

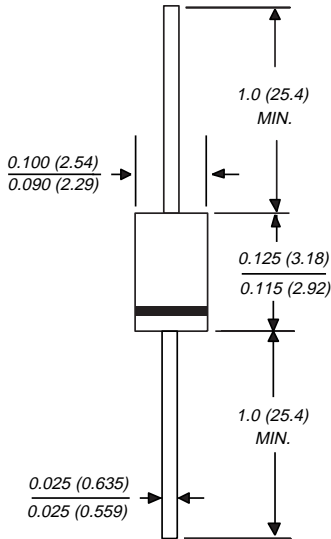
# TMPG06-6.8 THRU TMPG06-43A

## AUTOMOTIVE TRANSIENT VOLTAGE SUPPRESSOR

Breakdown Voltage - 6.8 to 43 Volts Peak Pulse Power - 400 Watts

**PATENTED\***

### Case Style TMPG-06



Dimensions in inches and (millimeters)

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

**Available in uni-directional only**

### FEATURES

- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◆ Designed for the hood applications
- ◆ Available in uni-directional only
- ◆ Exclusive patented PAR™ oxide passivated chip construction
- ◆ 400W peak pulse power capability on 10/1000μs waveform, repetition rate (duty cycle): 1.0%
- ◆ Excellent clamping capability
- ◆ Low incremental surge resistance
- ◆ Fast response time: typically less than 1.0ps from 0 Volts to V<sub>(BR)</sub>
- ◆ For devices with V<sub>(BR)</sub>≥10V, I<sub>D</sub> are typically less than 1.0μA
- ◆ High temperature soldering guaranteed: 300°C/10 seconds 0.375 (9.5mm) lead length, 5lbs (2.3 kg) tension

### MECHANICAL DATA

**Case:** Molded plastic over a passivated junction

**Terminals:** Axial leads, solderable per MIL-STD-750, Method 2026

**Polarity:** Color band denotes positive end (cathode)

**Mounting Position:** Any

**Weight:** 0.0064 ounce, 0.181 gram

### MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

	SYMBOL	VALUE	UNITS
Peak power dissipation with a 10/1000μs waveform (NOTE 1, FIG. 1)	PPPM	Minimum 400	Watts
Peak pulse power current with a 10/1000μs waveform (NOTE 1,2, FIG. 3)	IPPM	SEE TABLE 1	Amps
Steady state power dissipation at T <sub>L</sub> =75°C lead lengths 0.25" (6.33mm) (NOTE 2)	PM(AV)	1.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (NOTE 3)	I <sub>FSM</sub>	40.0	Amps
Maximum instantaneous forward voltage at 25A (NOTE 3)	V <sub>F</sub>	3.5	Volts
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +185	°C

#### NOTES:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub>=25°C per Fig. 2
- (2) Mounted on copper pads area of 1.6 x 1.6" (40 x 40mm)
- (3) Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum

 GENERAL SEMICONDUCTOR®

**ELECTRICAL CHARACTERISTICS at (T<sub>A</sub>=25°C unless otherwise noted) TABLE 1**

Device Type	Breakdown Voltage V <sub>(BR)</sub> Volts (NOTE 1)		Test Current at I <sub>T</sub> (mA)	Stand-off Voltage V <sub>WM</sub> (Volts)	Maximum Reverse Leakage at V <sub>WM</sub> I <sub>D</sub> (μA)	Maximum Reverse Leakage at V <sub>WM</sub> T <sub>J</sub> =150°C I <sub>D</sub> (μA)	Peak Pulse Current I <sub>PPM</sub> (NOTE 2) (Amps)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>C</sub> (Volts)	Maximum Temperature Coefficient of V <sub>(BR)</sub> (% / °C)
	MIN	MAX							
TMPG06-6.8	6.12	7.48	10.0	5.50	300	1000	27.8	10.8	0.057
TMPG06-6.8A	6.45	7.14	10.0	5.80	300	1000	28.6	10.5	0.057
TMPG06-7.5	6.75	8.25	10.0	6.05	150	500	25.6	11.7	0.060
TMPG06-7.5A	7.13	7.88	10.0	6.40	150	500	26.5	11.3	0.061
TMPG06-8.2	7.38	9.02	10.0	6.63	50.0	200	24.0	12.5	0.065
TMPG06-8.2A	7.79	8.61	10.0	7.02	50.0	200	24.8	12.1	0.065
TMPG06-9.1	8.19	10.0	1.0	7.37	10.0	50.0	21.7	13.8	0.068
TMPG06-9.1A	8.65	9.55	1.0	7.78	10.0	50.0	22.4	13.4	0.068
TMPG06-10	9.00	11.0	1.0	8.10	5.0	20.0	26.7	15.0	0.073
TMPG06-10A	9.50	10.5	1.0	8.55	5.0	20.0	27.6	14.5	0.073
TMPG06-11	9.90	12.1	1.0	8.92	2.0	10.0	24.7	16.2	0.075
TMPG06-11A	10.5	11.6	1.0	9.40	2.0	10.0	25.6	15.6	0.075
TMPG06-12	10.8	13.2	1.0	9.72	1.0	5.0	23.1	17.3	0.076
TMPG06-12A	11.4	12.6	1.0	10.2	1.0	5.0	24.0	16.7	0.078
TMPG06-13	11.7	14.3	1.0	10.5	1.0	5.0	21.1	19.0	0.081
TMPG06-13A	12.4	13.7	1.0	11.1	1.0	5.0	22.0	18.2	0.081
TMPG06-15	13.5	16.3	1.0	12.1	1.0	5.0	18.2	22.0	0.084
TMPG06-15A	14.3	15.8	1.0	12.8	1.0	5.0	18.9	21.2	0.084
TMPG06-16	14.4	17.6	1.0	12.9	1.0	5.0	17.0	23.5	0.086
TMPG06-16A	15.2	16.8	1.0	13.6	1.0	5.0	17.8	22.5	0.086
TMPG06-18	16.2	19.8	1.0	14.5	1.0	5.0	15.1	26.5	0.088
TMPG06-18A	17.1	18.9	1.0	15.3	1.0	5.0	15.9	25.5	0.088
TMPG06-20	18.0	22.0	1.0	16.2	1.0	5.0	13.7	29.1	0.090
TMPG06-20A	19.0	21.0	1.0	17.0	1.0	5.0	14.4	27.7	0.090

**ELECTRICAL CHARACTERISTICS at (T<sub>A</sub>=25°C unless otherwise noted) TABLE 1 (Cont'd)**

Device Type	Breakdown Voltage V <sub>(BR)</sub> (Volts) (NOTE 1)		Test Current at I <sub>T</sub> (mA)	Stand-off Voltage V <sub>WM</sub> (Volts)	Maximum Reverse Leakage at V <sub>WM</sub> I <sub>D</sub> (μA)	Maximum Reverse Leakage at V <sub>WM</sub> T <sub>J</sub> =150°C I <sub>D</sub> (μA)	Peak Pulse Current I <sub>PPM</sub> (NOTE 2) (Amps)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>C</sub> (Volts)	Maximum Temperature Coefficient of V <sub>(BR)</sub> (% / °C)
	MIN	MAX							
TMPG06-22	19.8	24.2	1.0	17.8	1.0	5.0	12.5	31.9	0.092
TMPG06-22A	20.9	23.1	1.0	18.8	1.0	5.0	13.1	30.6	0.092
TMPG06-24	21.6	26.4	1.0	19.4	1.0	5.0	11.5	34.2	0.094
TMPG06-24A	22.8	25.2	1.0	20.5	1.0	5.0	12.0	33.2	0.094
TMPG06-27	24.3	29.7	1.0	21.8	1.0	5.0	10.2	39.1	0.096
TMPG06-27A	25.7	28.4	1.0	23.1	1.0	5.0	10.7	37.5	0.096
TMPG06-30	27.0	33.0	1.0	24.3	1.0	5.0	9.2	43.5	0.097
TMPG06-30A	28.5	31.5	1.0	25.6	1.0	5.0	9.7	41.4	0.097
TMPG06-33	29.7	36.3	1.0	26.8	1.0	5.0	8.4	47.7	0.098
TMPG06-33A	31.4	34.7	1.0	28.2	1.0	5.0	8.8	45.7	0.098
TMPG06-36	32.4	39.6	1.0	29.1	1.0	5.0	7.7	52.0	0.099
TMPG06-36A	34.2	37.8	1.0	30.8	1.0	5.0	8.0	49.9	0.099
TMPG06-39	35.1	42.9	1.0	31.6	1.0	5.0	7.1	56.4	0.100
TMPG06-39A	37.1	41.0	1.0	33.3	1.0	5.0	7.4	53.9	0.100
TMPG06-43	38.7	47.3	1.0	34.8	1.0	5.0	6.5	61.9	0.101
TMPG06-43A	40.9	45.2	1.0	36.8	1.0	5.0	6.7	59.3	0.101

**NOTES:**

- (1) V<sub>(BR)</sub> measured after I<sub>T</sub> applied for 300μs, I<sub>T</sub>=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

# RATING AND CHARACTERISTIC CURVES TMPG06-6.8 THRU TMPG06-43A

FIG. 1 - PEAK PULSE POWER RATING CURVE

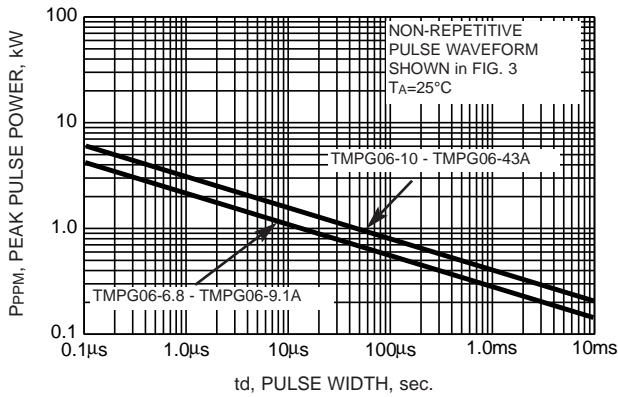


FIG. 2 - PULSE DERATING CURVE

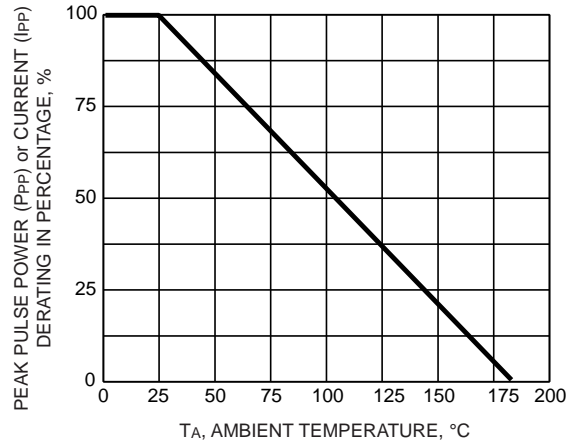


FIG. 3 - PULSE WAVEFORM

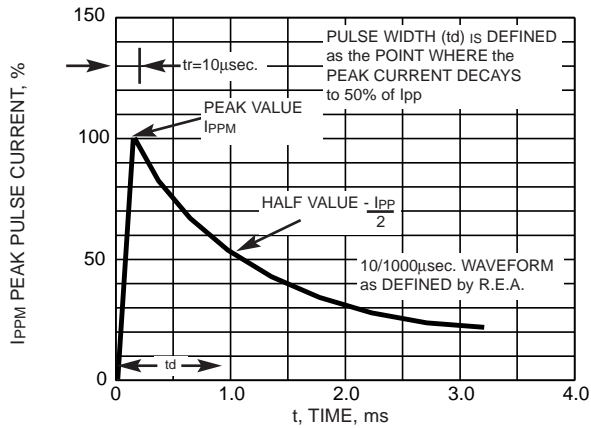


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

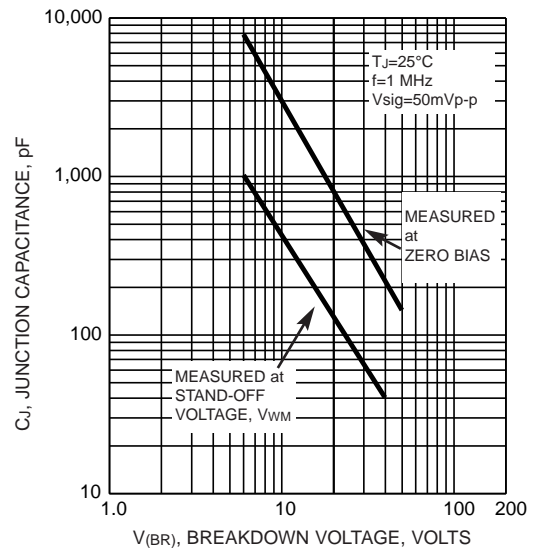


FIG. 5 - STEADY STATE POWER DERATING CURVE

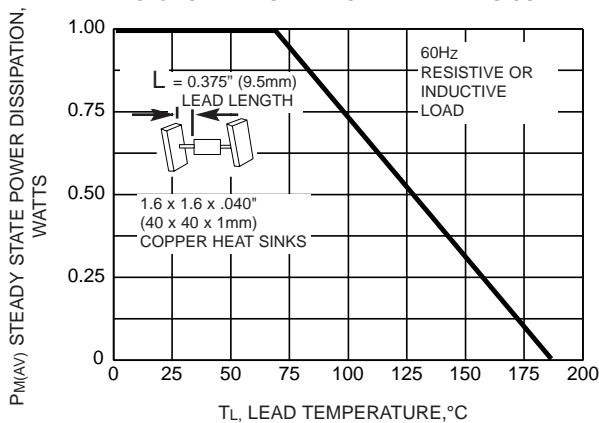


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

