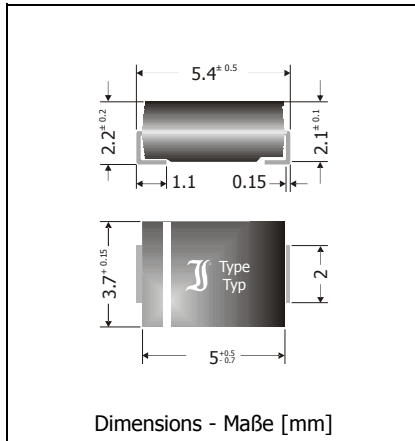


## P6SMBJ5.0 ... P6SMBJ170CA

**Surface mount unidirectional and bidirectional Transient Voltage Suppressor Diodes**  
**Unidirektionale und bidirektionale Spannungs-Begrenzer-Dioden für die Oberflächenmontage**

Version 2009-05-22



|   |                     |
|---|---------------------|
| Peak pulse power dissipation<br>Impuls-Verlustleistung                                | 600 W               |
| Nominal Stand-off voltage<br>Nominale Sperrspannung                                   | 5.0...170 V         |
| Plastic case<br>Kunststoffgehäuse   | ~ SMB<br>~ DO-214AA |
| Weight approx. – Gewicht ca.  | 0.1 g               |
| Plastic material has UL classification 94V-0<br>Gehäusematerial UL94V-0 klassifiziert |                     |
| Standard packaging taped and reeled<br>Standard Lieferform gegurtet auf Rollen        |                     |



For bidirectional types, suppressor characteristics apply in both directions; add suffix "C" or "CA".  
Für bidirektionale Dioden gelten die Begrenzer-Eigenschaften in beiden Richtungen;  
es ist das Suffix "C" oder "CA" zu ergänzen.

**TVS diodes having breakdown voltage  $V_{BR} = 220 \dots 550$  V:**  
**please refer to datasheet P6SMB220 ... 550CA**  
**TVS-Dioden mit Abbruchspannung  $V_{BR} = 220 \dots 550$  V: siehe Datenblatt P6SMB220 ... 550CA**

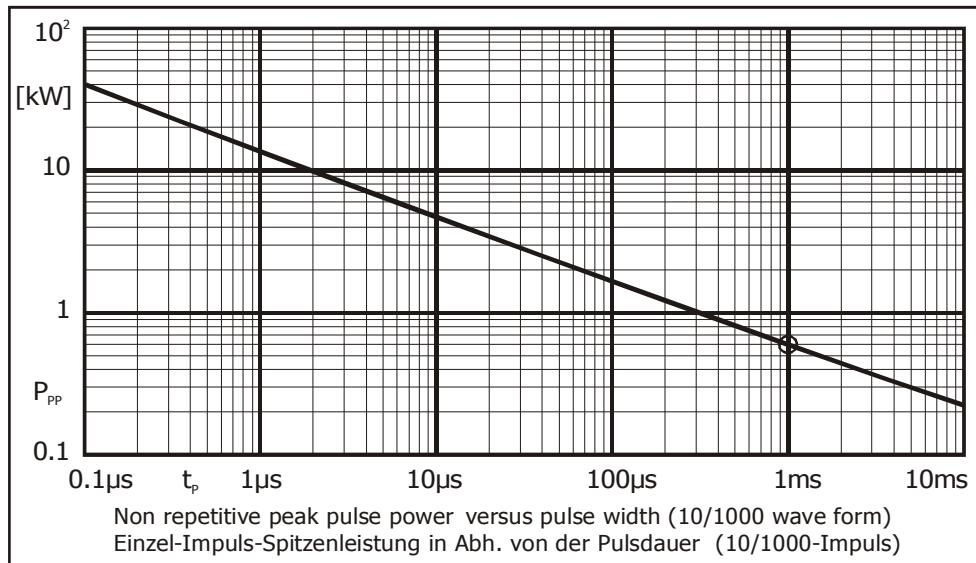
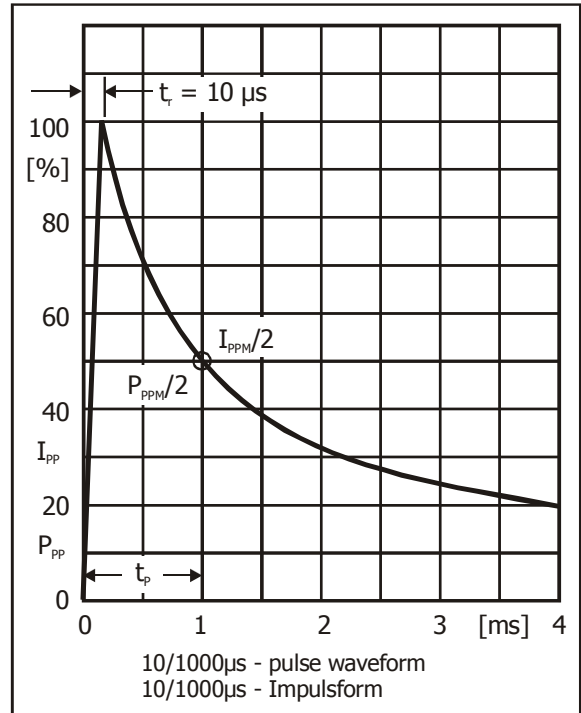
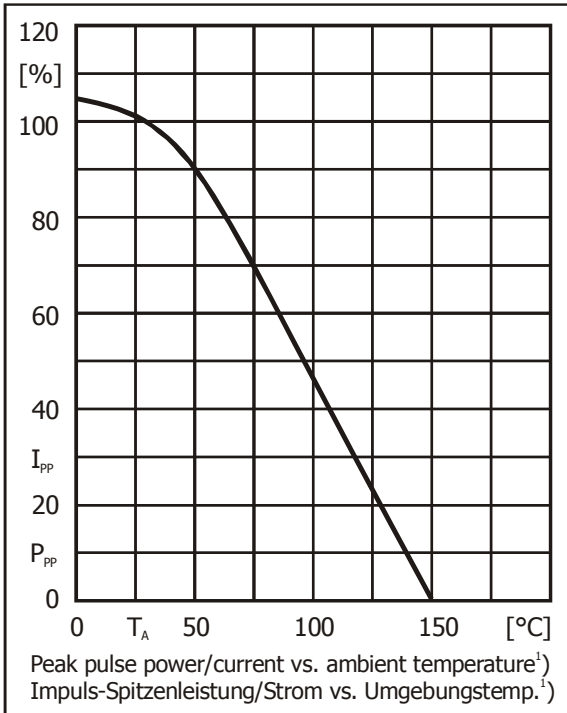
| Maximum ratings and Characteristics  | Grenz- und Kennwerte     |             |                        |
|--|--------------------------|-------------|------------------------|
| Peak pulse power dissipation (10/1000 $\mu$ s waveform)<br>Impuls-Verlustleistung (Strom-Impuls 10/1000 $\mu$ s) | $T_A = 25^\circ\text{C}$ | $P_{PPM}$   | 600 W <sup>1)</sup>    |
| Steady state power dissipation<br>Verlustleistung im Dauerbetrieb  | $T_T = 75^\circ\text{C}$ | $P_{M(AV)}$ | 5 W                    |
| Peak forward surge current, 60 Hz half sine-wave<br>Stoßstrom für eine 60 Hz Sinus-Halbwelle                     | $T_A = 25^\circ\text{C}$ | $I_{FSM}$   | 100 A <sup>2)</sup>    |
| Max. instantaneous forward voltage<br>Augenblickswert der Durchlass-Spannung                                     | $I_F = 25$ A             | $V_F$       | < 3.0 V <sup>2)</sup>  |
| Operating junction temperature – Sperrschichttemperatur  |                          | $T_j$       | -50...+150°C           |
| Storage temperature – Lagerungstemperatur  |                          | $T_S$       | -50...+150°C           |
| Thermal resistance junction to ambient air<br>Wärmewiderstand Sperrschicht – umgebende Luft                      |                          | $R_{thA}$   | < 45 K/W <sup>3)</sup> |
| Thermal resistance junction to terminal<br>Wärmewiderstand Sperrschicht – Anschluss                              |                          | $R_{thT}$   | < 15 K/W               |

- 1 Non-repetitive pulse see curve  $I_{pp} = f(t) / P_{pp} = f(t)$   
Höchstzulässiger Spitzenwert eines einmaligen Impulses, siehe Kurve  $I_{pp} = f(t) / P_{pp} = f(t)$
- 2 Unidirectional diodes only – Nur für unidirektionale Dioden
- 3 Mounted on P.C. board with 50 mm<sup>2</sup> copper pads at each terminal  
Montage auf Leiterplatte mit 50 mm<sup>2</sup> Kupferbelag (Löt-pad) an jedem Anschluss

| Maximum ratings |                                    |   |   | Grenzwerte       |  |               |
|-----------------|------------------------------------|---|---|------------------|--|---------------|
| Type<br>Typ     | Stand-off voltage<br>Sperrspannung | Max. rev. current<br>Max. Sperrstrom<br>at / bei $V_{WM}$ | Breakdown voltage at $I_T = 1$ mA<br>Abbruch-Spannung bei $I_T = 1$ mA<br>*) at / bei $I_T = 10$ mA |                  | Max. clamping voltage<br>Max. Begrenzer-Spannung<br>at / bei $I_{PPM}$ (10/1000 $\mu$ s) |               |
|                 | $V_{WM}$ [V]                       | $I_D$ [ $\mu$ A]  | $V_{BR}$ min [V]  | $V_{BR}$ max [V] | $V_C$ [V]  | $I_{PPM}$ [A] |
| P6SMBJ5.0       | 5.0                                | 800   | 6.4 *)  | 7.8 *)           | 10.3   | 58.3          |
| P6SMBJ5.0A      | 5.0                                | 800   | 6.4 *)  | 7.0 *)           | 9.2  | 65.2          |
| P6SMBJ6.5       | 6.5                                | 500   | 7.2 *)  | 8.8 *)           | 12.3   | 48.8          |
| P6SMBJ6.5A      | 6.5                                | 500   | 7.2 *)  | 8.0 *)           | 11.2   | 53.6          |
| P6SMBJ7.0       | 7.0                                | 200   | 7.8 *)  | 9.5 *)           | 13.3   | 45.1          |
| P6SMBJ7.0A      | 7.0                                | 200   | 7.8 *)  | 8.7 *)           | 12.0   | 50.0          |
| P6SMBJ7.5       | 7.5                                | 100   | 8.3   | 10.1             | 14.3   | 42.0          |
| P6SMBJ7.5A      | 7.5                                | 100   | 8.3   | 9.2              | 12.9   | 46.5          |
| P6SMBJ8.0       | 8.0                                | 50  | 8.9   | 10.9             | 15.0   | 40.0          |
| P6SMBJ8.0A      | 8.0                                | 50  | 8.9   | 9.9              | 13.6   | 44.1          |
| P6SMBJ8.5       | 8.5                                | 10  | 9.4   | 11.5             | 15.9   | 37.7          |
| P6SMBJ8.5A      | 8.5                                | 10  | 9.4   | 10.4             | 14.4   | 41.7          |
| P6SMBJ9.0       | 9.0                                | 5   | 10.0  | 12.2             | 16.9   | 35.5          |
| P6SMBJ9.0A      | 9.0                                | 5   | 10.0  | 11.1             | 15.4   | 39.0          |
| P6SMBJ10        | 10                                 | 5   | 11.1  | 13.5             | 18.8   | 31.9          |
| P6SMBJ10A       | 10                                 | 5   | 11.1  | 12.3             | 17.0   | 35.3          |
| P6SMBJ11        | 11                                 | 5   | 12.2  | 14.9             | 20.1   | 29.9          |
| P6SMBJ11A       | 11                                 | 5   | 12.2  | 13.5             | 18.2   | 33.0          |
| P6SMBJ12        | 12                                 | 5   | 13.3  | 16.2             | 22.0   | 27.3          |
| P6SMBJ12A       | 12                                 | 5   | 13.3  | 14.8             | 19.9   | 30.2          |
| P6SMBJ13        | 13                                 | 5   | 14.4  | 17.6             | 23.8   | 25.2          |
| P6SMBJ13A       | 13                                 | 5   | 14.4  | 16.0             | 21.5   | 27.9          |
| P6SMBJ14        | 14                                 | 5   | 15.6  | 19.0             | 25.8   | 23.3          |
| P6SMBJ14A       | 14                                 | 5   | 15.6  | 17.3             | 23.2   | 25.9          |
| P6SMBJ15        | 15                                 | 5   | 16.7  | 20.4             | 26.9   | 22.3          |
| P6SMBJ15A       | 15                                 | 5   | 16.7  | 18.6             | 24.4   | 24.6          |
| P6SMBJ16        | 16                                 | 5   | 17.8  | 21.7             | 28.8   | 20.8          |
| P6SMBJ16A       | 16                                 | 5   | 17.8  | 19.8             | 26.0   | 23.1          |
| P6SMBJ17        | 17                                 | 5   | 18.9  | 23.1             | 30.5   | 19.7          |
| P6SMBJ17A       | 17                                 | 5   | 18.9  | 21.0             | 27.6   | 21.7          |
| P6SMBJ18        | 18                                 | 5   | 20.0  | 24.4             | 32.2   | 18.6          |
| P6SMBJ18A       | 18                                 | 5   | 20.0  | 22.2             | 29.2   | 20.5          |
| P6SMBJ20        | 20                                 | 5   | 22.2  | 27.1             | 35.8   | 16.8          |
| P6SMBJ20A       | 20                                 | 5   | 22.2  | 24.6             | 32.4   | 18.5          |
| P6SMBJ22        | 22                                 | 5   | 24.4  | 29.8             | 39.4   | 15.2          |
| P6SMBJ22A       | 22                                 | 5   | 24.4  | 27.1             | 35.5   | 16.9          |
| P6SMBJ24        | 24                                 | 5   | 26.7  | 32.6             | 43.0   | 14.0          |
| P6SMBJ24A       | 24                                 | 5   | 26.7  | 29.6             | 38.9   | 15.4          |
| P6SMBJ26        | 26                                 | 5   | 28.9  | 35.3             | 46.6   | 12.9          |
| P6SMBJ26A       | 26                                 | 5   | 28.9  | 32.1             | 42.1   | 14.3          |
| P6SMBJ28        | 28                                 | 5   | 31.1  | 37.9             | 50.0   | 12.0          |
| P6SMBJ28A       | 28                                 | 5   | 31.1  | 34.5             | 45.4   | 13.2          |
| P6SMBJ30        | 30                                 | 5   | 33.3  | 40.1             | 53.5   | 11.2          |
| P6SMBJ30A       | 30                                 | 5   | 33.3  | 36.9             | 48.4   | 12.4          |
| P6SMBJ33        | 33                                 | 5   | 36.7  | 44.8             | 59.0   | 10.2          |
| P6SMBJ33A       | 33                                 | 5   | 36.7  | 40.7             | 53.3   | 11.3          |

| Maximum ratings |                                    |   |  | Grenzwerte       |  |               |
|-----------------|------------------------------------|---|--|------------------|--|---------------|
| Type<br>Typ     | Stand-off voltage<br>Sperrspannung | Max. rev. current<br>Max. Sperrstrom<br>at / bei $V_{WM}$ | Breakdown voltage at $I_T = 1$ mA<br>Abbruch-Spannung bei $I_T = 1$ mA<br>) at / bei $I_T = 10$ mA |                  | Max. clamping voltage<br>Max. Begrenzer-Spannung<br>at / bei $I_{PPM}$ (10/1000 $\mu$ s) |               |
|                 | $V_{WM}$ [V]                       | $I_D$ [ $\mu$ A]  | $V_{BR}$ min [V]   | $V_{BR}$ max [V] | $V_C$ [V]  | $I_{PPM}$ [A] |
| P6SMBJ36        | 36                                 | 5   | 40.0   | 48.4             | 64.3   | 9.3           |
| P6SMBJ36A       | 36                                 | 5   | 40.0   | 44.4             | 58.1   | 10.3          |
| P6SMBJ40        | 40                                 | 5   | 44.4   | 54.2             | 71.4   | 8.4           |
| P6SMBJ40A       | 40                                 | 5   | 44.4   | 49.3             | 64.5   | 9.3           |
| P6SMBJ43        | 43                                 | 5   | 47.8   | 58.3             | 76.7   | 7.8           |
| P6SMBJ43A       | 43                                 | 5   | 47.8   | 53.1             | 69.4   | 8.6           |
| P6SMBJ45        | 45                                 | 5   | 50.0   | 61.0             | 80.3   | 7.5           |
| P6SMBJ45A       | 45                                 | 5   | 50.0   | 55.5             | 72.7   | 8.3           |
| P6SMBJ48        | 48                                 | 5   | 53.3   | 65.0             | 85.5   | 7.0           |
| P6SMBJ48A       | 48                                 | 5   | 53.3   | 59.2             | 77.4   | 7.8           |
| P6SMBJ51        | 51                                 | 5   | 56.7   | 69.2             | 91.1   | 6.6           |
| P6SMBJ51A       | 51                                 | 5   | 56.7   | 62.9             | 82.4   | 7.3           |
| P6SMBJ54        | 54                                 | 5   | 60.0   | 73.2             | 96.3   | 6.2           |
| P6SMBJ54A       | 54                                 | 5   | 60.0   | 66.6             | 87.1   | 6.9           |
| P6SMBJ58        | 58                                 | 5   | 64.4   | 78.6             | 103  | 5.8           |
| P6SMBJ58A       | 58                                 | 5   | 64.4   | 71.5             | 93.6   | 6.4           |
| P6SMBJ60        | 60                                 | 5   | 66.7   | 81.4             | 107  | 5.6           |
| P6SMBJ60A       | 60                                 | 5   | 66.7   | 74.0             | 96.8   | 6.2           |
| P6SMBJ64        | 64                                 | 5   | 71.1   | 86.7             | 114  | 5.3           |
| P6SMBJ64A       | 64                                 | 5   | 71.1   | 78.9             | 103  | 5.8           |
| P6SMBJ70        | 70                                 | 5   | 77.8   | 94.9             | 125  | 4.8           |
| P6SMBJ70A       | 70                                 | 5   | 77.8   | 86.4             | 113  | 5.3           |
| P6SMBJ75        | 75                                 | 5   | 83.3   | 102              | 134  | 4.5           |
| P6SMBJ75A       | 75                                 | 5   | 83.3   | 92.5             | 121  | 5.0           |
| P6SMBJ78        | 78                                 | 5   | 86.7   | 106              | 139  | 4.3           |
| P6SMBJ78A       | 78                                 | 5   | 86.7   | 96.2             | 126  | 4.8           |
| P6SMBJ85        | 85                                 | 5   | 94.4   | 115              | 151  | 4.0           |
| P6SMBJ85A       | 85                                 | 5   | 94.4   | 105              | 137  | 4.4           |
| P6SMBJ90        | 90                                 | 5   | 100  | 122              | 160  | 3.8           |
| P6SMBJ90A       | 90                                 | 5   | 100  | 111              | 146  | 4.1           |
| P6SMBJ100       | 100                                | 5   | 111  | 135              | 179  | 3.4           |
| P6SMBJ100A      | 100                                | 5   | 111  | 123              | 162  | 3.7           |
| P6SMBJ110       | 110                                | 5   | 122  | 149              | 196  | 3.1           |
| P6SMBJ110A      | 110                                | 5   | 122  | 135              | 177  | 3.4           |
| P6SMBJ120       | 120                                | 5   | 133  | 162              | 214  | 2.8           |
| P6SMBJ120A      | 120                                | 5   | 133  | 148              | 193  | 3.1           |
| P6SMBJ130       | 130                                | 5   | 144  | 176              | 231  | 2.6           |
| P6SMBJ130A      | 130                                | 5   | 144  | 160              | 209  | 2.9           |
| P6SMBJ150       | 150                                | 5   | 167  | 204              | 268  | 2.2           |
| P6SMBJ150A      | 150                                | 5   | 167  | 185              | 243  | 2.5           |
| P6SMBJ160       | 160                                | 5   | 178  | 217              | 287  | 2.1           |
| P6SMBJ160A      | 160                                | 5   | 178  | 198              | 259  | 2.3           |
| P6SMBJ170       | 170                                | 5   | 189  | 231              | 304  | 2.0           |
| P6SMBJ170A      | 170                                | 5   | 189  | 210              | 275  | 2.2           |

TVS diodes having breakdown voltage  $V_{BR} = 220 \dots 550$  V: please refer to datasheet P6SMB220 ... 550CA  
TVS-Dioden mit Abbruchspannung  $V_{BR} = 220 \dots 550$  V: siehe Datenblatt P6SMB220 ... 550CA



1 Mounted on P.C. board with 50 mm<sup>2</sup> copper pads at each terminal  
Montage auf Leiterplatte mit 50 mm<sup>2</sup> Kupferbelag (Lötpad) an jedem Anschluss