

Vishay General Semiconductor

# PAR® Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



PRIMARY CHARACTERISTICS						
$V_{BR}$	6.8 V to 43 V					
P <sub>PPM</sub>	400 W					
$P_{D}$	1.0 W					
I <sub>FSM</sub>	40 A					
T <sub>J</sub> max.	185 °C					

### **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.

### **FEATURES**

 Junction passivation optimized design passivated anisotropic rectifier technology



 T<sub>J</sub> = 185 °C capability suitable for high reliability and automotive requirement

RoHS

- Available in uni-directional polarity only
- 400 W peak pulse power capability with a 10/1000 µs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- · Very fast response time
- · Low incremental surge resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

### **MECHANICAL DATA**

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

Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

HE3 suffix meets JESD 201 class 2 whisker test **Polarity:** Color band denotes cathode end

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	LIMIT	UNIT					
Peak power dissipation with a 10/1000 μs waveform <sup>(1)</sup> (fig. 1)	P <sub>PPM</sub>	400	W					
Peak pulse current with a 10/1000 μs waveform <sup>(1)(2)</sup> (fig. 3)	I <sub>PPM</sub>	See next table	Α					
Power dissipation on infinite heatsink at $T_L = 75$ °C (fig. 5)	P <sub>D</sub>	1.0	W					
Peak forward surge current 8.3 ms single half sine-wave (2)	I <sub>FSM</sub>	40	Α					
Maximum instantaneous forward voltage at 25 A (2)	V <sub>F</sub>	3.5	V					
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  $T_A = 25$  °C per fig. 2

<sup>(2)</sup> 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**

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$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	ELECTRICAL	L CHAR	ACTER	ISTICS (	Γ <sub>A</sub> = 25 °C	unless othe	rwise noted	<del>d</del> )		
MIN.   MAX.   MAX.   MIN.   MIN.   MAX.   MIN.	DEVICE TYPE	BREAK VOLTAG	KDOWN E V <sub>BR</sub> <sup>(1)</sup>	CURRENT	OFF VOLTAGE	REVERSE LEAKAGE	LEAKAGE AT V <sub>WM</sub>	PULSE CURRENT	CLAMPING VOLTAGE	COEFFICIENT
TMPG06-8.8   4   6.45						I <sub>D</sub> (μ <b>A</b> )	_		V <sub>C</sub> (V)	
TMPG06-7.5 (**)   6.75	TMPG06-6.8 (4)	6.12	7.48	10.0	5.50	300	1000	27.8	10.8	0.057
TMPG06-7.5A (4)   7.13   7.88   10.0   6.40   150   500   26.5   11.3   0.061	TMPG06-6.8A (4)	6.45	7.14	10.0	5.80	300	1000	28.6	10.5	0.057
TMPG06-82 (*)   7.38   9.02   10.0   6.63   50.0   200   24.0   12.5   0.065   110066-21   7.79   8.61   10.0   7.02   50.0   200   24.8   12.1   0.065   110069-11   7.77   8.61   10.0   7.07   10.0   50.0   21.7   13.8   0.068   110069-11   7.78   10.0   50.0   22.4   13.4   0.068   110069-11   7.78   10.0   50.0   22.4   13.4   0.068   110069-10   9.00   11.0   1.0   8.10   5.0   20.0   26.7   15.0   0.073   110069-10   9.00   11.0   1.0   8.10   5.0   20.0   26.7   15.0   0.073   110069-10   9.00   11.0   1.0   8.55   5.0   20.0   27.6   14.5   0.073   110069-11   9.90   12.1   1.0   8.92   2.0   10.0   27.6   14.5   0.075   110069-11   9.90   12.1   1.0   9.40   2.0   10.0   25.6   15.6   0.075   110069-12   10.8   13.2   1.0   9.72   1.0   5.0   23.1   17.3   0.076   110069-12   10.8   13.2   1.0   9.72   1.0   5.0   23.1   17.3   0.076   110069-12   11.4   12.6   1.0   10.2   1.0   5.0   24.0   16.7   0.078   110069-13   11.7   14.3   1.0   10.5   1.0   5.0   21.1   19.0   0.081   110069-13   11.7   14.3   1.0   10.5   1.0   5.0   21.1   19.0   0.081   110069-13   13.5   16.3   1.0   12.1   1.0   5.0   18.2   22.0   0.084   110069-15   13.5   16.3   1.0   12.8   1.0   5.0   18.2   22.0   0.084   110069-16   14.4   17.6   1.0   12.8   1.0   5.0   17.0   23.5   0.086   110069-16   14.4   17.6   1.0   12.8   1.0   5.0   17.0   23.5   0.086   110069-18   16.2   19.8   1.0   14.5   1.0   5.0   15.1   26.5   0.088   110069-18   1.0   1.0   1.0   1.0   1.0   5.0   11.1   3.0   0.090   110069-20   18.0   22.0   1.0   16.2   1.0   5.0   13.7   29.1   0.090   110069-20   19.0   21.0   1.0   17.0   1.0   5.0   13.7   29.1   0.090   110069-20   19.8   24.2   1.0   17.8   1.0   5.0   13.1   3.6   0.092   110069-20   13.0   21.0   1.0   17.0   1.0   5.0   13.1   3.6   0.092   110069-20   13.0   21.0   1.0   17.0   1.0   5.0   13.1   3.6   0.092   110069-20   13.0   21.0   1.0   17.0   1.0   5.0   13.1   3.0   0.090   110069-20   13.0   21.0   1.0   12.8   1.0   5.0   13.7   29.1   0.090   110069-20   23.1   1.0   24.	TMPG06-7.5 (4)	6.75	8.25	10.0	6.05	150	500	25.6	11.7	0.060
TMPG06-8.2A (4)   7.79	TMPG06-7.5A (4)	7.13	7.88	10.0	6.40	150	500	26.5	11.3	0.061
TMPG06-9.1 (4)   8.19   10.0   1.0   7.37   10.0   50.0   21.7   13.8   0.068   1MPG06-9.1 (4)   8.65   9.55   1.0   7.78   10.0   50.0   22.4   13.4   0.068   1MPG06-10   9.00   11.0   1.0   8.10   5.0   20.0   26.7   15.0   0.073   1MPG06-10A   9.50   10.5   1.0   8.95   5.0   20.0   27.6   14.5   0.073   1MPG06-11   9.90   12.1   1.0   8.92   2.0   10.0   24.7   16.2   0.075   1MPG06-11   10.5   11.6   1.0   9.40   2.0   10.0   25.6   15.6   0.075   1MPG06-12A   11.4   12.6   1.0   9.72   1.0   5.0   23.1   17.3   0.076   1MPG06-12A   11.4   12.6   1.0   10.2   1.0   5.0   24.0   16.7   0.078   1MPG06-13A   12.4   13.7   1.0   11.1   1.0   5.0   22.0   18.2   0.081   1MPG06-13A   12.4   13.7   1.0   11.1   1.0   5.0   22.0   18.2   0.081   1MPG06-15A   14.3   15.8   1.0   12.1   1.0   5.0   18.2   22.0   0.084   1MPG06-16A   14.4   17.6   1.0   12.9   1.0   5.0   17.0   23.5   0.086   1MPG06-16A   14.4   17.6   1.0   12.9   1.0   5.0   17.0   23.5   0.086   1MPG06-18A   15.2   16.8   1.0   13.6   1.0   5.0   17.0   23.5   0.086   1MPG06-18A   15.2   16.8   1.0   15.3   1.0   5.0   17.8   22.5   0.086   1MPG06-18A   17.1   18.9   1.0   15.3   1.0   5.0   15.9   25.5   0.086   1MPG06-20   18.0   22.0   1.0   16.2   1.0   5.0   13.7   29.1   0.090   1MPG06-20   18.0   22.0   1.0   16.2   1.0   5.0   13.7   29.1   0.090   1MPG06-20   18.0   22.0   1.0   16.2   1.0   5.0   13.7   29.1   0.090   1MPG06-20   18.0   22.0   1.0   16.2   1.0   5.0   13.1   30.6   0.092   1MPG06-24   21.6   26.4   1.0   17.8   1.0   5.0   13.1   30.6   0.092   1MPG06-24   21.6   26.4   1.0   19.4   1.0   5.0   11.5   34.2   0.094   1MPG06-30   27.0   33.0   1.0   24.3   1.0   5.0   10.7   37.5   0.096   1MPG06-30   27.0   33.0   1.0   24.3   1.0   5.0   5.0   37.7   52.0   0.099   1MPG06-33   29.7   36.3   1.0   28.2   1.0   5.0   5.0   5.0   8.8   45.7   0.098   1MPG06-39   35.1   42.9   1.0   31.6   1.0   5.0   5.0   7.7   52.0   0.099   1MPG06-39A   37.1   41.0   1.0   33.3   1.0   5.0   5.0   7.1   56.4   0.100   1MPG06-39A   37.	TMPG06-8.2 (4)	7.38	9.02	10.0	6.63	50.0	200	24.0	12.5	0.065
TMPG06-9.1A (4)   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   TMPG06-11   9.90   12.1   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   TMPG06-11   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   TMPG06-12   10.8   13.2   1.0   9.72   1.0   5.0   23.1   17.3   0.076   TMPG06-12   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   22.0   18.2   0.081   TMPG06-13   12.4   13.7   1.0   11.1   1.0   5.0   22.0   18.2   0.081   TMPG06-15A   14.3   15.8   1.0   12.1   1.0   5.0   12.2   2.0   0.084   TMPG06-15A   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   17.0   23.5   0.086   TMPG06-16A   15.2   16.8   1.0   13.6   1.0   5.0   17.8   22.5   0.086   TMPG06-18A   17.1   18.9   1.0   14.5   1.0   5.0   15.9   25.5   0.086   TMPG06-18A   17.1   18.9   1.0   14.5   1.0   5.0   15.9   25.5   0.086   TMPG06-18A   17.1   18.9   1.0   15.3   1.0   5.0   17.8   22.5   0.086   TMPG06-18A   17.1   18.9   1.0   14.5   1.0   5.0   15.9   25.5   0.086   TMPG06-18A   17.1   18.9   1.0   15.3   1.0   5.0   15.9   25.5   0.086   TMPG06-20   18.0   22.0   1.0   16.2   1.0   5.0   13.7   29.1   0.090   TMPG06-20   18.0   22.0   1.0   16.2   1.0   5.0   13.1   30.6   0.092   TMPG06-22   19.8   24.2   1.0   17.0   1.0   5.0   12.5   31.9   0.090   TMPG06-24   21.6   26.4   1.0   19.4   1.0   5.0   12.5   31.9   0.090   TMPG06-24   21.6   26.4   1.0   19.4   1.0   5.0   11.5   34.2   0.094   TMPG06-27   24.3   29.7   1.0   23.1   1.0   5.0   10.2   39.1   0.096   TMPG06-30   27.0   33.0   1.0   24.3   1.0   5.0   5.0   38.8   45.7   0.098   TMPG06-30   27.0   33.0   1.0   24.3   1.0   5.0   5.0   7.7   52.0   0.099   TMPG06-30   32.4   39.6   1.0   28.2   1.0	TMPG06-8.2A (4)	7.79	8.61	10.0	7.02	50.0	200	24.8	12.1	0.065
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           TMPG06-11A         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           TMPG06-13A         12.4         13.7         1.0         10.5         1.0         5.0         22.0         18.2         2.0         0.081           TMPG06-15A         14.3         15.8         1.0         12.8         1.0         5.0         18.9         21.2         0.084           TMPG06-15A         16.2         16.3 </td <td>TMPG06-9.1 (4)</td> <td>8.19</td> <td>10.0</td> <td>1.0</td> <td>7.37</td> <td>10.0</td> <td>50.0</td> <td>21.7</td> <td>13.8</td> <td>0.068</td>	TMPG06-9.1 (4)	8.19	10.0	1.0	7.37	10.0	50.0	21.7	13.8	0.068
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 23.1 17.3 0.076 TMPG06-13A 11.7 14.3 1.0 10.5 1.0 5.0 24.0 16.7 0.078 TMPG06-13A 12.4 13.7 1.0 11.1 1.0 5.0 22.0 18.2 0.081 TMPG06-15A 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 18.2 22.0 0.084 TMPG06-16A 15.2 16.8 1.0 12.9 1.0 5.0 18.9 21.2 0.086 TMPG06-16A 15.2 16.8 1.0 13.6 1.0 5.0 17.0 23.5 0.086 TMPG06-18A 15.2 16.8 1.0 13.6 1.0 5.0 15.1 26.5 0.088 TMPG06-18A 17.1 18.9 1.0 14.5 1.0 5.0 15.1 26.5 0.088 TMPG06-18A 17.1 18.9 1.0 14.5 1.0 5.0 15.1 26.5 0.088 TMPG06-20A 19.0 21.0 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 13.7 29.1 0.090 TMPG06-24A 22.8 25.2 1.0 17.8 1.0 5.0 13.1 30.6 0.092 TMPG06-24A 22.8 25.2 1.0 20.5 1.0 5.0 13.1 30.6 0.092 TMPG06-27 24.3 29.7 1.0 21.8 1.0 5.0 13.1 30.6 0.092 TMPG06-30A 27.0 33.0 1.0 24.3 1.0 5.0 13.7 37.5 0.096 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 38.8 45.7 0.096 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 8.8 44.7 0.099 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 8.8 44.7 0.099 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 8.8 45.7 0.099 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 8.8 45.7 0.099 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 8.8 45.7 0.099 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 8.8 45.7 0.099 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 8.8 45.7 0.099 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 8.8 45.7 0.099 TMPG06-30A 31.4 34.7 1.0 28.2 1.0 5.0 8.8 45.7 0.099 TMPG06-30A 37.1 41.0 11.0 31.6 1.0 5.0 7.7 52.0 0.099 TMPG06-39A 37.1 41.0 11.0 31.6 1.0 5.0 7.4 53.9 0.009	TMPG06-9.1A (4)	8.65	9.55	1.0	7.78	10.0	50.0	22.4	13.4	0.068
TMPG06-11	TMPG06-10	9.00	11.0	1.0	8.10	5.0	20.0	26.7	15.0	0.073
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         22.0         18.2         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           TMPG06-18         16.2         16.8         1.0	TMPG06-10A	9.50	10.5	1.0	8.55	5.0	20.0	27.6	14.5	0.073
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         22.0         18.2         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         22.0         18.2         0.084           TMPG06-15A         14.3         15.8         1.0         12.8         1.0         5.0         18.9         21.2         0.084           TMPG06-16A         15.2         16.8         1.0         13.6         1.0         5.0         17.0         23.5         0.086           TMPG06-18A         16.2         19.8         1.0         14.5         1.0         5.0         15.1         26.5         0.088           TMPG06-20A         18.0         22.0         1.0	TMPG06-11	9.90	12.1	1.0	8.92	2.0	10.0	24.7	16.2	0.075
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           TMPG06-16A         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           TMPG06-18A         17.1         18.9         1.0         15.3         1.0         5.0         15.1         26.5         0.088           TMPG06-20         18.0         22.0         1.0	TMPG06-11A	10.5	11.6	1.0	9.40	2.0	10.0	25.6	15.6	0.075
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	TMPG06-12	10.8	13.2	1.0	9.72	1.0	5.0	23.1	17.3	0.076
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           TMPG06-18A         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         17.8	TMPG06-12A	11.4	12.6	1.0	10.2	1.0	5.0	24.0	16.7	0.078
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           TMPG06-18A         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           TMPG06-22A         20.9         23.1         1.0	TMPG06-13	11.7	14.3	1.0	10.5	1.0	5.0	21.1	19.0	0.081
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           TMPG06-18A         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         13.7         29.1         0.090           TMPG06-22A         19.8         24.2         1.0         17.8         1.0         5.0         12.5         31.9         0.092           TMPG06-24A         21.6         26.4         1.0	TMPG06-13A	12.4	13.7	1.0	11.1	1.0	5.0	22.0	18.2	0.081
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           TMPG06-18A         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         13.7         29.1         0.090           TMPG06-22A         19.8         24.2         1.0         17.8         1.0         5.0         12.5         31.9         0.092           TMPG06-24A         22.8         25.2         1.0	TMPG06-15	13.5	16.3	1.0	12.1	1.0	5.0	18.2	22.0	0.084
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           TMPG06-22A         19.8         24.2         1.0         17.8         1.0         5.0         14.4         27.7         0.090           TMPG06-22A         20.9         23.1         1.0         18.8         1.0         5.0         12.5         31.9         0.092           TMPG06-24A         22.8         25.2         1.0         20.5         1.0         5.0         11.5         34.2         0.094           TMPG06-27A         25.7         28.4         1.0	TMPG06-15A	14.3	15.8	1.0	12.8	1.0	5.0	18.9	21.2	0.084
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           TMPG06-22A         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           TMPG06-27A         25.7         28.4         1.0	TMPG06-16	14.4	17.6	1.0	12.9	1.0	5.0	17.0	23.5	0.086
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           TMPG06-22A         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           TMPG06-24A         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         11.5         34.2         0.094           TMPG06-27A         24.3         29.7         1.0         21.8         1.0         5.0         10.2         39.1         0.096           TMPG06-30         27.0         33.0         1.0	TMPG06-16A	15.2	16.8	1.0	13.6	1.0	5.0	17.8	22.5	0.086
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           TMPG06-22A         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           TMPG06-24A         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           TMPG06-27A         24.3         29.7         1.0         21.8         1.0         5.0         10.2         39.1         0.096           TMPG06-30         27.0         33.0         1.0	TMPG06-18	16.2	19.8	1.0	14.5	1.0	5.0	15.1	26.5	0.088
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           TMPG06-27A         24.3         29.7         1.0         21.8         1.0         5.0         10.2         39.1         0.096           TMPG06-37A         25.7         28.4         1.0         23.1         1.0         5.0         10.7         37.5         0.096           TMPG06-30A         28.5         31.5         1.0         25.6         1.0         5.0         9.2         43.5         0.097           TMPG06-33A         29.7         36.3         1.0	TMPG06-18A	17.1	18.9	1.0	15.3	1.0		15.9	25.5	0.088
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           TMPG06-27A         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           TMPG06-33A         31.4         34.7         1.0	TMPG06-20	18.0	22.0	1.0	16.2	1.0	5.0	13.7	29.1	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           TMPG06-27A         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           TMPG06-33A         31.4         34.7         1.0	TMPG06-20A	19.0	21.0	1.0	17.0	1.0	5.0	14.4	27.7	0.090
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           TMPG06-36A         34.2         37.8         1.0	TMPG06-22	19.8	24.2	1.0	17.8	1.0	5.0	12.5	31.9	0.092
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           TMPG06-39A         35.1         42.9         1.0	TMPG06-22A	20.9	23.1	1.0	18.8	1.0	5.0	13.1	30.6	0.092
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           TMPG06-39A         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	TMPG06-24	21.6	26.4	1.0	19.4	1.0	5.0	11.5	34.2	0.094
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           TMPG06-39A         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	TMPG06-24A	22.8	25.2	1.0	20.5	1.0	5.0	12.0	33.2	0.094
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           TMPG06-39A         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	TMPG06-27	24.3	29.7	1.0	21.8	1.0	5.0	10.2	39.1	0.096
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	TMPG06-27A	25.7	28.4	1.0	23.1	1.0	5.0	10.7		0.096
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	TMPG06-30	27.0	33.0	1.0	24.3	1.0	5.0	9.2		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	TMPG06-30A	28.5	31.5	1.0	25.6	1.0	5.0	9.7	41.4	0.097
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										
TMPG06-36         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										
TMPG06-36A         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										
TMPG06-39         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										
TMPG06-39A 37.1 41.0 1.0 33.3 1.0 5.0 7.4 53.9 0.100							-			
HVIFGUO-45   38.7   47.3   1.0   34.8   1.0   5.0   6.5   61.9   0.101	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

<sup>(1)</sup> Pulse test: t<sub>p</sub> ≤ 50 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
(4) TMPG06-6.8(A) thru TMPG06-9.1(A) not recommended for new design due to product be end of life on 31-May-11 per PCN-PDD-008-2010 Rev. 0



# Vishay General Semiconductor

ORDERING INFORMATION (Example)							
PREFERRED P/N	ERRED P/N UNIT WEIGHT (g) PREFERRED PACKAGE CODE BASE QUANTITY DELIVERY MODE						
TMPG06-6.8AHE3/54 (1)	0.218	54	5500	13" diameter paper tape and reel			

#### Note

### **RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

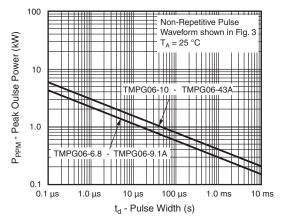


Figure 1. Peak Pulse Power Rating Curve

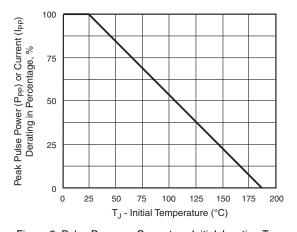


Figure 2. Pulse Power or Current vs. Initial Junction Temperature  $\label{eq:current} % \begin{center} \begin{$ 

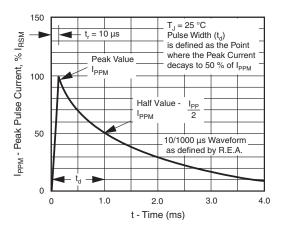


Figure 3. Pulse Waveform

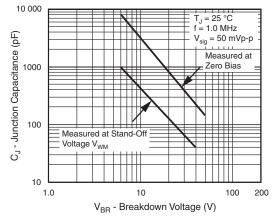


Figure 4. Typical Junction Capacitance

<sup>(1)</sup> AEC-Q101 qualified

## **TMPG06-6.8 thru TMPG06-43A**

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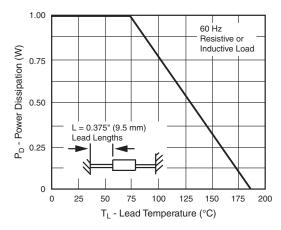


Figure 5. Power Derating Curve

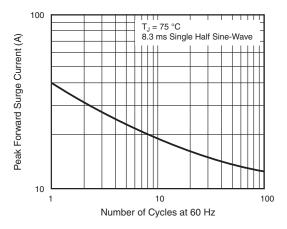
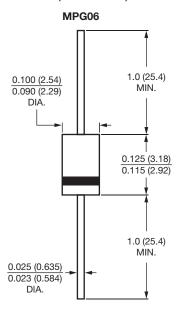


Figure 6. Maximum Non-Repetitive Forward Surge Current

## **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)







Vishay

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