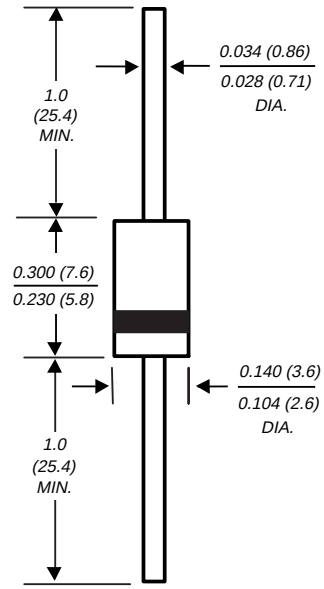
P6KA6.8 THRU P6KA43A

AUTOMOTIVE TRANSIENT VOLTAGE SUPPRESSOR

***Breakdown Voltage** - 6.8 to 43 Volts* ***Peak Pulse Power -** 600 Watts*

PATENTED*

DO-204AC



Dimensions in inches and (millimeters)

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

Available in uni-directional only

FEATURES

- Designed for under the hood applications
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Exclusive patented PAR™ oxide passivated chip construction
- 600W peak pulse power surge capability with a 10/1000μs waveform repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Fast response time: typically less than 1.0ps from 0 Volts to $V_{(BR)}$
- For devices with $V_{(BR)} \geq 10V$, I_D are typically less than1.0μA
- High temperature soldering guaranteed: 300°C/10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3 kg) tension



MECHANICAL DATA

Case: JEDEC DO-204AC molded plastic body over passivated junction
Terminals: Solder plated axial leads, solderable per MIL-STD-750, Method 2026
Polarity: Color band denotes positive end (cathode)
Mounting Position: Any
Weight: 0.015 ounce, 0.4 gram

MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

	SYMBOL	*VALUE*	*UNITS*
Peak pulse power dissipation with a 10/1000μs (NOTE 1, FIG. 1)	P_{PPM}	Minimum 600	Watts
Pulse pulse current with a 10/1000μs waveform (NOTE 1, FIG. 3)	I_{PPM}	SEE TABLE 1	Amps
Steady state power dissipation at T_L=75°C lead lengths 0.375" (9.5mm) (NOTE 2)	$P_{M(AV)}$	5.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (NOTE 3)	I_{FSM}	70.0	Amps
Maximum instantaneous forward voltage at 50A (NOTE 3)	V_F	3.5	Volts
Operating junction and storage temperature range	T_J, T_{STG}	-65 to +185	°C

NOTES:
(1) Non-repetitive current pulse, per Fig. 3 and derated above T_A=25°C per Fig. 2
(2) Mounted on copper pad area of 1.6 x 1.6" (40 x 40mm) per Fig. 5
(3) Measured on 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum

GENERAL SEMICONDUCTOR®

ELECTRICAL CHARACTERISTICS RATINGS at (T_A=25°C unless otherwise noted) TABLE 1

Device Type	Breakdown Voltage $V_{(BR)}$ (Volts) (NOTE 1) MIN	Breakdown Voltage $V_{(BR)}$ (Volts) (NOTE 1) MAX	Test Current at I_T (Amps)	Stand-off Voltage V_{WM} (Volts)	Maximum Reverse Leakage at V_{WM} I_D (μA)	Maximum Reverse Leakage at V_{WM} T_J=150°C I_D (μA)	Peak Pulse Current I_{PPM} (NOTE 2) (Amps)	Maximum Clamping Voltage at I_{PPM} V_C (Volts)	Maximum Temperature Coefficient of $V_{(BR)}$ (% / °C)
P6KA6.8	6.12	7.48	10	5.50	500	1000	55.6	10.8	0.057
P6KA6.8A	6.45	7.14	10	5.80	500	1000	57.1	10.5	0.057
P6KA7.5	6.75	8.25	10	6.05	250	500	51.3	11.7	0.061
P6KA7.5A	7.13	7.88	10	6.40	250	500	53.1	11.3	0.061
P6KA8.2	7.38	9.02	10	6.63	100	200	48.0	12.5	0.065
P6KA8.2A	7.79	8.61	10	7.02	100	200	49.6	12.1	0.065
P6KA9.1	8.19	10.0	1.0	7.37	25.0	100	43.5	13.8	0.068
P6KA9.1A	8.65	9.55	1.0	7.78	25.0	100	44.8	13.4	0.068
P6KA10	9.00	11.0	1.0	8.10	10.0	50	40.0	15.0	0.073
P6KA10A	9.50	10.5	1.0	8.55	10.0	50	41.4	14.5	0.073
P6KA11	9.90	12.1	1.0	8.92	5.0	20.0	37.0	16.2	0.075
P6KA11A	10.5	11.6	1.0	9.40	5.0	20.0	38.5	15.6	0.076
P6KA12	10.8	13.2	1.0	9.72	2.0	10.0	34.7	17.3	0.076
P6KA12A	11.4	12.6	1.0	10.2	2.0	10.0	35.9	16.7	0.078
P6KA13	11.7	14.3	1.0	10.5	2.0	10.0	31.6	19.0	0.081
P6KA13A	12.4	13.7	1.0	11.1	2.0	10.0	33.0	18.2	0.081
P6KA15	13.5	16.3	1.0	12.1	2.0	10.0	27.3	22.0	0.084
P6KA15A	14.3	15.8	1.0	12.8	2.0	10.0	28.3	21.2	0.084
P6KA16	14.4	17.6	1.0	12.9	2.0	10.0	25.5	23.5	0.086
P6KA16A	15.2	16.8	1.0	13.6	2.0	10.0	26.7	22.5	0.086
P6KA18	16.2	19.8	1.0	14.5	2.0	10.0	22.6	26.5	0.088
P6KA18A	17.1	18.9	1.0	15.3	2.0	10.0	23.8	25.2	0.088

ELECTRICAL CHARACTERISTIC RATINGS (T_A = 25°C unless otherwise noted) TABLE 1 (Cont'd)

Device Type	Breakdown Voltage $V_{(BR)}$ Volts (NOTE 1) MIN	Breakdown Voltage $V_{(BR)}$ Volts (NOTE 1) MAX	Test Current at I_T (mA)	Stand-off Voltage Vwm (Volts)	Maximum Reverse Leakage at V_{WM} I_D (μA)	Tc=150°C Maximum Reverse Leakage at V_{WM} I_D (μA)	Peak Pulse Current I_{PPM} (NOTE 2) (Amps)	Maximum Clamping Voltage at I_{PPM} V_C (Volts)	Maximum Temperature Coefficient of $V_{(BR)}$ (% / °C)
P6KA20	18.0	22.0	1.0	16.2	2.0	10.0	20.6	29.1	0.090
P6KA20A	19.0	21.0	1.0	17.1	2,0	10.0	21.7	27.7	0.090
P6KA22	19.8	24.2	1.0	17.8	2.0	10.0	18.8	31.9	0.092
P6KA22A	20.9	23.1	1.0	18.8	2.0	10.0	19.6	30.6	0.092
P6KA24	21.6	26.4	1.0	19.4	2.0	10.0	17.3	34.7	0.094
P6KA24A	22.8	25.2	1.0	20.5	2.0	10.0	18.1	33.6	0.094
P6KA27	24.3	29.7	1.0	21.8	2.0	10.0	15.3	39.1	0.096
P6KA27A	25.7	28.4	1.0	23.1	2.0	10.0	16.0	37.5	0.096
P6KA30	27.0	33.0	1.0	24.3	2.0	10.0	13.8	43.5	0.097
P6KA30A	28.5	31.5	1.0	25.6	2.0	10.0	14.5	41.4	0.097
P6KA33	29.7	36.3	1.0	26.8	2.0	10.0	12.6	47.7	0.098
P6KA33A	31.4	34.7	1.0	28.2	2.0	10.0	13.1	45.7	0.098
P6KA36	32.4	39.6	1.0	29.1	2.0	10.0	11.5	52.0	0.099
P6KA36A	34.2	37.8	1.0	30.8	2.0	10.0	12.0	49.9	0.099
P6KA39	35.1	42.9	1.0	31.6	2.0	10.0	10.6	56.4	0.100
P6KA39A	37.1	41.0	1.0	33.3	2.0	10.0	11.1	53.9	0.100
P6KA43	38.7	47.3	1.0	34.8	2.0	10.0	9.7	61.9	0.101
P6KA43A	40.9	45.2	1.0	36.8	2.0	10.0	10.1	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 derate per Fig. 2
(3) All terms and symbols are consistent with ANSI/IEEE C62.35

FIG. 1 - PEAK PULSE POWER RATING CURVE

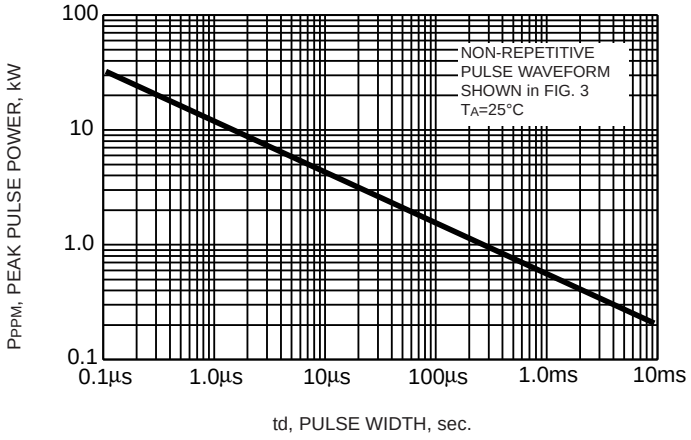


FIG. 2 - PULSE DERATING CURVE

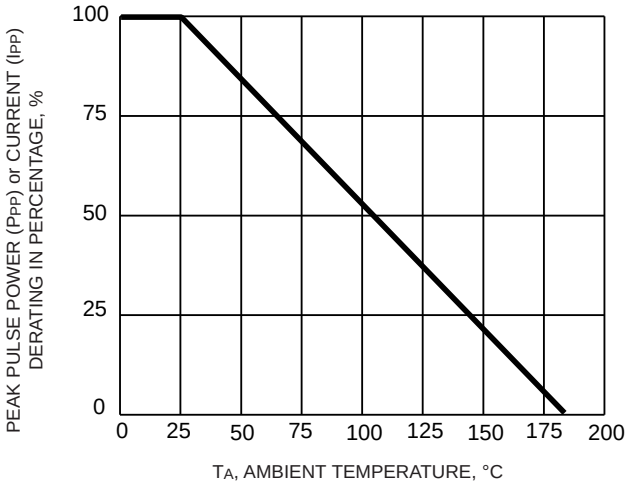


FIG. 3 - PULSE WAVEFORM

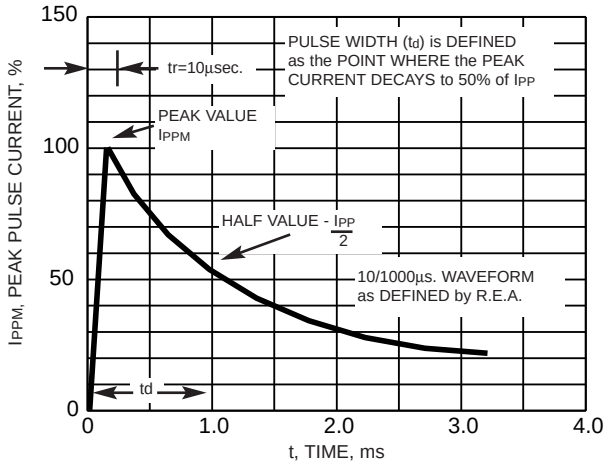


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

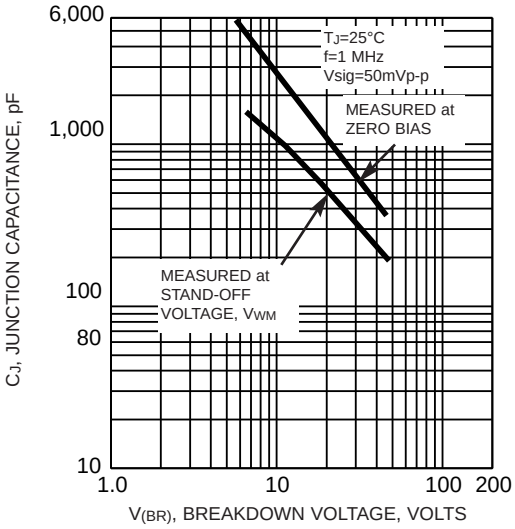


FIG. 5 - STEADY STATE POWER DERATING CURVE

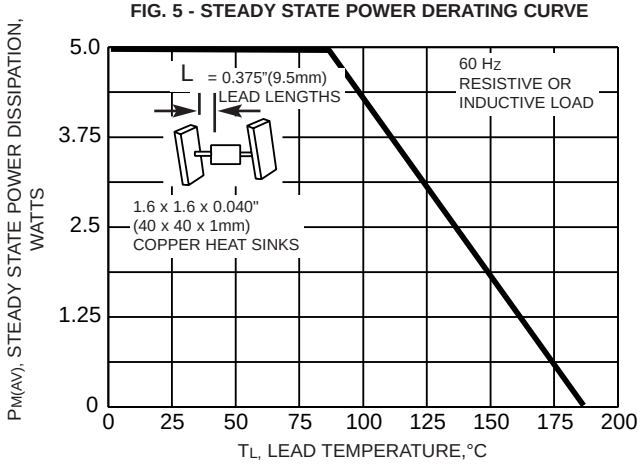


FIG. 6 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

