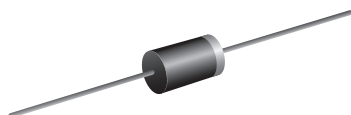


# TRANSZORB® Transient Voltage Suppressors



DO-41 (DO-204AL)

## FEATURES

- Glass passivated chip junction
- Available in unidirectional only
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



## TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, and telecommunication.

## MECHANICAL DATA

**Case:** DO-41 (DO-204L), molded epoxy over passivated chip

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** color band denotes cathode end

## PRIMARY CHARACTERISTICS

|                         |                  |
|-------------------------|------------------|
| $V_{WM}$                | 477 V, 495 V     |
| $V_{BR}$ unidirectional | 530 V, 550 V     |
| $P_{PPM}$               | 300 W            |
| $P_D$                   | 1.0 W            |
| $V_C$                   | 760 A            |
| $T_J$ max.              | 150 °C           |
| Polarity                | Unidirectional   |
| Package                 | DO-41 (DO-204AL) |

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

| PARAMETER  | SYMBOL         | P4KE530     | P4KE550 | UNIT |
|--|----------------|-------------|---------|------|
| Peak pulse power dissipation <sup>(1)(2)</sup> (fig.1)           | $P_{PPM}$      | 300         |         | W    |
| Power dissipation on infinite heatsink at $T_L = 75$ °C (fig. 4) | $P_D$          | 1.0         |         | W    |
| Operating junction and storage temperature range                 | $T_J, T_{STG}$ | -55 to +150 |         | °C   |

### Notes

<sup>(1)</sup> Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25$  °C per fig. 2

<sup>(2)</sup> Peak pulse power waveform is 10/1000  $\mu$ s

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

| DEVICE TYPE | BREAKDOWN VOLTAGE<br>$V_{BR}$ AT $I_T$<br>(V) | TEST CURRENT<br>$I_T$<br>( $\mu$ A) | STAND-OFF VOLTAGE<br>$V_{WM}$<br>(V) |
|-------------|---|-------------------------------------|--------------------------------------|
|             | MIN.  |                                     |                                      |
| P4KE530     | 530   | 100                                 | 477                                  |
| P4KE550     | 550   | 100                                 | 495                                  |

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

| PARAMETER                          | TEST CONDITIONS                  | SYMBOL | P4KE530 | P4KE550 | UNIT    |
|------------------------------------|----------------------------------|--------|---------|---------|---------|
| Max. clamping voltage              | 400 mA, 10/1000 $\mu$ s waveform | $V_C$  | 760     |         | V       |
| Maximum DC reverse leakage current | at $V_{WM}$                      | $I_D$  | 1.0     |         | $\mu$ A |
| Typical temperature coefficient    | of $V_{BR}$                      |        | 650     |         | mV/°C   |
| Typical capacitance                | 1 MHz, $V_R = 0$ V               | $C_J$  | 90      |         | pF      |
|                                    | 1 MHz, $V_R = 200$ V             | $C_J$  | 7.5     |         | pF      |



| THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) |                 |       |                             |
|--|-----------------|-------|-----------------------------|
| PARAMETER  | SYMBOL          | VALUE | UNIT                        |
| Typical thermal resistance, junction to lead   | $R_{\theta JL}$ | 75    | $^{\circ}\text{C}/\text{W}$ |
| Typical thermal resistance, junction to ambient                                      | $R_{\theta JA}$ | 125   |                             |

| ORDERING INFORMATION (Example) |                 |                        |               |                                  |
|--------------------------------|-----------------|------------------------|---------------|----------------------------------|
| PREFERRED PIN                  | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
| P4KE530-E3/54                  | 0.350           | 54                     | 5500          | 13" diameter paper tape and reel |
| P4KE550-E3/54                  | 0.350           | 54                     | 5500          | 13" diameter paper tape and reel |

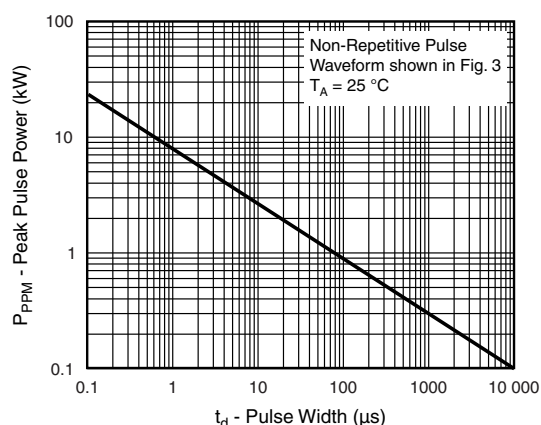
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Peak Pulse Power Rating Curve

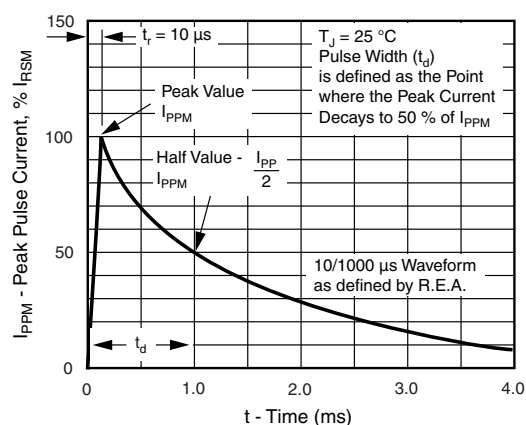


Fig. 3 - Pulse Waveform

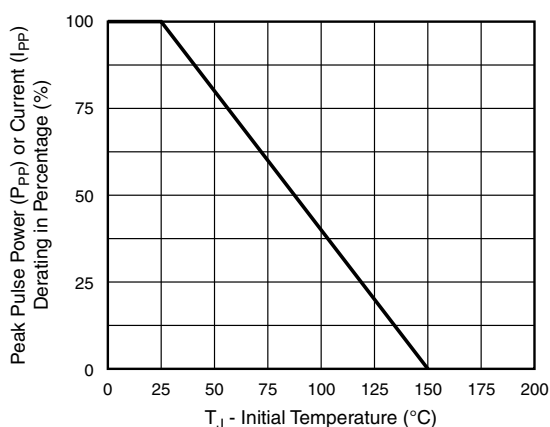


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

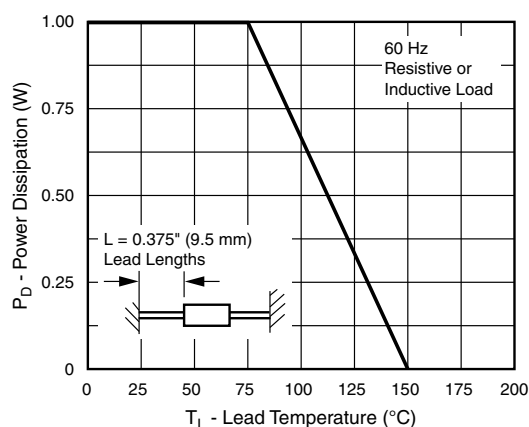
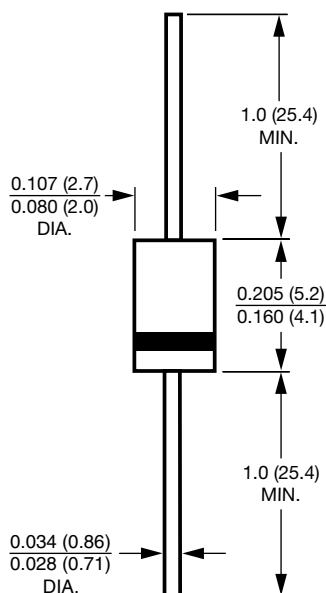


Fig. 4 - Pulse Derating Curve

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

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

**APPLICATION NOTES**

- Respect thermal resistance (PCB Layout) - as the temperature coefficient also contributes to the clamping voltage
- Select minimum breakdown voltage, so you get acceptable power dissipation and PCB tie point temperature. Devices with higher breakdown voltage will have a shorter conduction time and will dissipate less power
- Clamping voltage is influenced by internal resistance - design approximation is 7 V per 100 mA slope
- Keep temperature of TVS lower than TOPSwitch® as a recommendation
- Maximum current is determined by the maximum  $T_J$  and can be higher than 300 mA. Contact supplier for different clamping voltage/current arrangements
- Minimum breakdown voltage can be customized for other applications. Contact supplier
- TOPSwitch® is a registered trademark of Power Integrations, Inc.



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