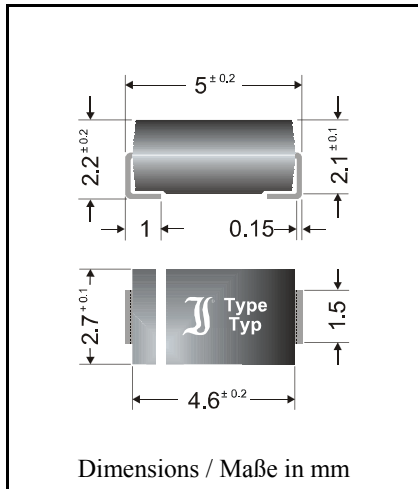


**Surface Mount  
unidirectional and bidirectional  
Transient Voltage Suppressor Diodes**

**Unidirektionale und bidirektionale  
Spannungs-Begrenzer-Dioden  
für die Oberflächenmontage**



|  |                |
|--|----------------|
| Pulse power dissipation – Impuls-Verlustleistung | 400 W          |
| Maximum stand-off voltage                        | 6.5...170 V    |
| Maximale Sperrspannung                           |                |
| Plastic case                                     | ~ SMA          |
| Kunststoffgehäuse                                | ~ DO-214AC     |
| Weight approx. – Gewicht ca.                     | 0.07 g         |
| Plastic material has UL classification 94V-0     |                |
| Gehäusematerial UL94V-0 klassifiziert            |                |
| Standard packaging taped and reeled              | see page 18    |
| Standard Lieferform gegurtet auf Rolle           | siehe Seite 18 |

Suffix “C” or “CA” for bidirectional types

Suffix “C” oder “CA” für bidirektionale Typen

**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) | $T_A = 25^\circ\text{C}$ | $P_{PPM}$   | 400 W <sup>1)</sup>    |
| Steady state power dissipation<br>Verlustleistung im Dauerbetrieb  | $T_A = 25^\circ\text{C}$ | $P_{M(AV)}$ | 1 W <sup>2)</sup>      |
| Peak forward surge current, 60 Hz half sine-wave<br>Stoßstrom für eine 60 Hz Sinus-Halbwellen                    | $T_A = 25^\circ\text{C}$ | $I_{FSM}$   | 40 A <sup>3)</sup>     |
| Operating junction temperature – Sperrschichttemperatur  |                          | $T_j$       | - 50...+150°C          |
| Storage temperature – Lagerungstemperatur  |                          | $T_s$       | - 50...+150°C          |
| Max. instantaneous forward voltage<br>Augenblickswert der Durchlaßspannung                                       | $I_F = 25\text{ A}$      | $V_F$       | < 3.5 V <sup>3)</sup>  |
| Thermal resistance junction to ambient air<br>Wärmewiderstand Sperrschicht – umgebende Luft                      |                          | $R_{thA}$   | < 70 K/W <sup>2)</sup> |
| Thermal resistance junction to terminal<br>Wärmewiderstand Sperrschicht – Anschluß                               |                          | $R_{thT}$   | < 30 K/W               |

<sup>1)</sup> Non-repetitive current pulse see curve  $I_{PPM} = f(t_r)$   
Höchstzulässiger Spitzenwert eines einmaligen Strom-Impulses, siehe Kurve  $I_{PPM} = f(t_r)$   
<sup>2)</sup> Mounted on P.C. board with 25 mm<sup>2</sup> copper pads at each terminal  
Montage auf Leiterplatte mit 25 mm<sup>2</sup> Kupferbelag (Löt-pad) an jedem Anschluß  
<sup>3)</sup> Unidirectional diodes only – nur für unidirektionale Dioden

Maximum ratings

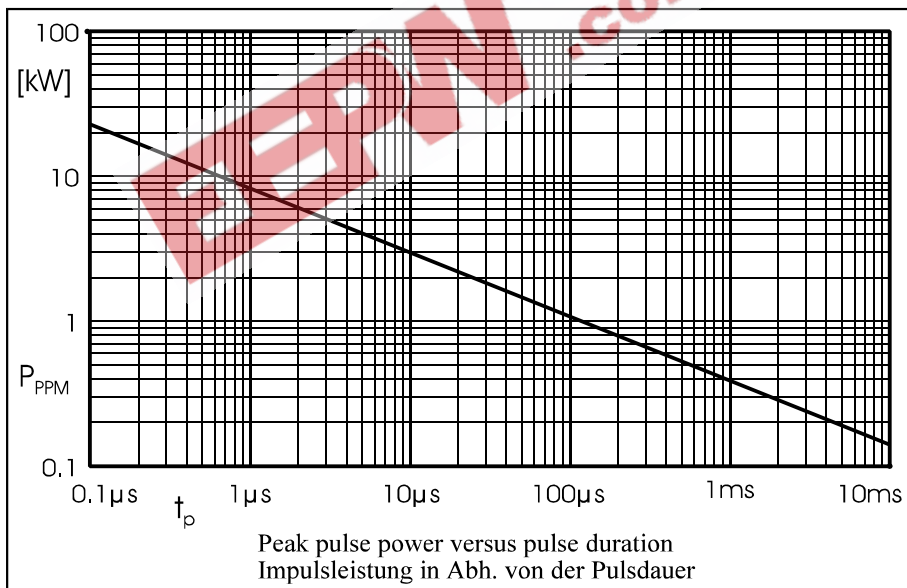
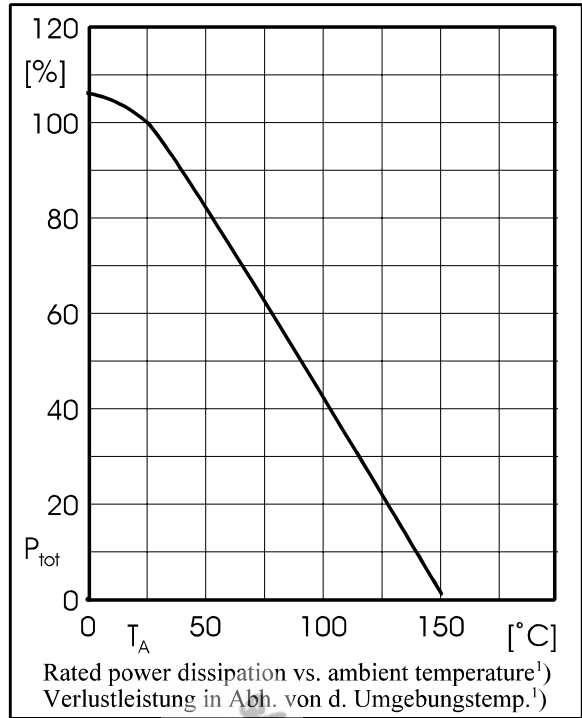
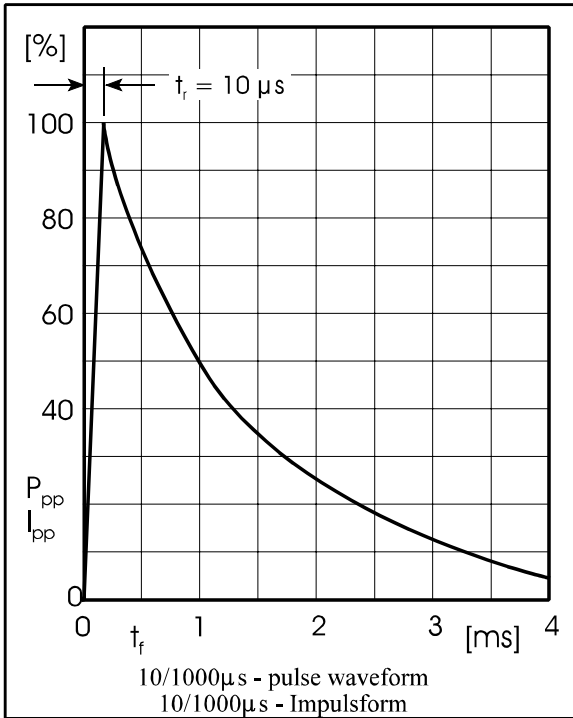
Grenzwerte

| Type<br>Typ  | Stand-off<br>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] |
| P4 SMAJ 6.5  | 6.5                                   | 500   | 7.2 *)  | 8.8 *)            | 12.3  | 32.5          |
| P4 SMAJ 6.5A | 6.5                                   | 500   | 7.2 *)  | 8.0 *)            | 11.2  | 35.7          |
| P4 SMAJ 7.0  | 7.0                                   | 200   | 7.8 *)  | 9.5 *)            | 13.3  | 30.1          |
| P4 SMAJ 7.0A | 7.0                                   | 200   | 7.8 *)  | 8.7 *)            | 12.0  | 33.3          |
| P4 SMAJ 7.5  | 7.5                                   | 100   | 8.3   | 10.1              | 14.3  | 28.0          |
| P4 SMAJ 7.5A | 7.5                                   | 100   | 8.3   | 9.2               | 12.9  | 31.0          |
| P4 SMAJ 8.0  | 8.0                                   | 50  | 8.9   | 10.9              | 15.0  | 26.7          |
| P4 SMAJ 8.0A | 8.0                                   | 50  | 8.9   | 9.9               | 13.6  | 29.4          |
| P4 SMAJ 8.5  | 8.5                                   | 10  | 9.4   | 11.5              | 15.9  | 25.2          |
| P4 SMAJ 8.5A | 8.5                                   | 10  | 9.4   | 10.4              | 14.4  | 27.8          |
| P4 SMAJ 9.0  | 9.0                                   | 5   | 10.0  | 12.2              | 16.9  | 23.7          |
| P4 SMAJ 9.0A | 9.0                                   | 5   | 10.0  | 11.1              | 15.4  | 26.0          |
| P4 SMAJ 10   | 10                                    | 5   | 11.1  | 13.5              | 18.8  | 21.3          |
| P4 SMAJ 10A  | 10                                    | 5   | 11.1  | 12.3              | 17.0  | 23.5          |
| P4 SMAJ 11   | 11                                    | 5   | 12.2  | 14.9              | 20.1  | 19.9          |
| P4 SMAJ 11A  | 11                                    | 5   | 12.2  | 13.5              | 18.2  | 22.0          |
| P4 SMAJ 12   | 12                                    | 5   | 13.3  | 16.2              | 22.0  | 18.2          |
| P4 SMAJ 12A  | 12                                    | 5   | 13.3  | 14.8              | 19.9  | 20.1          |
| P4 SMAJ 13   | 13                                    | 5   | 14.4  | 17.6              | 23.8  | 16.8          |
| P4 SMAJ 13A  | 13                                    | 5   | 14.4  | 16.0              | 21.5  | 18.6          |
| P4 SMAJ 14   | 14                                    | 5   | 15.6  | 19.0              | 25.8  | 15.5          |
| P4 SMAJ 14A  | 14                                    | 5   | 15.6  | 17.3              | 23.2  | 17.2          |
| P4 SMAJ 15   | 15                                    | 5   | 16.7  | 20.4              | 26.9  | 14.9          |
| P4 SMAJ 15A  | 15                                    | 5   | 16.7  | 18.6              | 24.4  | 16.4          |
| P4 SMAJ 16   | 16                                    | 5   | 17.8  | 21.7              | 28.8  | 13.9          |
| P4 SMAJ 16A  | 16                                    | 5   | 17.8  | 19.8              | 26.0  | 15.4          |
| P4 SMAJ 17   | 17                                    | 5   | 18.9  | 23.1              | 30.5  | 13.1          |
| P4 SMAJ 17A  | 17                                    | 5   | 18.9  | 21.0              | 27.6  | 14.5          |
| P4 SMAJ 18   | 18                                    | 5   | 20.0  | 24.4              | 32.2  | 12.4          |
| P4 SMAJ 18A  | 18                                    | 5   | 20.0  | 22.2              | 29.2  | 13.7          |
| P4 SMAJ 20   | 20                                    | 5   | 22.2  | 27.1              | 35.8  | 11.2          |
| P4 SMAJ 20A  | 20                                    | 5   | 22.2  | 24.6              | 32.4  | 12.3          |
| P4 SMAJ 22   | 22                                    | 5   | 24.4  | 29.8              | 39.4  | 10.2          |
| P4 SMAJ 22A  | 22                                    | 5   | 24.4  | 27.1              | 35.5  | 11.3          |
| P4 SMAJ 24   | 24                                    | 5   | 26.7  | 32.6              | 43.0  | 9.3           |
| P4 SMAJ 24A  | 24                                    | 5   | 26.7  | 29.6              | 38.9  | 10.3          |
| P4 SMAJ 26   | 26                                    | 5   | 28.9  | 35.3              | 46.6  | 8.6           |
| P4 SMAJ 26A  | 26                                    | 5   | 28.9  | 32.1              | 42.1  | 9.5           |
| P4 SMAJ 28   | 28                                    | 5   | 31.1  | 37.9              | 50.0  | 8.0           |
| P4 SMAJ 28A  | 28                                    | 5   | 31.1  | 34.5              | 45.4  | 8.8           |
| P4 SMAJ 30   | 30                                    | 5   | 33.3  | 40.1              | 53.5  | 7.5           |
| P4 SMAJ 30A  | 30                                    | 5   | 33.3  | 36.9              | 48.4  | 8.3           |
| P4 SMAJ 33   | 33                                    | 5   | 36.7  | 44.8              | 59.0  | 6.8           |
| P4 SMAJ 33A  | 33                                    | 5   | 36.7  | 40.7              | 53.3  | 7.5           |

## Maximum ratings

## Grenzwerte

| Type<br>Typ  | Stand-off<br>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] |
| P4 SMAJ 36   | 36                                    | 5   | 40.0   | 48.8              | 64.3   | 6.2           |
| P4 SMAJ 36A  | 36                                    | 5   | 40.0   | 44.4              | 58.1   | 6.9           |
| P4 SMAJ 40   | 40                                    | 5   | 44.4   | 54.2              | 71.4   | 5.6           |
| P4 SMAJ 40A  | 40                                    | 5   | 44.4   | 49.3              | 64.5   | 6.2           |
| P4 SMAJ 43   | 43                                    | 5   | 47.8   | 58.3              | 76.7   | 5.2           |
| P4 SMAJ 43A  | 43                                    | 5   | 47.8   | 53.1              | 69.4   | 5.8           |
| P4 SMAJ 45   | 45                                    | 5   | 50.0   | 61.0              | 80.3   | 5.0           |
| P4 SMAJ 45A  | 45                                    | 5   | 50.0   | 55.5              | 72.7   | 5.5           |
| P4 SMAJ 48   | 48                                    | 5   | 53.3   | 65.0              | 85.5   | 4.7           |
| P4 SMAJ 48A  | 48                                    | 5   | 53.3   | 59.2              | 77.4   | 5.2           |
| P4 SMAJ 51   | 51                                    | 5   | 56.7   | 69.2              | 91.1   | 4.4           |
| P4 SMAJ 51A  | 51                                    | 5   | 56.7   | 62.9              | 82.4   | 4.9           |
| P4 SMAJ 54   | 54                                    | 5   | 60.0   | 73.2              | 96.3   | 4.2           |
| P4 SMAJ 54A  | 54                                    | 5   | 60.0   | 66.6              | 87.1   | 4.6           |
| P4 SMAJ 58   | 58                                    | 5   | 64.4   | 78.6              | 103  | 3.9           |
| P4 SMAJ 58A  | 58                                    | 5   | 64.4   | 71.5              | 93.6   | 4.3           |
| P4 SMAJ 60   | 60                                    | 5   | 66.7   | 81.4              | 107  | 3.7           |
| P4 SMAJ 60A  | 60                                    | 5   | 66.7   | 74.0              | 96.8   | 4.1           |
| P4 SMAJ 64   | 64                                    | 5   | 71.1   | 86.7              | 114  | 3.5           |
| P4 SMAJ 64A  | 64                                    | 5   | 71.1   | 78.9              | 103  | 3.9           |
| P4 SMAJ 70   | 70                                    | 5   | 77.8   | 94.9              | 125  | 3.2           |
| P4 SMAJ 70A  | 70                                    | 5   | 77.8   | 86.4              | 113  | 3.5           |
| P4 SMAJ 75   | 75                                    | 5   | 83.3   | 102               | 134  | 3.0           |
| P4 SMAJ 75A  | 75                                    | 5   | 83.3   | 92.5              | 121  | 3.3           |
| P4 SMAJ 78   | 78                                    | 5   | 86.7   | 106               | 139  | 2.9           |
| P4 SMAJ 78A  | 78                                    | 5   | 86.7   | 96.2              | 126  | 3.2           |
| P4 SMAJ 85   | 85                                    | 5   | 94.4   | 115               | 151  | 2.6           |
| P4 SMAJ 85A  | 85                                    | 5   | 94.4   | 105               | 137  | 2.9           |
| P4 SMAJ 90   | 90                                    | 5   | 100  | 122               | 160  | 2.5           |
| P4 SMAJ 90A  | 90                                    | 5   | 100  | 111               | 146  | 2.7           |
| P4 SMAJ 100  | 100                                   | 5   | 111  | 135               | 179  | 2.2           |
| P4 SMAJ 100A | 100                                   | 5   | 111  | 123               | 162  | 2.5           |
| P4 SMAJ 110  | 110                                   | 5   | 122  | 149               | 196  | 2.0           |
| P4 SMAJ 110A | 110                                   | 5   | 122  | 135               | 177  | 2.3           |
| P4 SMAJ 120  | 120                                   | 5   | 133  | 162               | 214  | 1.9           |
| P4 SMAJ 120A | 120                                   | 5   | 133  | 148               | 193  | 2.1           |
| P4 SMAJ 130  | 130                                   | 5   | 144  | 176               | 231  | 1.7           |
| P4 SMAJ 130A | 130                                   | 5   | 144  | 160               | 209  | 1.9           |
| P4 SMAJ 150  | 150                                   | 5   | 167  | 204               | 268  | 1.5           |
| P4 SMAJ 150A | 150                                   | 5   | 167  | 185               | 243  | 1.6           |
| P4 SMAJ 160  | 160                                   | 5   | 178  | 217               | 287  | 1.4           |
| P4 SMAJ 160A | 160                                   | 5   | 178  | 198               | 259  | 1.5           |
| P4 SMAJ 170  | 170                                   | 5   | 189  | 231               | 304  | 1.3           |
| P4 SMAJ 170A | 170                                   | 5   | 189  | 210               | 275  | 1.4           |



For bidirectional types (suffix “C” or “CA”) electrical characteristics apply in both directions  
Für bidirektionale Dioden (Suffix “C” oder “CA”) gelten die el. Werte in beiden Richtungen

<sup>1)</sup> Mounted on P.C. board with 25 mm<sup>2</sup> copper pads at each terminal  
Montage auf Leiterplatte mit 25 mm<sup>2</sup> Kupferbelag (Lötpad) an jedem Anschluß