

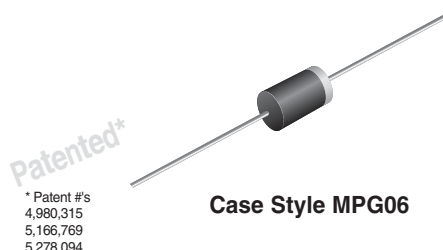


## Automotive Transient Voltage Suppressors

### High Temperature Stability & High Reliability Conditions

#### Major Ratings and Characteristics

$V_{(BR)}$	6.8 V to 43 V
$P_{PPM}$	400 W
$P_D$	1.0 W
$I_{FSM}$	40 A
$T_J$ max.	185 °C



#### Features

- Patented PAR<sup>®</sup> construction
- Available in Unidirectional polarity only
- 400 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Typical  $I_D$  less than 1.0  $\mu$ A above 10 V rating
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



#### 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, automotive and Telecommunication.

#### Mechanical Data

**Case:** MPG06, molded epoxy over passivated junction  
Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D  
E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

**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 $\mu$ s waveform <sup>(1)</sup> (Fig. 1)	$P_{PPM}$	Minimum 400	W
Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)(2)</sup> (Fig. 3)	$I_{PPM}$	see next table	A
Power dissipation on infinite heatsink at $T_L = 75$ °C (Fig. 5)	$P_D$	1.0	W
Peak forward surge current 8.3 ms single half sine-wave <sup>(2)</sup>	$I_{FSM}$	40	A
Maximum instantaneous forward voltage at 25 A <sup>(2)</sup>	$V_F$	3.5	V
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) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

# TMPG06-6.8 thru TMPG06-43A

Vishay General Semiconductor



## Electrical Characteristics

( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Device Type	Maximum Breakdown Voltage $V_{(BR)}^{(1)}$ at $I_T$ (V)		Test Current $I_T$ (mA)	Stand-off Voltage $V_{WM}$ (V)	Maximum Reverse Leakage at $V_{WM}$ $I_D$ ( $\mu\text{A}$ )	Reverse Leakage at $V_{WM}$ $T_J = 150\text{ }^{\circ}\text{C}$ $I_D$ ( $\mu\text{A}$ )	Peak Pulse Current $I_{PPM}^{(2)}$ (A)	Maximum Clamping Voltage at $I_{PPM}$ $V_C$ (Volts)	Maximum Temp. Coefficient of $V_{(BR)}$ (% / $^{\circ}\text{C}$ )
	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
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) Pulse test:  $t_p \leq 50\text{ ms}$

(2) Surge current waveform per Fig. 3 and derated per Fig. 2

(3) All terms and symbols are consistent with ANSI/IEEE C62.35



## Ordering Information

Preferred P/N	Unit Weight (g)	Preferred Package Code	Base Quantity	Delivery Mode
TMPG06-6.8A-E3/54	0.218	54	5500	13" Diameter Paper Tape & Reel

## Ratings and Characteristics Curves

( $T_A = 25^\circ\text{C}$  unless otherwise specified)

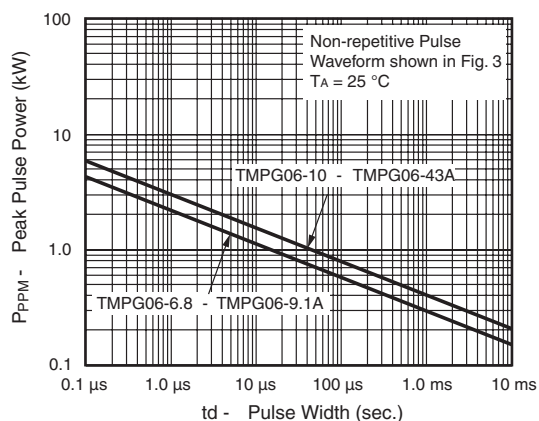


Figure 1. Peak Pulse Power Rating Curve

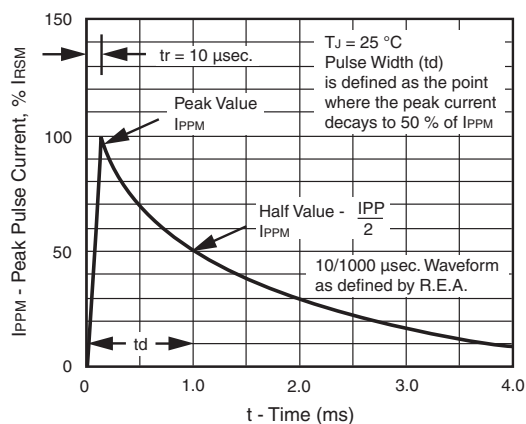


Figure 3. Pulse Waveform

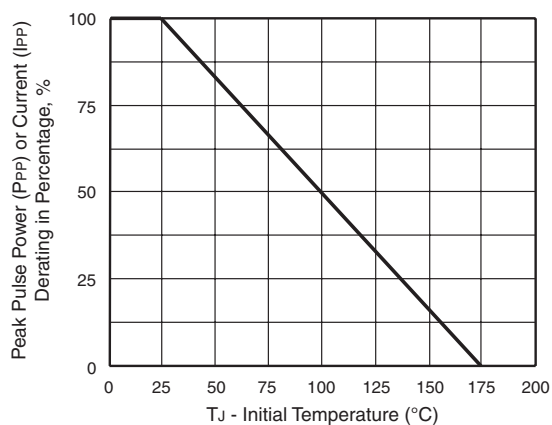


Figure 2. Pulse Power or Current versus Initial Junction Temperature

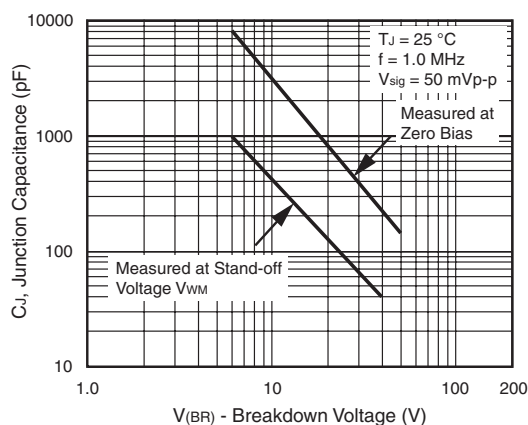


Figure 4. Typical Junction Capacitance

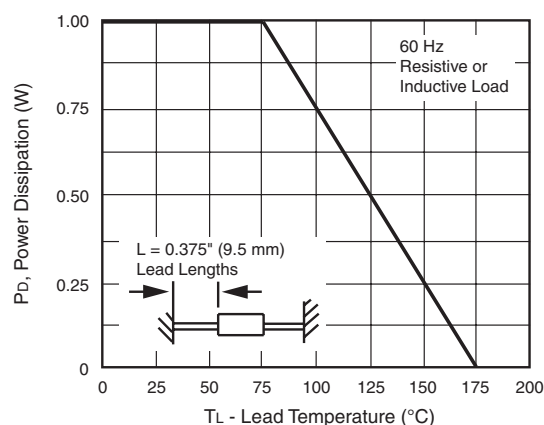


Figure 5. Power Derating Curve

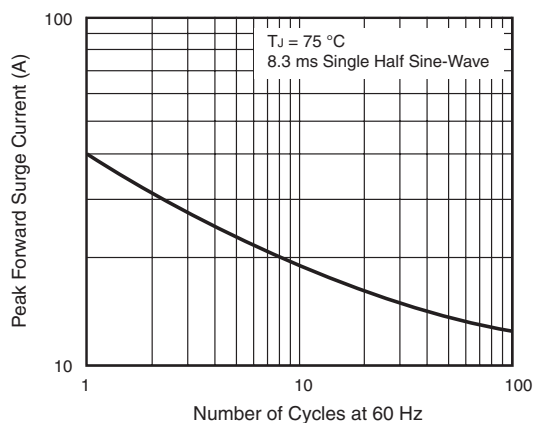
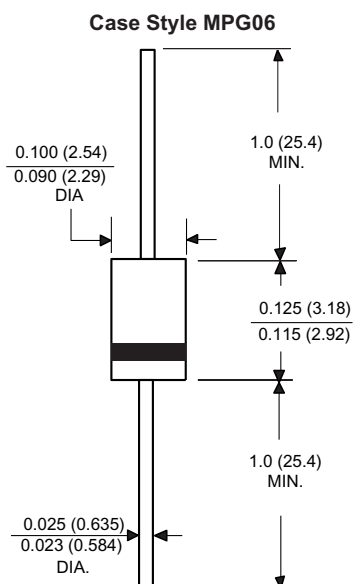


Figure 6. Maximum Non-Repetitive Forward Surge Current

## Package outline dimensions in inches (millimeters)





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