

# TRANSZORB® Transient Voltage Suppressors



DO-204AL (DO-41)

## FEATURES

- Glass passivated chip junction
- Available in uni-directional 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)


**RoHS**  
COMPLIANT

## 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-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
$V_{BR}$ uni-directional	530 V, 550 V
$P_{PPM}$	300 W
$P_D$	1.0 W
$V_C$	760 A
$T_J$ max.	150 °C
Polarity	Uni-directional
Package	DO-204AL (DO-41)

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

- (1) Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25$  °C per fig. 2
- (2) Peak pulse power waveform is 10/1000  $\mu$ s

ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted)			
DEVICE TYPE	BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ (V)	TEST CURRENT $I_T$ ( $\mu$ A)	STAND-OFF VOLTAGE $V_{WM}$ (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

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ 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	

<b>ORDERING INFORMATION</b> (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

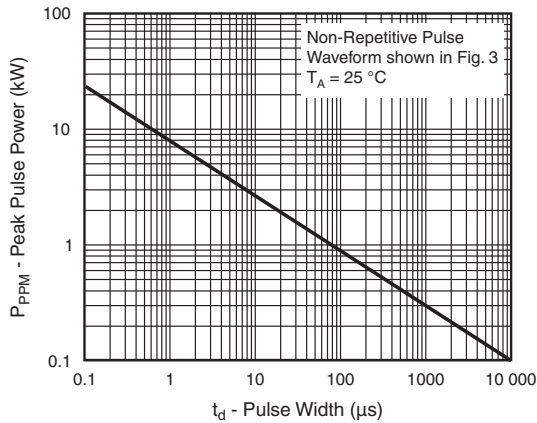
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)


Fig. 1 - Peak Pulse Power Rating Curve

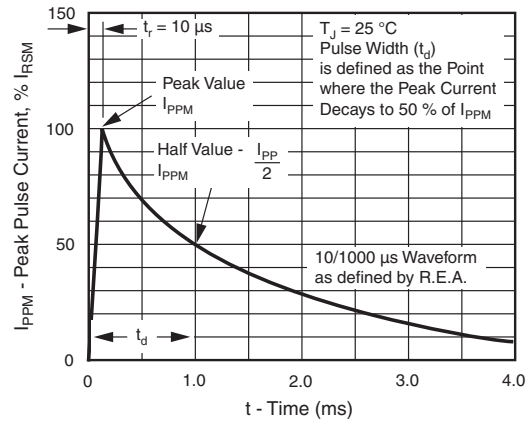


Fig. 3 - Pulse Waveform

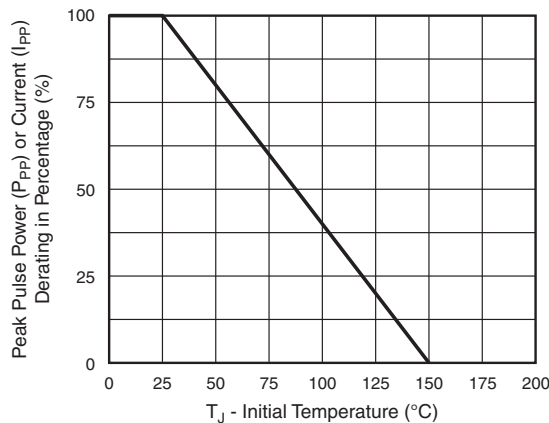


Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

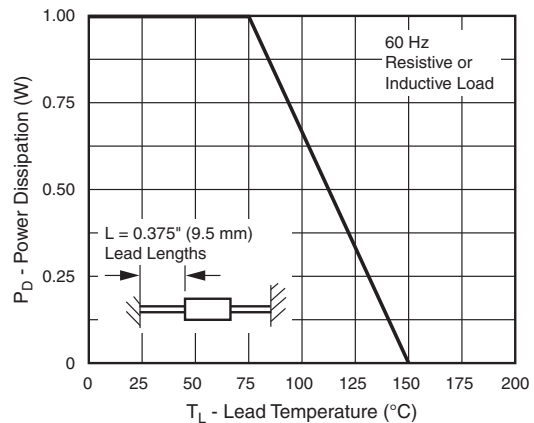
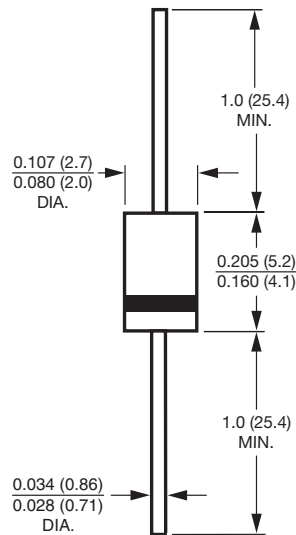


Fig. 4 - Pulse Derating Curve

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

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

**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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