. UHF Tuner](image)

- **TR1**: FM AMP: KSC1393
- **TR2**: MIXER: KSC1394
- **TR3**: OSC: KSC1730
- **D1, D4**: 1S2209
- **D2, D3**: 1S2207

AFC terminal

Low/High Channel Switching terminal.
Physical Dimensions

TO-92 2L

NOTES: UNLESS OTHERWISE SPECIFIED
A) THIS PACKAGE DOES NOT CONFORM TO ANY STANDARD
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
D) FORMERLY NAMED BD6864
E) DRAWING FILE NAME: MKT-ZA02AREV1

Figure 12. 2-LEAD, TO-92, JOINED TERMINAL (ACTIVE)

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PRODUCT STATUS DEFINITIONS

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<thead>
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<th>Datasheet Identification</th>
<th>Product Status</th>
<th>Definition</th>
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<td>Advance Information</td>
<td>Formative / In Design</td>
<td>Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.</td>
</tr>
<tr>
<td>Preliminary</td>
<td>First Production</td>
<td>Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.</td>
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<tr>
<td>No Identification Needed</td>
<td>Full Production</td>
<td>Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.</td>
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<tr>
<td>Obsolete</td>
<td>Not In Production</td>
<td>Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.</td>
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