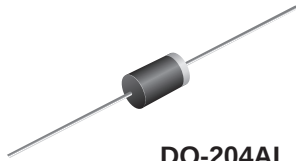
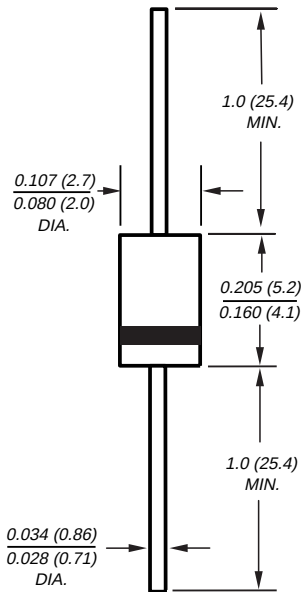


Automotive Transient Voltage Suppressors



DO-204AL (DO-41)



Available in uni-directional only

Dimensions in inches and (millimeters)

*Patent #'s 4,980,315
5,166,769
5,278,094

Patented*

Breakdown Voltage 6.8 to 43V
Peak Pulse Power 400W

Features

- Plastic package has underwriters laboratory flammability classification 94V-0
- Designed for under the hood applications
- Exclusive patented PAR[®] oxide-passivated chip construction
- 400W peak pulse power capability with a 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time
- For devices with $V_{(BR)} \geq 10V$, I_D are typically less than 1.0μA at $T_A = 150^\circ C$
- High temperature soldering guaranteed: 300°C/10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3 kg) tension

Mechanical Data

Case: JEDEC DO-204AL molded plastic body over passivated junction

Terminals: Plated axial leads, solderable per MIL-STD-750, Method 2026

Polarity: The color band denotes the cathode, which is positive with respect to the anode under normal TVS operation

Mounting Position: Any

Weight: 0.012 oz., 0.3 g

Packaging codes/options:

1/5K per Bulk Box, 50K/box

4/5.5K per 13" Reel (52mm Tape), 22K/box

23/3K per Ammo Box (52mm Tape), 27K/box

Maximum Ratings and Thermal Characteristics ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000μs waveform ⁽¹⁾ (Fig. 1)	PPPM	Minimum 400	W
Peak pulse current with a 10/1000μs waveform ⁽¹⁾ (Fig.3)	IPPM	See Next Table	A
Steady state power dissipation at $T_L = 75^\circ C$ lead lengths 0.375" (9.5mm) ⁽²⁾	$P_{M(AV)}$	1.0	W
Peak forward surge current, 8.3ms single half sine-wave ⁽³⁾	I_{FSM}	40	A
Maximum instantaneous forward voltage at 25A	V_F	3.5	V
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +185	$^\circ C$

Notes: (1) Non-repetitive current pulse, per Fig. 3 and derated above $T_A = 25^\circ C$ per Fig. 2

(2) Mounted on copper pad area of 1.6 x 1.6" (40 x 40mm) per Fig. 5

P4KA6.8 thru P4KA43A

Vishay Semiconductors
formerly General Semiconductor



Electrical Characteristics (T_A = 25°C unless otherwise noted)

Device Type	Breakdown Voltage V _(BR) ⁽¹⁾ at I _T (V)		Test Current I _T (mA)	Stand-off Voltage V _{WM} (V)	Maximum Reverse Leakage at V _{WM} I _D (μA)	T _J = 150°C Maximum Reverse Leakage at V _{WM} I _D (μA)	Maximum Peak Pulse Surge Current I _{PPM} ⁽²⁾ (A)	Maximum Clamping Voltage at I _{PPM} V _C (V)	Maximum Temp. Coefficient of V _(BR) (% / °C)
	Min	Max							
P4KA6.8	6.12	7.48	10	5.50	300	1000	37.0	10.8	0.057
P4KA6.8A	6.45	7.14	10	5.80	300	1000	38.1	10.5	0.057
P4KA7.5	6.75	8.25	10	6.05	150	500	34.2	11.7	0.060
P4KA7.5A	7.13	7.88	10	6.40	150	500	35.4	11.3	0.061
P4KA8.2	7.38	9.02	10	6.63	50	200	32.0	12.5	0.065
P4KA8.2A	7.79	8.61	10	7.02	50	200	33.1	12.1	0.065
P4KA9.1	8.19	10.0	1.0	7.37	10	50	29.0	13.8	0.068
P4KA9.1A	8.65	9.55	1.0	7.78	10	50	29.9	13.4	0.068
P4KA10	9.00	11.0	1.0	8.10	5.0	20	26.7	15.0	0.073
P4KA10A	9.50	10.5	1.0	8.55	5.0	20	27.6	14.5	0.073
P4KA11	9.90	12.1	1.0	8.92	1.0	5.0	24.7	16.2	0.075
P4KA11A	10.5	11.6	1.0	9.40	1.0	5.0	25.6	15.6	0.075
P4KA12	10.8	13.2	1.0	9.72	1.0	5.0	23.1	17.3	0.076
P4KA12A	11.4	12.6	1.0	10.2	1.0	5.0	24.0	16.7	0.078
P4KA13	11.7	14.3	1.0	10.5	1.0	5.0	21.1	19.0	0.081
P4KA13A	12.4	13.7	1.0	11.1	1.0	5.0	22.0	18.2	0.081
P4KA15	13.5	16.3	1.0	12.1	1.0	5.0	18.2	22.0	0.084
P4KA15A	14.3	15.8	1.0	12.8	1.0	5.0	18.9	21.2	0.084
P4KA16	14.4	17.6	1.0	12.9	1.0	5.0	17.0	23.5	0.086
P4KA16A	15.2	16.8	1.0	13.6	1.0	5.0	17.8	22.5	0.086
P4KA18	16.2	19.8	1.0	14.5	1.0	5.0	15.1	26.5	0.088
P4KA18A	17.1	18.9	1.0	15.3	1.0	5.0	15.9	25.5	0.088
P4KA20	18.0	22.0	1.0	16.2	1.0	5.0	13.7	29.1	0.090
P4KA20A	19.0	21.0	1.0	17.0	1.0	5.0	14.4	27.7	0.090
P4KA22	19.8	24.2	1.0	17.8	1.0	5.0	12.5	31.9	0.092
P4KA22A	20.9	23.1	1.0	18.8	1.0	5.0	13.1	30.6	0.092
P4KA24	21.6	26.4	1.0	19.4	1.0	5.0	11.5	34.2	0.094
P4KA24A	22.8	25.2	1.0	20.5	1.0	5.0	12.0	33.2	0.094
P4KA27	24.3	29.7	1.0	21.8	1.0	5.0	10.2	39.1	0.096
P4KA27A	25.7	28.4	1.0	23.1	1.0	5.0	10.7	37.5	0.096
P4KA30	27.0	33.0	1.0	24.3	1.0	5.0	9.2	43.5	0.097
P4KA30A	28.5	31.5	1.0	25.6	1.0	5.0	9.7	41.4	0.097
P4KA33	29.7	36.3	1.0	26.8	1.0	5.0	8.4	47.7	0.098
P4KA33A	31.4	34.7	1.0	28.2	1.0	5.0	8.8	45.7	0.098
P4KA36	32.4	39.6	1.0	29.1	1.0	5.0	7.7	52.0	0.099
P4KA36A	34.2	37.8	1.0	30.8	1.0	5.0	8.0	49.9	0.099
P4KA39	35.1	42.9	1.0	31.6	1.0	5.0	7.1	56.4	0.100
P4KA39A	37.1	41.0	1.0	33.3	1.0	5.0	7.4	53.9	0.100
P4KA43	38.7	47.3	1.0	34.8	1.0	5.0	6.5	61.9	0.101
P4KA43A	40.9	45.2	1.0	36.8	1.0	5.0	6.7	59.3	0.101

Notes:

- (1) V_(BR) measured after I_T applied for 300μs, I_T = square wave pulse or equivalent
- (2) Surge current waveform per Fig. 3 and derated per Fig. 2
- (3) All terms and symbols are consistent with ANSI/IEEE C62.35



**Ratings and
Characteristic Curves** ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 – Peak Pulse Power Rating Curve

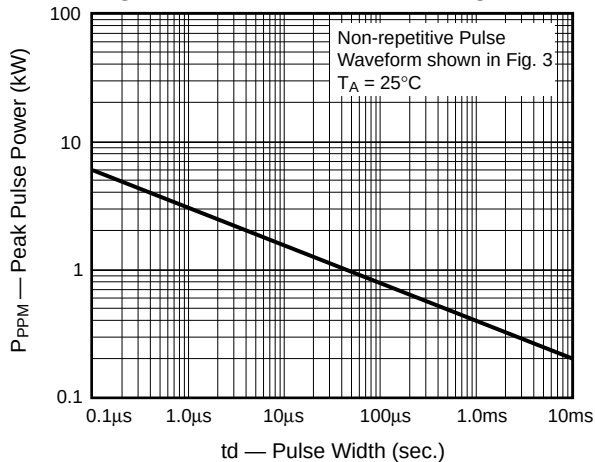


Fig. 2 – Pulse Derating Curve

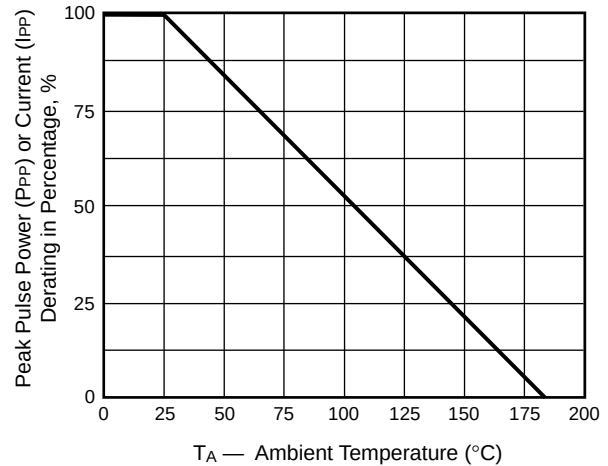


Fig. 3 – Pulse Waveform

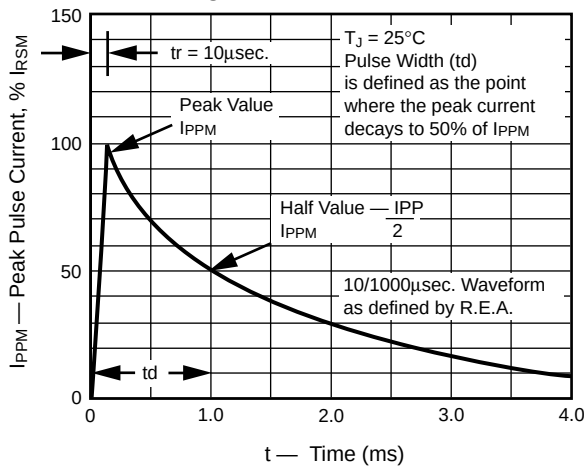
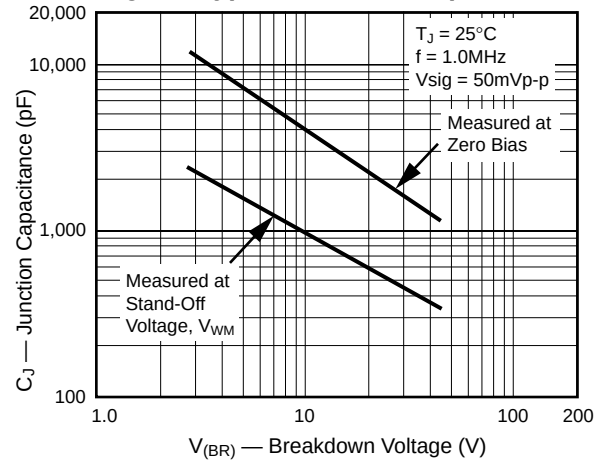
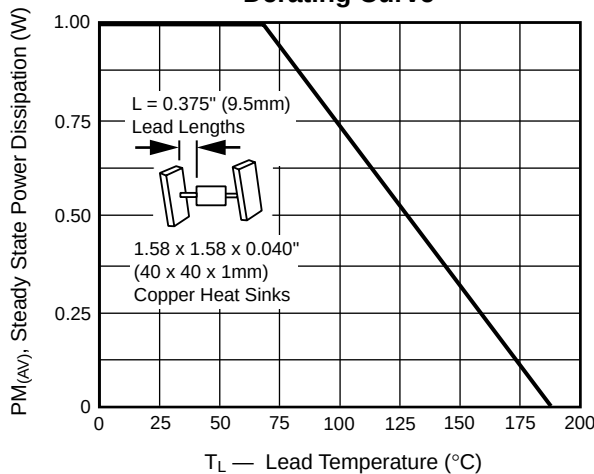


Fig. 4 – Typical Junction Capacitance



**Fig. 5 – Steady State Power
Derating Curve**



**Fig. 6 – Maximum Non-Repetitive/Peak
Forward Surge Current**

