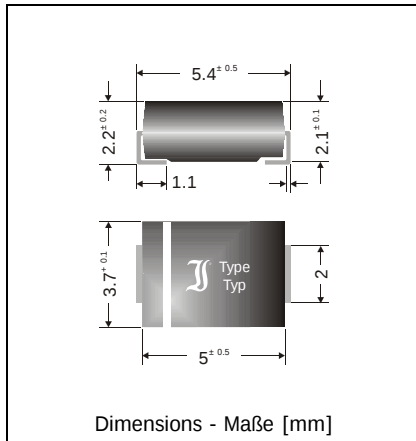


## P6SMBJ5.0 ... P6SMBJ170CA

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

Version 2006-07-04



|                                                                                       |                     |
|---------------------------------------------------------------------------------------|---------------------|
| 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**

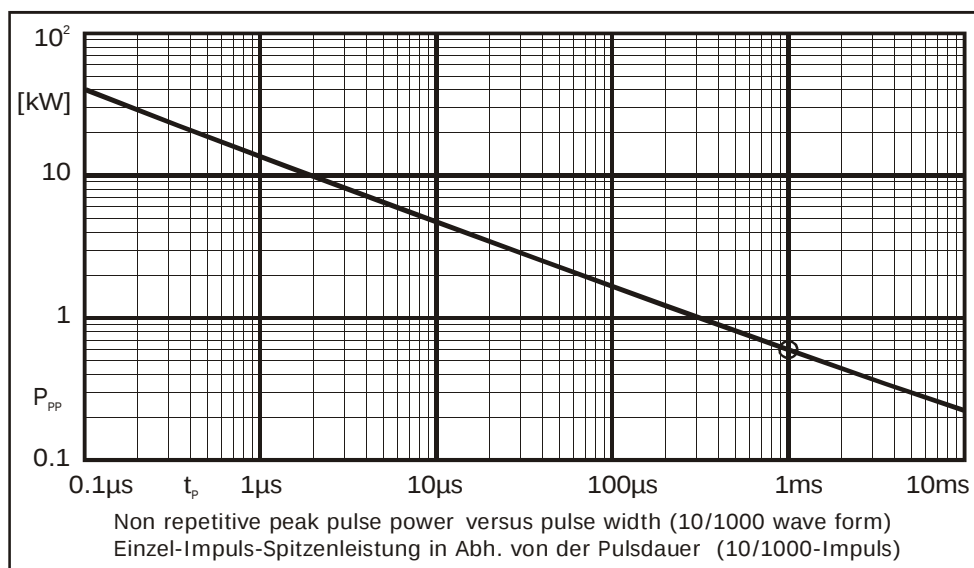
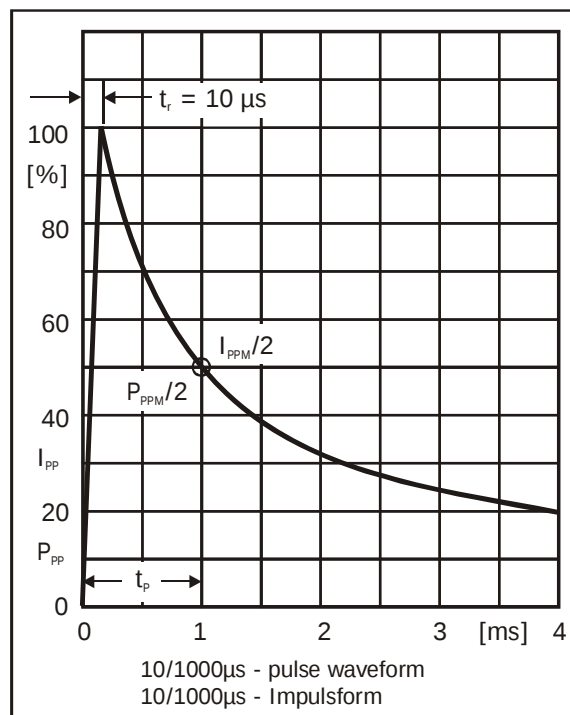
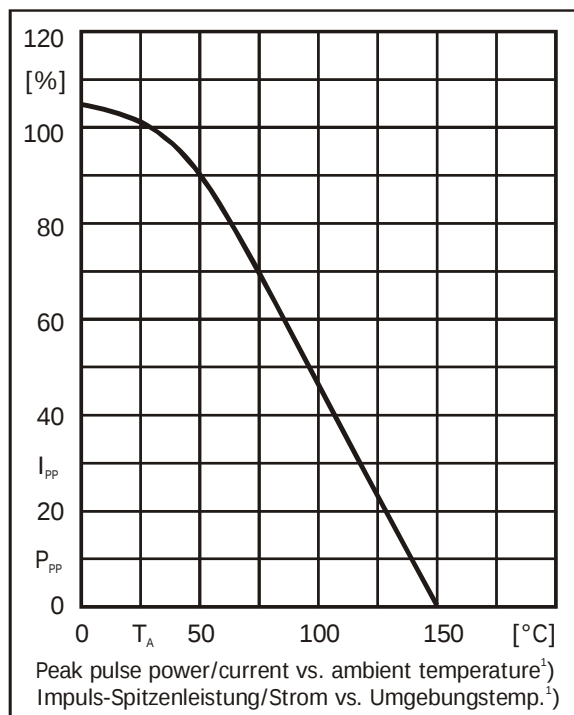
**TVS-Dioden mit Abbruchspannung  $V_{BR} = 220 \dots 550$  V: siehe Datenblatt P6SMB220 ... 550CA**

| 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-Halbwellen                    | $T_A = 25^\circ\text{C}$ | $I_{FSM}$   | 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 (Lötpad) 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]<br>$I_{PPM}$ [A]                                                               |
| P6SMBJ36                                                                                                                                                                                                       | 36                                 | 5                                                         | 40.0                                                                                               | 48.4             | 64.3<br>9.3                                                                              |
| P6SMBJ36A                                                                                                                                                                                                      | 36                                 | 5                                                         | 40.0                                                                                               | 44.4             | 58.1<br>10.3                                                                             |
| P6SMBJ40                                                                                                                                                                                                       | 40                                 | 5                                                         | 44.4                                                                                               | 54.2             | 71.4<br>8.4                                                                              |
| P6SMBJ40A                                                                                                                                                                                                      | 40                                 | 5                                                         | 44.4                                                                                               | 49.3             | 64.5<br>9.3                                                                              |
| P6SMBJ43                                                                                                                                                                                                       | 43                                 | 5                                                         | 47.8                                                                                               | 58.3             | 76.7<br>7.8                                                                              |
| P6SMBJ43A                                                                                                                                                                                                      | 43                                 | 5                                                         | 47.8                                                                                               | 53.1             | 69.4<br>8.6                                                                              |
| P6SMBJ45                                                                                                                                                                                                       | 45                                 | 5                                                         | 50.0                                                                                               | 61.0             | 80.3<br>7.5                                                                              |
| P6SMBJ45A                                                                                                                                                                                                      | 45                                 | 5                                                         | 50.0                                                                                               | 55.5             | 72.7<br>8.3                                                                              |
| P6SMBJ48                                                                                                                                                                                                       | 48                                 | 5                                                         | 53.3                                                                                               | 65.0             | 85.5<br>7.0                                                                              |
| P6SMBJ48A                                                                                                                                                                                                      | 48                                 | 5                                                         | 53.3                                                                                               | 59.2             | 77.4<br>7.8                                                                              |
| P6SMBJ51                                                                                                                                                                                                       | 51                                 | 5                                                         | 56.7                                                                                               | 69.2             | 91.1<br>6.6                                                                              |
| P6SMBJ51A                                                                                                                                                                                                      | 51                                 | 5                                                         | 56.7                                                                                               | 62.9             | 82.4<br>7.3                                                                              |
| P6SMBJ54                                                                                                                                                                                                       | 54                                 | 5                                                         | 60.0                                                                                               | 73.2             | 96.3<br>6.2                                                                              |
| P6SMBJ54A                                                                                                                                                                                                      | 54                                 | 5                                                         | 60.0                                                                                               | 66.6             | 87.1<br>6.9                                                                              |
| P6SMBJ58                                                                                                                                                                                                       | 58                                 | 5                                                         | 64.4                                                                                               | 78.6             | 103<br>5.8                                                                               |
| P6SMBJ58A                                                                                                                                                                                                      | 58                                 | 5                                                         | 64.4                                                                                               | 71.5             | 93.6<br>6.4                                                                              |
| P6SMBJ60                                                                                                                                                                                                       | 60                                 | 5                                                         | 66.7                                                                                               | 81.4             | 107<br>5.6                                                                               |
| P6SMBJ60A                                                                                                                                                                                                      | 60                                 | 5                                                         | 66.7                                                                                               | 74.0             | 96.8<br>6.2                                                                              |
| P6SMBJ64                                                                                                                                                                                                       | 64                                 | 5                                                         | 71.1                                                                                               | 86.7             | 114<br>5.3                                                                               |
| P6SMBJ64A                                                                                                                                                                                                      | 64                                 | 5                                                         | 71.1                                                                                               | 78.9             | 103<br>5.8                                                                               |
| P6SMBJ70                                                                                                                                                                                                       | 70                                 | 5                                                         | 77.8                                                                                               | 94.9             | 125<br>4.8                                                                               |
| P6SMBJ70A                                                                                                                                                                                                      | 70                                 | 5                                                         | 77.8                                                                                               | 86.4             | 113<br>5.3                                                                               |
| P6SMBJ75                                                                                                                                                                                                       | 75                                 | 5                                                         | 83.3                                                                                               | 102              | 134<br>4.5                                                                               |
| P6SMBJ75A                                                                                                                                                                                                      | 75                                 | 5                                                         | 83.3                                                                                               | 92.5             | 121<br>5.0                                                                               |
| P6SMBJ78                                                                                                                                                                                                       | 78                                 | 5                                                         | 86.7                                                                                               | 106              | 139<br>4.3                                                                               |
| P6SMBJ78A                                                                                                                                                                                                      | 78                                 | 5                                                         | 86.7                                                                                               | 96.2             | 126<br>4.8                                                                               |
| P6SMBJ85                                                                                                                                                                                                       | 85                                 | 5                                                         | 94.4                                                                                               | 115              | 151<br>4.0                                                                               |
| P6SMBJ85A                                                                                                                                                                                                      | 85                                 | 5                                                         | 94.4                                                                                               | 105              | 137<br>4.4                                                                               |
| P6SMBJ90                                                                                                                                                                                                       | 90                                 | 5                                                         | 100                                                                                                | 122              | 160<br>3.8                                                                               |
| P6SMBJ90A                                                                                                                                                                                                      | 90                                 | 5                                                         | 100                                                                                                | 111              | 146<br>4.1                                                                               |
| P6SMBJ100                                                                                                                                                                                                      | 100                                | 5                                                         | 111                                                                                                | 135              | 179<br>3.4                                                                               |
| P6SMBJ100A                                                                                                                                                                                                     | 100                                | 5                                                         | 111                                                                                                | 123              | 162<br>3.7                                                                               |
| P6SMBJ110                                                                                                                                                                                                      | 110                                | 5                                                         | 122                                                                                                | 149              | 196<br>3.1                                                                               |
| P6SMBJ110A                                                                                                                                                                                                     | 110                                | 5                                                         | 122                                                                                                | 135              | 177<br>3.4                                                                               |
| P6SMBJ120                                                                                                                                                                                                      | 120                                | 5                                                         | 133                                                                                                | 162              | 214<br>2.8                                                                               |
| P6SMBJ120A                                                                                                                                                                                                     | 120                                | 5                                                         | 133                                                                                                | 148              | 193<br>3.1                                                                               |
| P6SMBJ130                                                                                                                                                                                                      | 130                                | 5                                                         | 144                                                                                                | 176              | 231<br>2.6                                                                               |
| P6SMBJ130A                                                                                                                                                                                                     | 130                                | 5                                                         | 144                                                                                                | 160              | 209<br>2.9                                                                               |
| P6SMBJ150                                                                                                                                                                                                      | 150                                | 5                                                         | 167                                                                                                | 204              | 268<br>2.2                                                                               |
| P6SMBJ150A                                                                                                                                                                                                     | 150                                | 5                                                         | 167                                                                                                | 185              | 243<br>2.5                                                                               |
| P6SMBJ160                                                                                                                                                                                                      | 160                                | 5                                                         | 178                                                                                                | 217              | 287<br>2.1                                                                               |
| P6SMBJ160A                                                                                                                                                                                                     | 160                                | 5                                                         | 178                                                                                                | 198              | 259<br>2.3                                                                               |
| P6SMBJ170                                                                                                                                                                                                      | 170                                | 5                                                         | 189                                                                                                | 231              | 304<br>2.0                                                                               |
| P6SMBJ170A                                                                                                                                                                                                     | 170                                | 5                                                         | 189                                                                                                | 210              | 275<br>2.2                                                                               |
| TVS diodes having breakdown voltage $V_{BR} = 220 \dots 550$ V: please refer to datasheet P6SMB220 ... 550CA<br>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