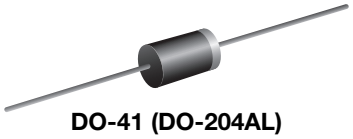
TRANSZORB® Transient Voltage Suppressors



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

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.

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)

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

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

PARAMETER	SYMBOL	P4KE530	P4KE550	UNIT
Peak pulse power dissipation [1][2] (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 μs

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

DEVICE TYPE	BREAKDOWN VOLTAGE V_{BR} AT I_T (V)	TEST CURRENT I_T (μA)	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 μs waveform	V_C	760		V
Maximum DC reverse leakage current	at V_{WM}	I_D	1.0		μA
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

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THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Typical thermal resistance, junction to lead	$R_{\theta JL}$	75	°C/ 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 °C unless otherwise noted)

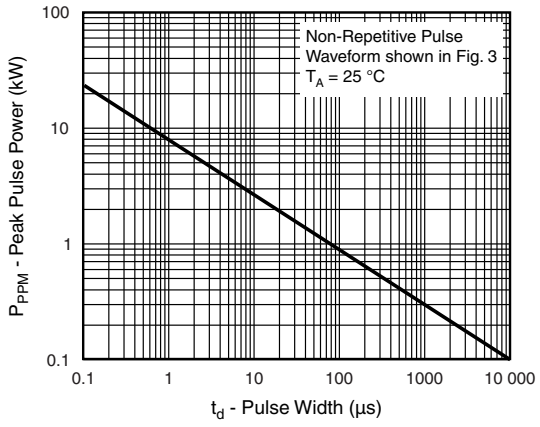

Fig. 1 - Peak Pulse Power Rating Curve

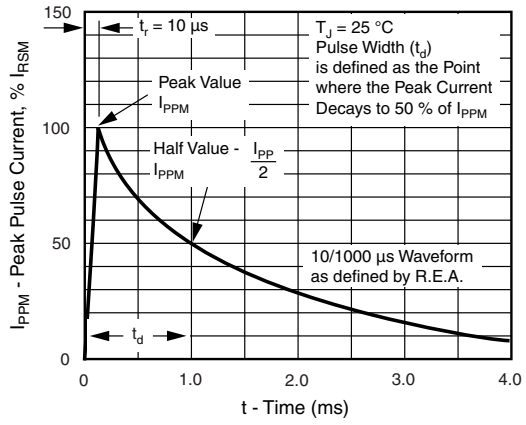

Fig. 3 - Pulse Waveform

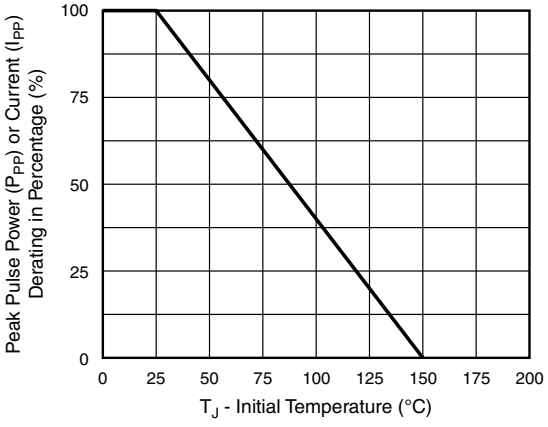

Fig. 2 - Pulse Power or Current vs. Initial Junction Temperature

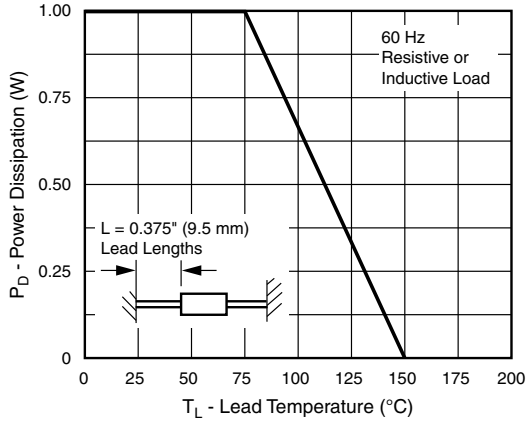

Fig. 4 - Pulse Derating Curve

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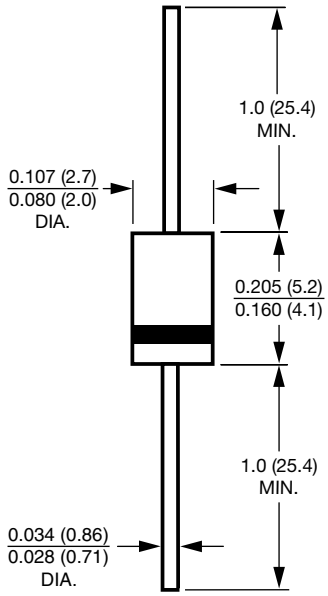
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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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