

|  |                                  |                                       |
|--|----------------------------------|---------------------------------------|
| <b>P6KE6.8 ... P6KE440CA, P6KE520CA</b><br><b>Transient Voltage Suppressor Diodes</b><br><b>Spannungs-Begrenzer-Dioden</b> | <b>P<sub>PPM</sub></b> = 600W    | <b>V<sub>WM</sub></b> = 5.0 ... 444 V |
|  | <b>P<sub>M(AV)</sub></b> = 5.0 W | <b>V<sub>BR</sub></b> = 6.8 ... 520 V |
|  | <b>T<sub>jmax</sub></b> = 175°C  |                                       |

Version 2016-11-23



**Typical Applications**

Over-voltage protection  
 ESD protection  
 Free-wheeling diodes  
 Commercial grade <sup>1)</sup>

**Features**

Uni- and Bidirectional versions  
 Peak pulse power of 600 W  
 (10/1000 μs waveform)  
 Very fast response time  
 Compliant to RoHS, REACH,  
 Conflict Minerals <sup>1)</sup>

**Mechanical Data <sup>1)</sup>**

|                              |                      |
|------------------------------|----------------------|
| Taped in ammo pack           | 4000                 |
| Weight approx.               | 0.4 g                |
| Case material                | UL 94V-0             |
| Solder & assembly conditions | 260°C/10s<br>MSL N/A |



**Typische Anwendungen**

Schutz gegen Überspannung  
 ESD-Schutz  
 Freilauf-Dioden  
 Standardausführung <sup>1)</sup>

**Besonderheiten**

Uni- und Bidirektionale Versionen  
 600 W Impuls-Verlustleistung  
 (10/1000 μs Strom-Impuls)  
 Sehr schnelle Ansprechzeit  
 Konform zu RoHS, REACH,  
 Konfliktmineralien <sup>1)</sup>

**Mechanische Daten <sup>1)</sup>**

|                            |                      |
|----------------------------|----------------------|
| Gegurtet in Ammo-Pack      |                      |
| Gewicht ca.                | 0.4 g                |
| Gehäusematerial            | UL 94V-0             |
| Löt- und Einbaubedingungen | 260°C/10s<br>MSL N/A |

For bidirectional types (add suffix "B"), electrical characteristics apply in both directions.  
 Für bidirektionale Dioden (ergänze Suffix "B") gelten die elektrischen Werte in beiden Richtungen.

**Maximum ratings <sup>2)</sup>**

**Grenzwerte <sup>2)</sup>**

|  |                                   |                              |
|--|-----------------------------------|------------------------------|
| Peak pulse power dissipation (10/1000 μs waveform)<br>Impuls-Verlustleistung (Strom-Impuls 10/1000 μs) | $P_{PPM}$                         | 600 W <sup>3)</sup>          |
| Steady state power dissipation<br>Verlustleistung im Dauerbetrieb                                      | $T_A = 75^\circ C$<br>$P_{M(AV)}$ | 5 W <sup>4)</sup>            |
| Peak forward surge current, 60 Hz half sine-wave<br>Stoßstrom für eine 60 Hz Sinus-Halbwellen          | $I_{FSM}$                         | 100 A <sup>5)</sup>          |
| Operating junction temperature – Sperrschichttemperatur<br>Storage temperature – Lagerungstemperatur   | $T_j$<br>$T_s$                    | -50...+175°C<br>-50...+175°C |

**Characteristics**

**Kennwerte**

|  |                                    |   |                |  |
|--|------------------------------------|---|----------------|--|
| Max. instantaneous forward voltage<br>Augenblickswert der Durchlass-Spannung         | $I_F = 25 A$<br>$T_j = 25^\circ C$ | $V_{BR} \leq 200 V$<br>$V_{BR} > 200 V$ | $V_F$<br>$V_F$ | < 3.5 V <sup>5)</sup><br>< 5.0 V <sup>5)</sup> |
| Thermal resistance junction to ambient<br>Wärmewiderstand Sperrschicht – Umgebung    |                                    |   | $R_{thA}$      | <30 K/W <sup>4)</sup>                          |
| Thermal resistance junction to lead<br>Wärmewiderstand Sperrschicht – Anschlussdraht |                                    |   | $R_{thL}$      | <15 K/W  |

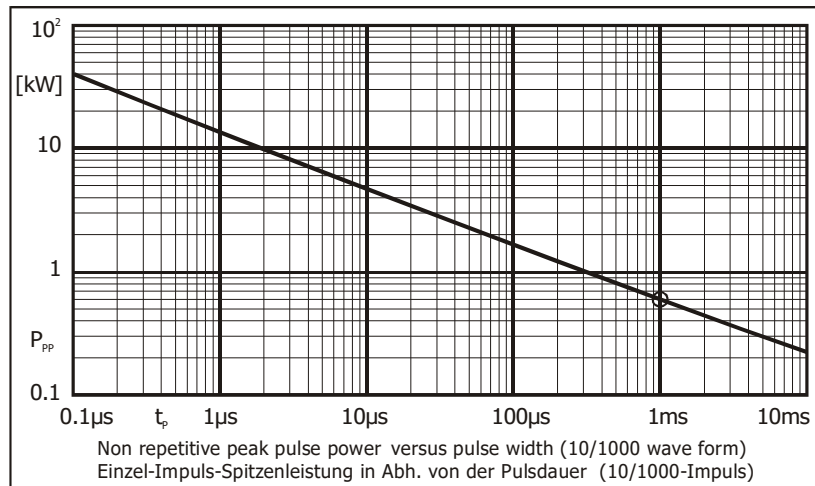
1 Please note the [detailed information on our website](#) or at the beginning of the data book  
 Bitte beachten Sie die [detaillierten Hinweise auf unserer Internetseite](#) bzw. am Anfang des Datenbuches  
 2  $T_A = 25^\circ C$  unless otherwise specified –  $T_A = 25^\circ C$  wenn nicht anders angegeben  
 3 Non-repetitive pulse see curve  $I_{pp} = f(t) / P_{pp} = f(t)$   
 Höchstzulässiger Spitzenwert eines einmaligen Impulses, siehe Kurve  $I_{pp} = f(t) / P_{pp} = f(t)$   
 4 Valid, if leads are kept at ambient temperature at a distance of 10 mm from case  
 Gültig, wenn die Anschlussdrähte in 10 mm Abstand vom Gehäuse auf Umgebungstemperatur gehalten werden  
 5 Unidirectional diodes only – Nur für unidirektionale Dioden

**Characteristics (T<sub>j</sub> = 25°C)**
**Kennwerte (T<sub>j</sub> = 25°C)**

| Type<br>Typ    |               | Breakdown voltage at I <sub>T</sub> = 1 mA<br>Abbruch-Spannung bei I <sub>T</sub> = 1 mA<br>*) at / bei I <sub>T</sub> = 10 mA |                | Stand-off<br>voltage<br>Sperrspannung | Max. rev. current<br>Max. Sperrstrom<br>at / bei V <sub>WM</sub> | Max. clamping voltage<br>Max. Begrenzer-Spannung<br>at / bei I <sub>PPM</sub> (10/1000 μs) |                      |
|----------------|---------------|--|----------------|---------------------------------------|--|--|----------------------|
| unidirectional | bidirectional | V <sub>BR</sub> [V]  |                | V <sub>WM</sub> [V]                   | I <sub>D</sub> [μA]  | V <sub>C</sub> [V]   | I <sub>PPM</sub> [A] |
| P6KE6.8        | P6KE6.8C      | 6.8 ± 10%  | 6.12...7.48 *) | 5.5                                   | 1000   | 10.8   | 58.0                 |
| P6KE6.8A       | P6KE6.8CA     | 6.8 ± 5%   | 6.45...7.14 *) | 5.8                                   | 1000   | 10.5   | 60.0                 |
| P6KE7.5        | P6KE7.5C      | 7.5 ± 10%  | 6.75...8.25 *) | 6.0                                   | 500  | 11.7   | 53.0                 |
| P6KE7.5A       | P6KE7.5CA     | 7.5 ± 5%   | 7.13...7.88 *) | 6.4                                   | 500  | 11.3   | 55.0                 |
| P6KE8.2        | P6KE8.2C      | 8.2 ± 10%  | 7.38...9.02 *) | 6.6                                   | 200  | 12.5   | 50.0                 |
| P6KE8.2A       | P6KE8.2CA     | 8.2 ± 5%   | 7.79...8.61 *) | 7.0                                   | 200  | 12.1   | 52.0                 |
| P6KE9.1        | P6KE9.1C      | 9.1 ± 10%  | 8.19...10.0    | 7.3                                   | 50   | 13.8   | 45.0                 |
| P6KE9.1A       | P6KE9.1CA     | 9.1 ± 5%   | 8.65...9.55    | 7.7                                   | 50   | 13.4   | 47.0                 |
| P6KE10         | P6KE10C       | 10 ± 10%   | 9.0...11.0     | 8.1                                   | 10   | 15.0   | 42.0                 |
| P6KE10A        | P6KE10CA      | 10 ± 5%  | 9.5...10.5     | 8.5                                   | 10   | 14.5   | 43.0                 |
| P6KE11         | P6KE11C       | 11 ± 10%   | 9.9...12.1     | 8.9                                   | 5  | 16.2   | 38.0                 |
| P6KE11A        | P6KE11CA      | 11 ± 5%  | 10.5...11.6    | 9.4                                   | 5  | 15.6   | 40.0                 |
| P6KE12         | P6KE12C       | 12 ± 10%   | 10.8...13.2    | 9.7                                   | 5  | 17.3   | 36.0                 |
| P6KE12A        | P6KE12CA      | 12 ± 5%  | 11.4...12.6    | 10.2                                  | 5  | 16.7   | 37.0                 |
| P6KE13         | P6KE13C       | 13 ± 10%   | 11.7...14.3    | 10.5                                  | 5  | 19.0   | 33.0                 |
| P6KE13A        | P6KE13CA      | 13 ± 5%  | 12.4...13.7    | 11.1                                  | 5  | 18.2   | 34.0                 |
| P6KE15         | P6KE15C       | 15 ± 10%   | 13.5...16.5    | 12.1                                  | 5  | 22.0   | 28.0                 |
| P6KE15A        | P6KE15CA      | 15 ± 5%  | 14.3...15.8    | 12.8                                  | 5  | 21.2   | 29.0                 |
| P6KE16         | P6KE16C       | 16 ± 10%   | 14.4...17.6    | 12.9                                  | 5  | 23.5   | 26.0                 |
| P6KE16A        | P6KE16CA      | 16 ± 5%  | 15.2...16.8    | 13.6                                  | 5  | 22.5   | 28.0                 |
| P6KE18         | P6KE18C       | 18 ± 10%   | 16.2...19.8    | 14.5                                  | 5  | 26.5   | 23.0                 |
| P6KE18A        | P6KE18CA      | 18 ± 5%  | 17.1...18.9    | 15.3                                  | 5  | 25.2   | 25.0                 |
| P6KE20         | P6KE20C       | 20 ± 10%   | 18.0...22.0    | 16.2                                  | 5  | 29.1   | 21.0                 |
| P6KE20A        | P6KE20CA      | 20 ± 5%  | 19.0...21.0    | 17.1                                  | 5  | 27.7   | 22.0                 |
| P6KE22         | P6KE22C       | 22 ± 10%   | 19.8...24.2    | 17.8                                  | 5  | 31.9   | 19.0                 |
| P6KE22A        | P6KE22CA      | 22 ± 5%  | 20.9...23.1    | 18.8                                  | 5  | 30.6   | 20.0                 |
| P6KE24         | P6KE24C       | 24 ± 10%   | 21.6...26.4    | 19.4                                  | 5  | 34.7   | 18.0                 |
| P6KE24A        | P6KE24CA      | 24 ± 5%  | 22.8...25.2    | 20.5                                  | 5  | 33.2   | 19.0                 |
| P6KE27         | P6KE27C       | 27 ± 10%   | 24.3...29.7    | 21.8                                  | 5  | 39.1   | 16.0                 |
| P6KE27A        | P6KE27CA      | 27 ± 5%  | 25.7...28.4    | 23.1                                  | 5  | 37.5   | 16.8                 |
| P6KE30         | P6KE30C       | 30 ± 10%   | 27.0...33.0    | 24.3                                  | 5  | 43.5   | 14.0                 |
| P6KE30A        | P6KE30CA      | 30 ± 5%  | 28.5...31.5    | 25.6                                  | 5  | 41.4   | 15.0                 |
| P6KE33         | P6KE33C       | 33 ± 10%   | 29.7...36.3    | 26.8                                  | 5  | 47.7   | 13.0                 |
| P6KE33A        | P6KE33CA      | 33 ± 5%  | 31.4...34.7    | 28.2                                  | 5  | 45.7   | 13.8                 |
| P6KE36         | P6KE36C       | 36 ± 10%   | 32.4...39.6    | 29.1                                  | 5  | 52.0   | 12.0                 |
| P6KE36A        | P6KE36CA      | 36 ± 5%  | 34.2...37.8    | 30.8                                  | 5  | 49.9   | 12.6                 |
| P6KE39         | P6KE39C       | 39 ± 10%   | 35.1...42.9    | 31.6                                  | 5  | 56.4   | 11.1                 |
| P6KE39A        | P6KE39CA      | 39 ± 5%  | 37.1...41.0    | 33.3                                  | 5  | 53.9   | 11.6                 |
| P6KE43         | P6KE43C       | 43 ± 10%   | 38.7...47.3    | 34.8                                  | 5  | 61.9   | 10.0                 |
| P6KE43A        | P6KE43CA      | 43 ± 5%  | 40.9...45.2    | 36.8                                  | 5  | 59.3   | 10.6                 |
| P6KE47         | P6KE47C       | 47 ± 10%   | 42.3...51.7    | 38.1                                  | 5  | 67.8   | 9.2                  |
| P6KE47A        | P6KE47CA      | 47 ± 5%  | 44.7...49.4    | 40.2                                  | 5  | 64.8   | 9.7                  |
| P6KE51         | P6KE51C       | 51 ± 10%   | 45.9...56.1    | 41.3                                  | 5  | 73.5   | 8.5                  |
| P6KE51A        | P6KE51CA      | 51 ± 5%  | 48.5...53.6    | 43.6                                  | 5  | 70.1   | 8.9                  |

**Characteristics (T<sub>j</sub> = 25°C)****Kennwerte (T<sub>j</sub> = 25°C)**

| Type<br>Typ    |               | Breakdown voltage at I <sub>T</sub> = 1 mA<br>Abbruch-Spannung bei I <sub>T</sub> = 1 mA<br>) at / bei I <sub>T</sub> = 10 mA |             | Stand-off<br>voltage<br>Sperrspannung | Max. rev. current<br>Max. Sperrstrom<br>at / bei V <sub>WM</sub> | Max. clamping voltage<br>Max. Begrenzer-Spannung<br>at / bei I <sub>PPM</sub> (10/1000 μs) |                      |
|----------------|---------------|---|-------------|---------------------------------------|--|--|----------------------|
| unidirectional | bidirectional | V <sub>BR</sub> [V]   |             | V <sub>WM</sub> [V]                   | I <sub>D</sub> [μA]  | V <sub>C</sub> [V]   | I <sub>PPM</sub> [A] |
| P6KE56         | P6KE56C       | 56 ± 10%  | 50.4...61.6 | 45.4                                  | 5  | 81   | 7.8                  |
| P6KE56A        | P6KE56CA      | 56 ± 5%   | 53.2...58.8 | 47.8                                  | 5  | 77   | 8.1                  |
| P6KE62         | P6KE62C       | 62 ± 10%  | 55.8...68.8 | 50.2                                  | 5  | 89   | 7.0                  |
| P6KE62A        | P6KE62CA      | 62 ± 5%   | 58.9...65.1 | 53.0                                  | 5  | 85   | 7.4                  |
| P6KE68         | P6KE68C       | 68 ± 10%  | 61.2...74.8 | 55.1                                  | 5  | 98   | 6.4                  |
| P6KE68A        | P6KE68CA      | 68 ± 5%   | 64.6...71.4 | 58.1                                  | 5  | 92   | 6.8                  |
| P6KE75         | P6KE75C       | 75 ± 10%  | 67.5...82.5 | 60.7                                  | 5  | 108  | 5.8                  |
| P6KE75A        | P6KE75CA      | 75 ± 5%   | 71.3...78.8 | 64.1                                  | 5  | 103  | 6.1                  |
| P6KE82         | P6KE82C       | 82 ± 10%  | 73.8...90.2 | 66.4                                  | 5  | 118  | 5.3                  |
| P6KE82A        | P6KE82CA      | 82 ± 5%   | 77.9...86.1 | 70.1                                  | 5  | 113  | 5.5                  |
| P6KE91         | P6KE91C       | 91 ± 10%  | 81.9...100  | 73.7                                  | 5  | 131  | 4.8                  |
| P6KE91A        | P6KE91CA      | 91 ± 5%   | 86.5...95.5 | 77.8                                  | 5  | 125  | 5.0                  |
| P6KE100        | P6KE100C      | 100 ± 10%   | 90.0...110  | 81.0                                  | 5  | 144  | 4.3                  |
| P6KE100A       | P6KE100CA     | 100 ± 5%  | 95.0...105  | 85.5                                  | 5  | 137  | 4.5                  |
| P6KE110        | P6KE110C      | 110 ± 10%   | 99.0...121  | 89.2                                  | 5  | 158  | 3.9                  |
| P6KE110A       | P6KE110CA     | 110 ± 5%  | 105...116   | 94.0                                  | 5  | 152  | 4.1                  |
| P6KE120        | P6KE120C      | 120 ± 10%   | 108...132   | 97.2                                  | 5  | 173  | 3.6                  |
| P6KE120A       | P6KE120CA     | 120 ± 5%  | 114...126   | 102                                   | 5  | 165  | 3.8                  |
| P6KE130        | P6KE130C      | 130 ± 10%   | 117...143   | 105                                   | 5  | 187  | 3.3                  |
| P6KE130A       | P6KE130CA     | 130 ± 5%  | 124...137   | 111                                   | 5  | 179  | 3.5                  |
| P6KE150        | P6KE150C      | 150 ± 10%   | 135...165   | 121                                   | 5  | 215  | 2.9                  |
| P6KE150A       | P6KE150CA     | 150 ± 5%  | 143...158   | 128                                   | 5  | 207  | 3.0                  |
| P6KE160        | P6KE160C      | 160 ± 10%   | 144...176   | 130                                   | 5  | 230  | 2.7                  |
| P6KE160A       | P6KE160CA     | 160 ± 5%  | 152...168   | 136                                   | 5  | 219  | 2.8                  |
| P6KE170        | P6KE170C      | 170 ± 10%   | 153...187   | 138                                   | 5  | 244  | 2.5                  |
| P6KE170A       | P6KE170CA     | 170 ± 5%  | 162...179   | 145                                   | 5  | 234  | 2.6                  |
| P6KE180        | P6KE180C      | 180 ± 10%   | 162...198   | 146                                   | 5  | 258  | 2.4                  |
| P6KE180A       | P6KE180CA     | 180 ± 5%  | 171...189   | 154                                   | 5  | 246  | 2.5                  |
| P6KE200        | P6KE200C      | 200 ± 10%   | 180...220   | 162                                   | 5  | 287  | 2.1                  |
| P6KE200A       | P6KE200CA     | 200 ± 5%  | 190...210   | 171                                   | 5  | 274  | 2.2                  |
| P6KE220        | P6KE220C      | 220 ± 10%   | 198...242   | 175                                   | 5  | 344  | 1.8                  |
| P6KE220A       | P6KE220CA     | 220 ± 5%  | 209...231   | 185                                   | 5  | 328  | 1.9                  |
| P6KE250        | P6KE250C      | 250 ± 10%   | 225...275   | 202                                   | 5  | 360  | 1.7                  |
| P6KE250A       | P6KE250CA     | 250 ± 5%  | 237...263   | 214                                   | 5  | 344  | 1.8                  |
| P6KE300        | P6KE300C      | 300 ± 10%   | 270...330   | 243                                   | 5  | 430  | 1.4                  |
| P6KE300A       | P6KE300CA     | 300 ± 5%  | 285...315   | 256                                   | 5  | 414  | 1.5                  |
| P6KE350        | P6KE350C      | 350 ± 10%   | 315...385   | 284                                   | 5  | 504  | 1.2                  |
| P6KE350A       | P6KE350CA     | 350 ± 5%  | 332...368   | 300                                   | 5  | 482  | 1.3                  |
| P6KE400        | P6KE400C      | 400 ± 10%   | 360...440   | 324                                   | 5  | 574  | 1.0                  |
| P6KE400A       | P6KE400CA     | 400 ± 5%  | 380...420   | 342                                   | 5  | 548  | 1.1                  |
| P6KE440        | P6KE440C      | 440 ± 10%   | 396...484   | 356                                   | 5  | 631  | 0.99                 |
| P6KE440A       | P6KE440CA     | 440 ± 5%  | 418...462   | 376                                   | 5  | 602  | 1.04                 |
| P6KE520C       | P6KE520C      | 520 ± 10%   | 470...570   | 423                                   | 5  | 745  | 0.81                 |
| P6KE520A       | P6KE520CA     | 520 ± 5%  | 494...546   | 444                                   | 5  | 711  | 0.84                 |



The range of type numbers is graded to the international E 24 standard. The standard tolerance of the breakdown voltage for each type is  $\pm 10\%$ . Suffix "A" denotes a tolerance of  $\pm 5\%$  for the breakdown voltage.

e.g.: P6KE51C = bidirectional diode,  $V_{BR} = 51 \text{ V } (\pm 10\%)$ ,  $V_{WM} \geq 41.3 \text{ V}$  at  $I_D = 5 \mu\text{A}$   
P6KE9.1A = unidirectional diode,  $V_{BR} = 9.1 \text{ V } (\pm 5\%)$ ,  $V_{WM} \geq 7.7 \text{ V}$  at  $I_D = 50 \mu\text{A}$

Die Abstufung der Typen innerhalb der Reihe entspricht dem internationalen E 24-Standard. Die Toleranz der Abbruchspannung jedes einzelnen Typs beträgt in der Standardausführung  $\pm 10\%$ . Suffix "A" kennzeichnet eine Toleranz der Abbruchspannung von  $\pm 5\%$ .

**Disclaimer:** See data book page 2 or [website](#)  
**Haftungsausschluss:** Siehe Datenbuch Seite 2 oder [Internet](#)

1 Valid, if leads are kept at ambient temperature at a distance of 10 mm from case  
Gültig, wenn die Anschlussdrähte in 10 mm Abstand von Gehäuse auf Umgebungstemperatur gehalten werden