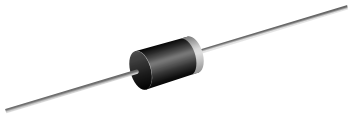
# Glass Passivated Power Voltage-Regulating Diodes



DO-204AL (DO-41)

## FEATURES

- Plastic MELF package
- Ideal for automated placement
- Glass passivated chip junction
- Low Zener impedance
- Low regulation factor
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS COMPLIANT

## TYPICAL APPLICATIONS

For general purpose regulation and protection applications.

| PRIMARY CHARACTERISTICS | |
|---|---|
| $V_Z$ | 100 V to 200 V |
| $P_D$ | 1.5 W |
| $I_R$ | 0.5 µA |
| $T_J$ max. | 150 °C |

## MECHANICAL DATA

**Case:** DO-204AL (DO-41)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS compliant, commercial grade

Base P/NHE3 - RoHS compliant, high reliability/ automotive grade (AEC Q101 qualified)

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes cathode end

**MAXIMUM RATINGS** ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | - 55 to + 150 | °C |

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted)

| TYPE | ZENER VOLTAGE AT 5.0 mA | | MAXIMUM ZENER DYNAMIC IMPEDANCE | | | | MAXIMUM DC REVERSE LEAKAGE CURRENT AT $V_R$ | | | MAXIMUM INSTANTANEOUS FORWARD VOLTAGE AT 0.50 A | MAXIMUM CONTINUOUS REGULATOR CURRENT (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $V_Z$ (V) | | $I_{ZT}$ | $Z_{ZT}$ | $I_{ZK}$ | $Z_{ZK}$ | $V_R$ | $I_R$ AT 25 °C | $I_R$ AT 100 °C | $V_{FM}$ | $I_{ZM}$ |
| | MIN. | MAX. | (mA) | (Ω) | (mA) | (Ω) | (V) | (µA) | (µA) | (V) | (mA) |
| Z4KE100 | 90 | 110 | 5.0 | 500 | 0.25 | 5000 | 72.0 | 0.5 | 100 | 1.0 | 15.0 |
| Z4KE100A | 95 | 105 | 5.0 | 500 | 0.25 | 5000 | 76.0 | 0.5 | 100 | 1.0 | 15.0 |
| Z4KE110 | 99 | 121 | 5.0 | 600 | 0.25 | 5000 | 79.2 | 0.5 | 100 | 1.0 | 13.0 |
| Z4KE110A | 104 | 116 | 5.0 | 600 | 0.25 | 5000 | 83.2 | 0.5 | 100 | 1.0 | 13.0 |
| Z4KE120 | 108 | 132 | 5.0 | 700 | 0.25 | 5000 | 86.4 | 0.5 | 100 | 1.0 | 12.0 |
| Z4KE120A | 114 | 126 | 5.0 | 700 | 0.25 | 5000 | 91.2 | 0.5 | 100 | 1.0 | 12.0 |
| Z4KE130 | 117 | 143 | 5.0 | 800 | 0.25 | 5000 | 93.6 | 0.5 | 100 | 1.0 | 11.0 |
| Z4KE130A | 124 | 137 | 5.0 | 800 | 0.25 | 5000 | 99.2 | 0.5 | 100 | 1.0 | 11.0 |

## ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted)

| TYPE | ZENER VOLTAGE AT 5.0 mA | | MAXIMUM ZENER DYNAMIC IMPEDANCE | | | | MAXIMUM DC REVERSE LEAKAGE CURRENT AT $V_R$ | | | MAXIMUM INSTANTANEOUS FORWARD VOLTAGE AT 0.50 A | MAXIMUM CONTINUOUS REGULATOR CURRENT (2) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $V_Z$ (V) | | $I_{ZT}$ | $Z_{ZT}$ | $I_{ZK}$ | $Z_{ZK}$ | $V_R$ | $I_R$ AT 25 °C | $I_R$ AT 100 °C | $V_{FM}$ | $I_{ZM}$ |
| | MIN. | MAX. | (mA) | (Ω) | (mA) | (Ω) | (V) | (µA) | (µA) | (V) | (mA) |
| Z4KE140 | 126 | 154 | 5.0 | 900 | 0.25 | 5000 | 100 | 0.5 | 100 | 1.0 | 10.7 |
| Z4KE140A | 133 | 147 | 5.0 | 900 | 0.25 | 5500 | 106.4 | 0.5 | 100 | 1.0 | 10.7 |
| Z4KE150 | 135 | 165 | 5.0 | 1000 | 0.25 | 6000 | 108.0 | 0.5 | 100 | 1.0 | 10.0 |
| Z4KE150A | 142 | 158 | 5.0 | 1000 | 0.25 | 6000 | 113.6 | 0.5 | 100 | 1.0 | 10.0 |
| Z4KE160 | 144 | 176 | 5.0 | 1100 | 0.25 | 6500 | 115.2 | 0.5 | 100 | 1.0 | 9.0 |
| Z4KE160A | 152 | 168 | 5.0 | 1100 | 0.25 | 6500 | 121.6 | 0.5 | 100 | 1.0 | 9.0 |
| Z4KE170 | 153 | 187 | 5.0 | 1200 | 0.25 | 7000 | 122.4 | 0.5 | 100 | 1.0 | 8.8 |
| Z4KE170A | 162 | 179 | 5.0 | 1200 | 0.25 | 7000 | 129.6 | 0.5 | 100 | 1.0 | 8.0 |
| Z4KE180 | 162 | 198 | 5.0 | 1300 | 0.25 | 7000 | 129.6 | 0.5 | 100 | 1.0 | 8.0 |
| Z4KE180A | 171 | 189 | 5.0 | 1300 | 0.25 | 7000 | 136.8 | 0.5 | 100 | 1.0 | 8.0 |
| Z4KE190 | 171 | 209 | 5.0 | 1400 | 0.25 | 7500 | 136.8 | 0.5 | 100 | 1.0 | 7.9 |
| Z4KE190A | 180 | 200 | 5.0 | 1400 | 0.25 | 7500 | 144.0 | 0.5 | 100 | 1.0 | 7.9 |
| Z4KE200 | 180 | 220 | 5.0 | 1500 | 0.25 | 8000 | 144.0 | 0.5 | 100 | 1.0 | 7.0 |
| Z4KE200A | 190 | 210 | 5.0 | 1500 | 0.25 | 8000 | 152.0 | 0.5 | 100 | 1.0 | 7.0 |

**Notes:**

(1) Standard voltage tolerance is ± 10 %, suffix “A” is ± 5 %

(2) Maximum power dissipation is 1.5 W at $T_L$ = 75 °C with lead length 0.375" (9.5 mm)

## ORDERING INFORMATION (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|---|---|---|---|---|
| Z4KE100-E3/54 | 0.350 | 54 | 5500 | 13" diameter paper tape and reel |
| Z4KE100HE3/54 (1) | 0.350 | 54 | 5500 | 13" diameter paper tape and reel |

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

($T_A$ = 25 °C unless otherwise noted)

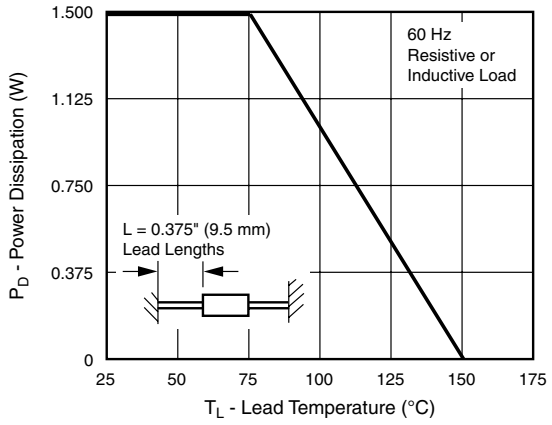



Figure 1. Power Derating Curve

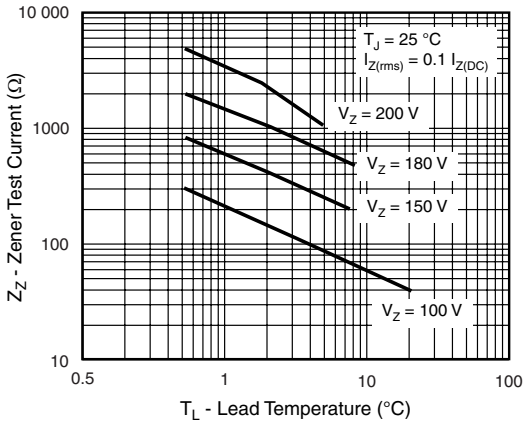



Figure 2. Typical Zener Impedance




For technical questions within your region, please contact one of the following:
PDD-Americas@vishay.com, PDD-Asia@vishay.com, PDD-Europe@vishay.com



Document Number: 88408
Revision: 22-Oct-08

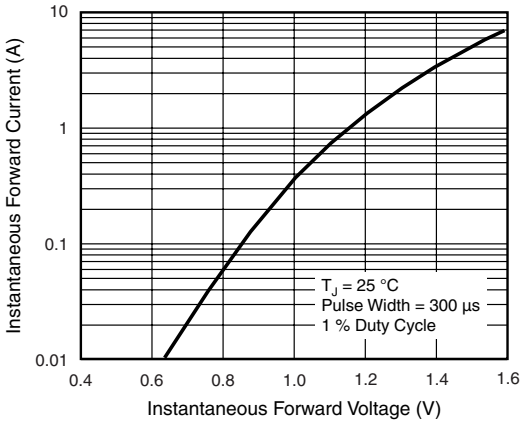



Figure 3. Typical Instantaneous Forward Characteristics

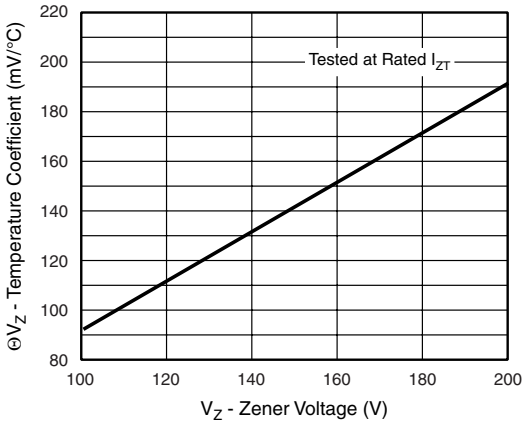



Figure 5. Typical Temperature Coefficients

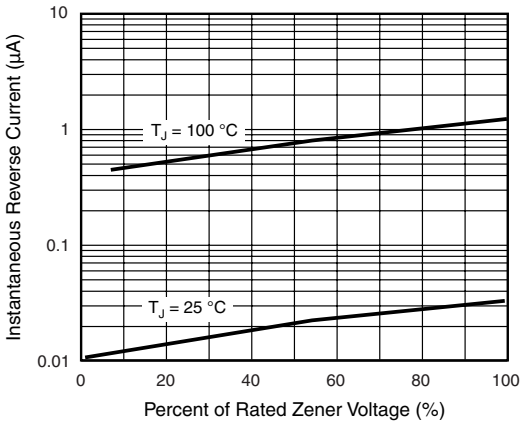



Figure 4. Typical Reverse Characteristics

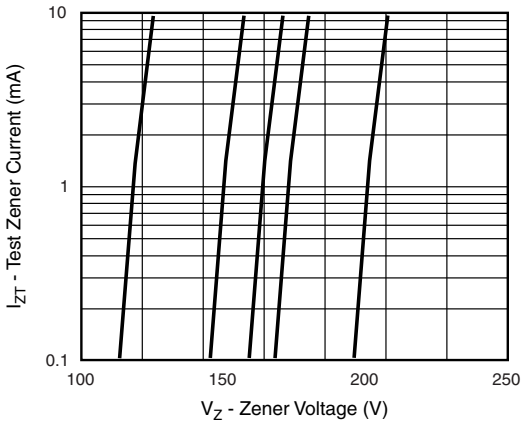
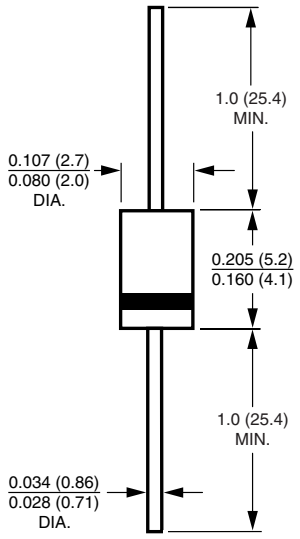



Figure 6. Typical Zener Voltage

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

**DO-204AL (DO-41)**



# Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

**Данный компонент на территории Российской Федерации**

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

**Офис по работе с юридическими лицами:**

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9