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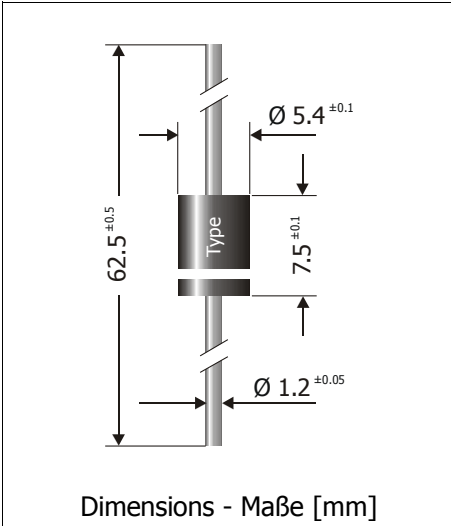
elektronikai alkatrész áruház

**EN:** This Datasheet is presented by the manufacturer.

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**1.5KE6.8 ... 1.5KE440CA**  
**Unidirectional and bidirectional Transient Voltage Suppressor Diodes**  
**Unidirectionale und bidirectionale Spannungs-Begrenzer-Dioden**

Version 2006-05-10



|   |                  |
|---|------------------|
| Peak pulse power dissipation<br>Maximale Verlustleistung                              | 1500 W           |
| Standard breakdown voltage range<br>Standard Abbruch-Spannungsbereich                 | 6.8...440 V      |
| Plastic case<br>Kunststoffgehäuse   | Ø 5.4 x 7.5 [mm] |
| Weight approx.<br>Gewicht ca.   | 1.0 g            |
| Plastic material has UL classification 94V-0<br>Gehäusematerial UL94V-0 klassifiziert |                  |
| Standard packaging taped in ammo pack<br>Standard Lieferform gegurtet in Ammo-Pack    |                  |



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

**Maximum ratings and Characteristics**

**Grenz- und Kennwerte**

|  |                          |   |  |
|--|--------------------------|---|--|
| Peak pulse power dissipation (10/1000 µs waveform)<br>Impuls-Verlustleistung (Strom-Impuls 10/1000 µs) | $T_A = 25^\circ\text{C}$ | $P_{PPM}$   | 1500 W <sup>1)</sup>   |
| Steady state power dissipation<br>Verlustleistung im Dauerbetrieb                                      | $T_A = 75^\circ\text{C}$ | $P_{M(AV)}$   | 6.5 W <sup>2)</sup>  |
| Peak forward surge current, 60 Hz half sine-wave<br>Stoßstrom für eine 60 Hz Sinus-Halbwellen          | $T_A = 25^\circ\text{C}$ | $I_{FSM}$   | 200 A <sup>3)</sup>  |
| Max. instantaneous forward voltage<br>Augenblickswert der Durchlass-Spannung                           | $I_F = 100\text{ A}$     | $V_{BR} \leq 200\text{ V}$<br>$V_{BR} > 200\text{ V}$ | $V_F < 3.5\text{ V}$ <sup>3)</sup><br>$V_F < 5\text{ V}$ <sup>3)</sup> |
| Junction temperature – Sperrschichttemperatur  |                          | $T_j$   | -50...+175°C   |
| Storage temperature – Lagerungstemperatur  |                          | $T_s$   | -50...+175°C   |
| Thermal resistance junction to ambient air<br>Wärmewiderstand Sperrschicht – umgebende Luft            |                          | $R_{thA}$   | < 19 K/W <sup>2)</sup>   |
| Thermal resistance junction to terminal<br>Wärmewiderstand Sperrschicht – Anschluss                    |                          | $R_{thT}$   | < 8 K/W  |

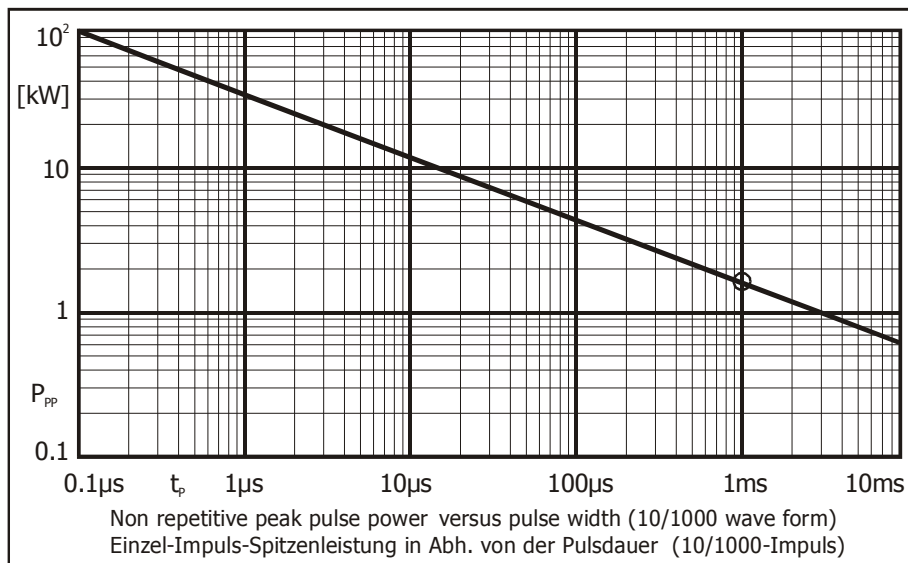
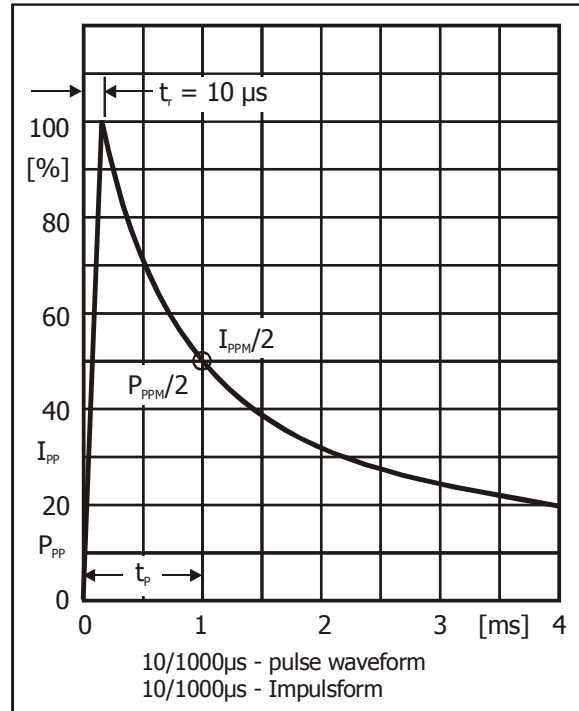
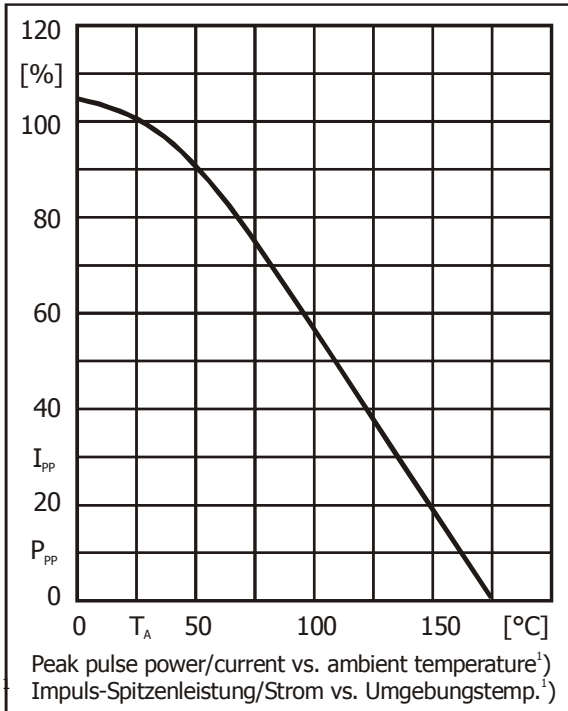
1 Non-repetitive pulse see curve  $I_{pp} = f(t_r) / P_{pp} = f(t_r)$   
 Höchstzulässiger Spitzenwert eines einmaligen Impulses, siehe Kurve  $I_{pp} = f(t_r) / P_{pp} = f(t_r)$   
 2 Valid, if leads are kept at ambient temperature at a distance of 10 mm from case  
 Gültig, wenn die Anschlussdrähte in 10 mm Abstand von Gehäuse auf Umgebungstemperatur gehalten werden  
 3 Unidirectional diodes only – Nur für unidirektionale Dioden

**Maximum ratings**
**Grenzwerte**

| Type<br>Typ | Breakdown voltage at $I_T = 1$ mA<br>Abbruch-Spannung bei $I_T = 1$ mA<br>*) at / bei $I_T = 10$ mA |                | Stand-off voltage<br>Sperrspannung | Max. rev. current<br>Max. Sperrstrom<br>at / bei $V_{WM}$ | Max. clamping voltage<br>Max. Begrenzer-Spannung<br>at / bei $I_{PPM}$ (10/1000 $\mu$ s) |                  |
|-------------|---|----------------|------------------------------------|---|--|------------------|
|             | $V_{BR}$ [V]  |                |                                    |   | $V_{WM}$ [V]   | $I_D$ [ $\mu$ A] |
| 1.5KE6.8    | 6.8 $\pm$ 10%   | 6.12...7.48 *) | 5.5                                | 1000  | 10.8   | 145              |
| 1.5KE6.8A   | 6.8 $\pm$ 5%  | 6.45...7.14 *) | 5.8                                | 1000  | 10.5   | 150              |
| 1.5KE7.5    | 7.5 $\pm$ 10%   | 6.75...8.25 *) | 6.0                                | 500   | 11.7   | 134              |
| 1.5KE7.5A   | 7.5 $\pm$ 5%  | 7.13...7.88 *) | 6.4                                | 500   | 11.3   | 139              |
| 1.5KE8.2    | 8.2 $\pm$ 10%   | 7.38...9.02 *) | 6.6                                | 200   | 12.5   | 126              |
| 1.5KE8.2A   | 8.2 $\pm$ 5%  | 7.79...8.61 *) | 7.0                                | 200   | 12.1   | 130              |
| 1.5KE9.1    | 9.1 $\pm$ 10%   | 8.19...10.0    | 7.3                                | 50  | 13.8   | 114              |
| 1.5KE9.1A   | 9.1 $\pm$ 5%  | 8.65...9.55    | 7.7                                | 50  | 13.4   | 117              |
| 1.5KE10     | 10 $\pm$ 10%  | 9.0...11.0     | 8.1                                | 10  | 15.0   | 105              |
| 1.5KE10A    | 10 $\pm$ 5%   | 9.5...10.5     | 8.5                                | 10  | 14.5   | 108              |
| 1.5KE11     | 11 $\pm$ 10%  | 9.9...12.1     | 8.9                                | 5   | 16.2   | 97               |
| 1.5KE11A    | 11 $\pm$ 5%   | 10.5...11.6    | 9.4                                | 5   | 15.6   | 100              |
| 1.5KE12     | 12 $\pm$ 10%  | 10.8...13.2    | 9.7                                | 5   | 17.3   | 91               |
| 1.5KE12A    | 12 $\pm$ 5%   | 11.4...12.6    | 10.2                               | 5   | 16.7   | 94               |
| 1.5KE13     | 13 $\pm$ 10%  | 11.7...14.3    | 10.5                               | 5   | 19.0   | 82               |
| 1.5KE13A    | 13 $\pm$ 5%   | 12.4...13.7    | 11.1                               | 5   | 18.2   | 86               |
| 1.5KE15     | 15 $\pm$ 10%  | 13.5...16.5    | 12.1                               | 5   | 22.0   | 71               |
| 1.5KE15A    | 15 $\pm$ 5%   | 14.3...15.8    | 12.8                               | 5   | 21.2   | 74               |
| 1.5KE16     | 16 $\pm$ 10%  | 14.4...17.6    | 12.9                               | 5   | 23.5   | 67               |
| 1.5KE16A    | 16 $\pm$ 5%   | 15.2...16.8    | 13.6                               | 5   | 22.5   | 70               |
| 1.5KE18     | 18 $\pm$ 10%  | 16.2...19.8    | 14.5                               | 5   | 26.5   | 59               |
| 1.5KE18A    | 18 $\pm$ 5%   | 17.1...18.9    | 15.3                               | 5   | 25.2   | 60               |
| 1.5KE20     | 20 $\pm$ 10%  | 18.0...22.0    | 16.2                               | 5   | 29.1   | 54               |
| 1.5KE20A    | 20 $\pm$ 5%   | 19.0...21.0    | 17.1                               | 5   | 27.7   | 56               |
| 1.5KE22     | 22 $\pm$ 10%  | 19.8...24.2    | 17.8                               | 5   | 31.9   | 49               |
| 1.5KE22A    | 22 $\pm$ 5%   | 20.9...23.1    | 18.8                               | 5   | 30.6   | 51               |
| 1.5KE24     | 24 $\pm$ 10%  | 21.6...26.4    | 19.4                               | 5   | 34.7   | 45               |
| 1.5KE24A    | 24 $\pm$ 5%   | 22.8...25.2    | 20.5                               | 5   | 33.2   | 47               |
| 1.5KE27     | 27 $\pm$ 10%  | 24.3...29.7    | 21.8                               | 5   | 39.1   | 40               |
| 1.5KE27A    | 27 $\pm$ 5%   | 25.7...28.4    | 23.1                               | 5   | 37.5   | 42               |
| 1.5KE30     | 30 $\pm$ 10%  | 27.0...30.0    | 24.3                               | 5   | 43.5   | 36               |
| 1.5KE30A    | 30 $\pm$ 5%   | 28.5...31.5    | 25.6                               | 5   | 41.4   | 38               |
| 1.5KE33     | 33 $\pm$ 10%  | 29.7...36.3    | 26.8                               | 5   | 47.7   | 33               |
| 1.5KE33A    | 33 $\pm$ 5%   | 31.4...34.7    | 28.2                               | 5   | 45.7   | 34               |
| 1.5KE36     | 36 $\pm$ 10%  | 32.4...39.6    | 29.1                               | 5   | 52.0   | 30               |
| 1.5KE36A    | 36 $\pm$ 5%   | 34.2...37.8    | 30.8                               | 5   | 49.9   | 31               |
| 1.5KE39     | 39 $\pm$ 10%  | 35.1...42.9    | 31.6                               | 5   | 56.4   | 27               |
| 1.5KE39A    | 39 $\pm$ 5%   | 37.1...41.0    | 33.3                               | 5   | 53.9   | 29               |
| 1.5KE43     | 43 $\pm$ 10%  | 38.7...47.3    | 34.8                               | 5   | 61.9   | 25               |
| 1.5KE43A    | 43 $\pm$ 5%   | 40.9...45.2    | 36.8                               | 5   | 59.3   | 26               |
| 1.5KE47     | 47 $\pm$ 10%  | 42.3...51.7    | 38.1                               | 5   | 67.8   | 23               |
| 1.5KE47A    | 47 $\pm$ 5%   | 44.7...49.4    | 40.2                               | 5   | 64.8   | 24               |
| 1.5KE51     | 51 $\pm$ 10%  | 45.9...56.1    | 41.3                               | 5   | 73.5   | 21               |
| 1.5KE51A    | 51 $\pm$ 5%   | 48.5...53.6    | 43.6                               | 5   | 70.1   | 22               |

**Maximum ratings****Grenzwerte**

| Type<br>Typ | Breakdown voltage at $I_T = 1$ mA<br>Abbruch-Spannung bei $I_T = 1$ mA<br>) at / bei $I_T = 10$ mA |             | Stand-off voltage<br>Sperrspannung | Max. rev. current<br>Max. Sperrstrom<br>at / bei $V_{WM}$ | Max. clamping voltage<br>Max. Begrenzer-Spannung<br>at / bei $I_{PPM}$ (10/1000 $\mu$ s) |                  |
|-------------|--|-------------|------------------------------------|---|--|------------------|
|             | $V_{BR}$ [V]   |             |                                    |   | $V_{WM}$ [V]   | $I_D$ [ $\mu$ A] |
| 1.5KE56     | 56 $\pm$ 10%   | 50.4...61.6 | 45.4                               | 5   | 81   | 19               |
| 1.5KE56A    | 56 $\pm$ 5%  | 53.2...58.8 | 47.8                               | 5   | 77   | 20               |
| 1.5KE62     | 62 $\pm$ 10%   | 55.8...68.8 | 50.2                               | 5   | 89   | 17               |
| 1.5KE62A    | 62 $\pm$ 5%  | 58.9...65.1 | 53.0                               | 5   | 85   | 18               |
| 1.5KE68     | 68 $\pm$ 10%   | 61.2...74.8 | 55.1                               | 5   | 98   | 16.0             |
| 1.5KE68A    | 68 $\pm$ 5%  | 64.6...71.4 | 58.1                               | 5   | 92   | 17.0             |
| 1.5KE75     | 75 $\pm$ 10%   | 67.5...82.5 | 60.7                               | 5   | 108  | 14.0             |
| 1.5KE75A    | 75 $\pm$ 5%  | 71.3...78.8 | 64.1                               | 5   | 103  | 15.0             |
| 1.5KE82     | 82 $\pm$ 10%   | 73.8...90.2 | 66.4                               | 5   | 118  | 13.0             |
| 1.5KE82A    | 82 $\pm$ 5%  | 77.9...86.1 | 70.1                               | 5   | 113  | 13.9             |
| 1.5KE91     | 91 $\pm$ 10%   | 81.9...100  | 73.7                               | 5   | 131  | 12.0             |
| 1.5KE91A    | 91 $\pm$ 5%  | 86.5...95.5 | 77.8                               | 5   | 125  | 12.6             |
| 1.5KE100    | 100 $\pm$ 10%  | 90.0...110  | 81.0                               | 5   | 144  | 10.9             |
| 1.5KE100A   | 100 $\pm$ 5%   | 95.0...105  | 85.5                               | 5   | 137  | 11.4             |
| 1.5KE110    | 110 $\pm$ 10%  | 99.0...121  | 89.2                               | 5   | 158  | 9.9              |
| 1.5KE110A   | 110 $\pm$ 5%   | 105...116   | 94.0                               | 5   | 152  | 10.3             |
| 1.5KE120    | 120 $\pm$ 10%  | 108...132   | 97.2                               | 5   | 173  | 9.1              |
| 1.5KE120A   | 120 $\pm$ 5%   | 114...126   | 102                                | 5   | 165  | 9.5              |
| 1.5KE130    | 130 $\pm$ 10%  | 117...143   | 105                                | 5   | 187  | 8.4              |
| 1.5KE130A   | 130 $\pm$ 5%   | 124...137   | 111                                | 5   | 179  | 8.7              |
| 1.5KE150    | 150 $\pm$ 10%  | 135...165   | 121                                | 5   | 215  | 7.3              |
| 1.5KE150A   | 150 $\pm$ 5%   | 143...158   | 128                                | 5   | 207  | 7.6              |
| 1.5KE160    | 160 $\pm$ 10%  | 144...176   | 130                                | 5   | 230  | 6.8              |
| 1.5KE160A   | 160 $\pm$ 5%   | 152...168   | 136                                | 5   | 219  | 7.1              |
| 1.5KE170    | 170 $\pm$ 10%  | 153...187   | 138                                | 5   | 244  | 6.4              |
| 1.5KE170A   | 170 $\pm$ 5%   | 162...179   | 145                                | 5   | 234  | 6.7              |
| 1.5KE180    | 180 $\pm$ 10%  | 162...198   | 146                                | 5   | 258  | 6.1              |
| 1.5KE180A   | 180 $\pm$ 5%   | 171...189   | 154                                | 5   | 246  | 6.4              |
| 1.5KE200    | 200 $\pm$ 10%  | 180...220   | 162                                | 5   | 287  | 5.4              |
| 1.5KE200A   | 200 $\pm$ 5%   | 190...210   | 171                                | 5   | 274  | 5.7              |
| 1.5KE220    | 220 $\pm$ 10%  | 198...242   | 175                                | 5   | 344  | 4.5              |
| 1.5KE220A   | 220 $\pm$ 5%   | 209...231   | 185                                | 5   | 328  | 4.8              |
| 1.5KE250    | 250 $\pm$ 10%  | 225...275   | 202                                | 5   | 360  | 4.3              |
| 1.5KE250A   | 250 $\pm$ 5%   | 237...263   | 214                                | 5   | 344  | 4.5              |
| 1.5KE300    | 300 $\pm$ 10%  | 270...330   | 243                                | 5   | 430  | 3.6              |
| 1.5KE300A   | 300 $\pm$ 5%   | 285...315   | 256                                | 5   | 414  | 3.8              |
| 1.5KE350    | 335 $\pm$ 10%  | 315...385   | 284                                | 5   | 504  | 3.1              |
| 1.5KE350A   | 350 $\pm$ 5%   | 332...368   | 300                                | 5   | 482  | 3.2              |
| 1.5KE400    | 400 $\pm$ 10%  | 360...440   | 324                                | 5   | 574  | 2.7              |
| 1.5KE400A   | 400 $\pm$ 5%   | 380...420   | 342                                | 5   | 548  | 2.8              |
| 1.5KE440    | 440 $\pm$ 10%  | 396...484   | 356                                | 5   | 631  | 2.4              |
| 1.5KE440A   | 440 $\pm$ 5%   | 418...462   | 376                                | 5   | 602  | 2.6              |



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.: 1.5KE51C = bidirectional diode,  $V_{BR} = 51 \text{ V} (\pm 10\%)$ ,  $V_{WM} \geq 41.3 \text{ V}$  at  $I_D = 5 \mu\text{A}$   
1.5KE9.1A = 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 betragt in der Standardausfuhrung  $\pm 10\%$ . Suffix "A" kennzeichnet eine Toleranz der Abbruchspannung von  $\pm 5\%$ .

<sup>1</sup> Valid, if leads are kept at ambient temperature at a distance of 10 mm from case  
Gultig, wenn die Anschlussdrahne in 10 mm Abstand von Gehause auf Umgebungstemp. gehalten werden