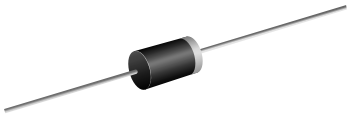
P4KE6.8D thru P4KE56D

Vishay General Semiconductor

TRANSZORB® Transient Voltage Suppressors



DO-204AL (DO-41)

FEATURES

- Available in uni-directional polarity only
- 400 W peak pulse power capability with a 10/1000 µs waveform
- V_{BR} tolerance ± 3.5 % (D suffix)
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

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_{BR}	6.8 V to 56 V
P_{PPM}	400 W
P_D	1.5 W
T_J max.	175 °C

MECHANICAL DATA

Case: DO-204AL, molded epoxy over passivated chip
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant, 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**	**LIMIT**	**UNIT**
Peak power dissipation with a 10/1000 µs waveform (1) (fig. 1)	P_{PPM}	400	W
Peak pulse current with a 10/1000 µs waveform (1)	I_{PPM}	See next table	A
Power dissipation on infinite heatsink at T_L = 75 °C (fig. 5)	P_D	1.5	W
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175	°C

Note:
(1) Non-repetitive current pulse, per fig. 3 and derated above T_A = 25 °C per fig. 2

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

DEVICE TYPE	BREAKDOWN VOLTAGE V_{BR} AT I_T (1) (V)		TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (3) (µA)	MAXIMUM PEAK PULSE CURRENT I_{PPM} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	MAXIMUM TEMPERATURE COEFFICIENT OF V_{BR} (%/°C)
	MIN.	MAX.						
P4KE6.8D	6.56	7.04	10	5.80	1000	38.5	10.4	0.057
P4KE7.5D	7.24	7.76	10	6.40	500	36.0	11.1	0.061
P4KE8.2D	7.91	8.49	10	7.02	200	33.6	11.9	0.06
P4KE9.1D	8.78	9.42	1.0	7.78	50	30.3	13.2	0.068
P4KE10D	9.65	10.35	1.0	8.55	10	28.0	14.3	0.073
P4KE11D	10.62	11.39	1.0	9.40	5.0	26.1	15.3	0.075
P4KE12D	11.58	12.42	1.0	10.2	1.0	24.2	16.5	0.078
P4KE13D	12.55	13.46	1.0	11.1	1.0	22.3	17.9	0.081
P4KE15D	14.48	15.53	1.0	12.8	1.0	19.2	20.8	0.084
P4KE16D	15.44	16.56	1.0	13.6	1.0	18.0	22.2	0.086
P4KE18D	17.37	18.63	1.0	15.3	1.0	16.1	24.8	0.088
P4KE20D	19.30	20.70	1.0	17.1	1.0	14.7	27.3	0.090
P4KE22D	21.23	22.77	1.0	18.8	1.0	13.2	30.2	0.092
P4KE24D	23.16	24.84	1.0	20.5	1.0	12.2	32.7	0.094
P4KE27D	26.06	27.95	1.0	23.1	1.0	10.8	36.9	0.096
P4KE30D	28.95	31.05	1.0	25.6	1.0	9.8	40.8	0.097
P4KE33D	31.85	34.16	1.0	28.2	1.0	8.9	45.0	0.098
P4KE36D	34.74	37.26	1.0	30.8	1.0	8.1	49.2	0.099
P4KE39D	37.6	40.4	1.0	33.3	1.0	7.5	53.1	0.100
P4KE43D	41.5	44.5	1.0	36.8	1.0	6.8	58.4	0.101
P4KE47D	45.3	48.7	1.0	40.2	1.0	6.3	63.8	0.101
P4KE51D	49.2	52.8	1.0	43.6	1.0	5.8	69.0	0.102
P4KE56D	54.0	58.0	1.0	47.8	1.0	5.3	75.9	0.103

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

PARAMETER	SYMBOL	LIMIT	UNIT
Typical thermal resistance, junction to lead (1)	$R_{\theta JL}$	66	°C/W
Typical thermal resistance, junction to ambient (2)	$R_{\theta JA}$	120	

Notes:

(1) Thermal resistance from juntion to lead at 0.375" (9.5 mm) lead length with heat sink

(2) Thermal resistance from juntion to ambient - free air, without heat sink

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
P4KE6.8D-E3/54	0.350	54	5500	13" diameter paper tape and reel

For technical questions within your region, please contact one of the following:
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Document Number: 89123
Revision: 13-Mar-09

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

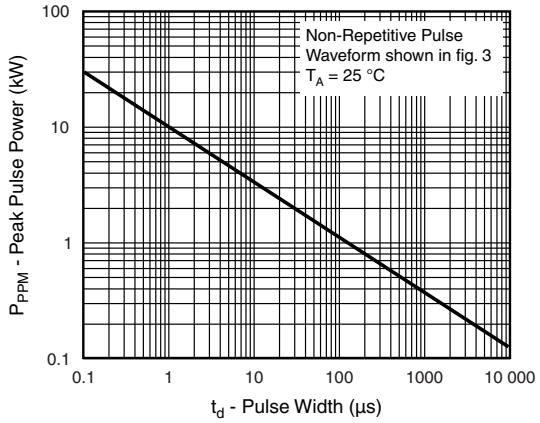


Figure 1. Peak Pulse Power Rating Curve

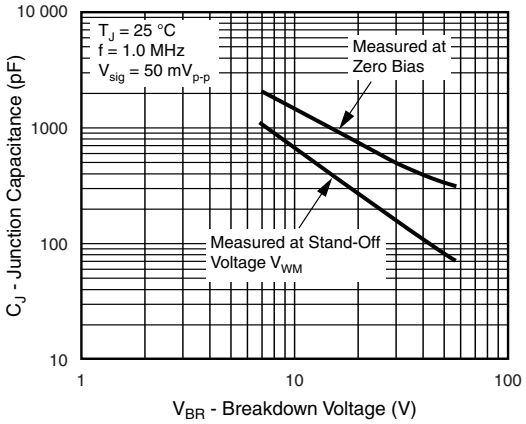


Figure 4. Typical Junction Capacitance

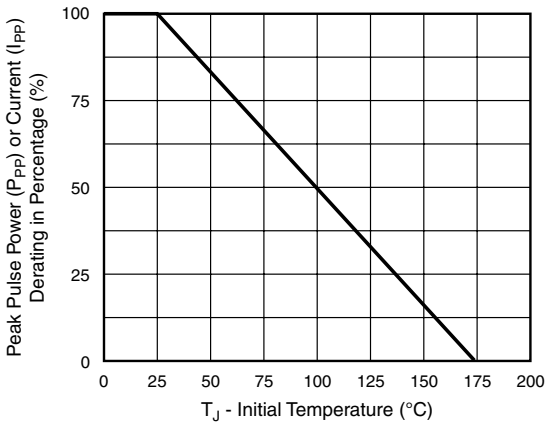


Figure 2. Pulse Power or Current vs. Initial Junction Temperature

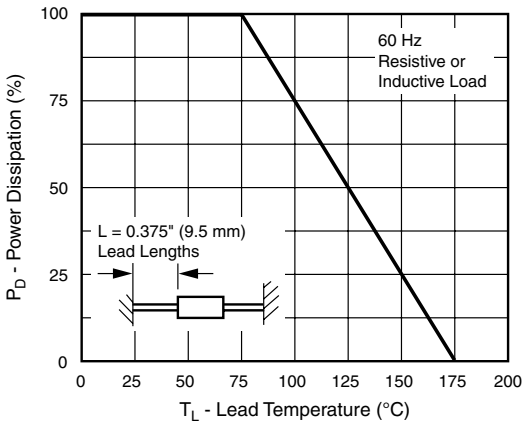


Figure 5. Power Derating Curve

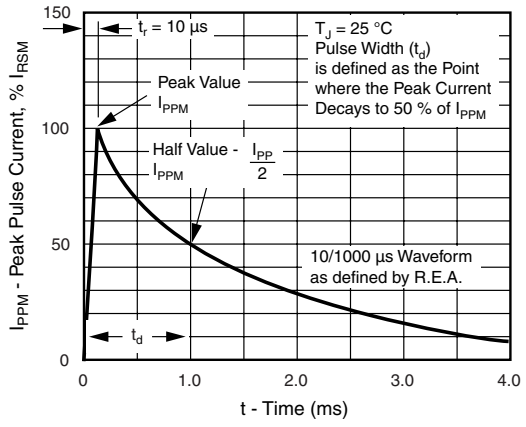


Figure 3. Pulse Waveform

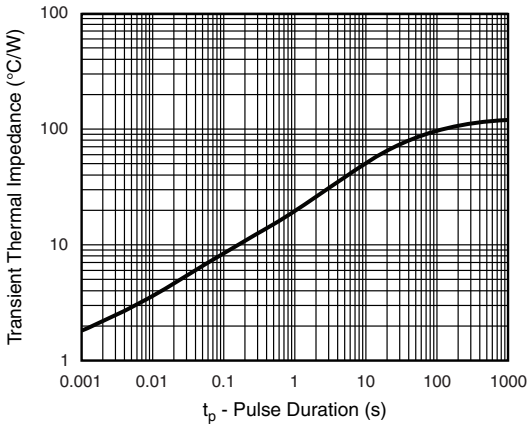
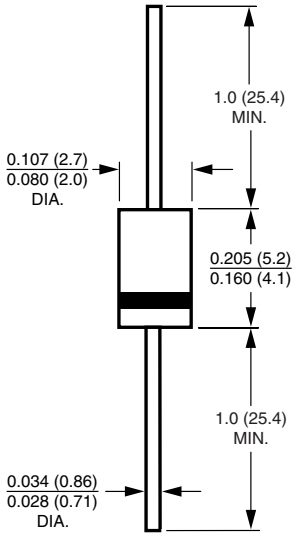


Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AL (DO-41)



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Document Number: 89123
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