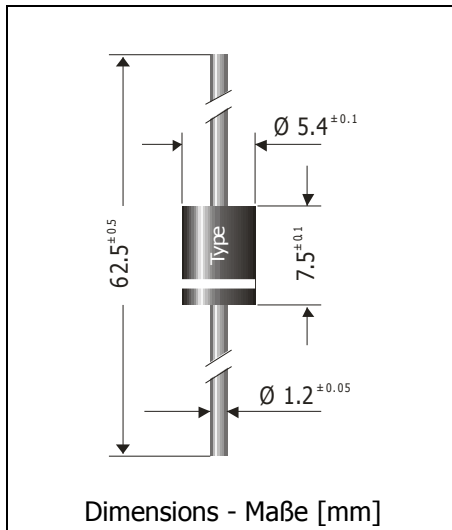



1.5KE6.8 ... 1.5KE440CA

Unidirectional and bidirectional Transient Voltage Suppressor Diodes Unidirectionale und bidirectionale Spannungs-Begrenzer-Dioden

Version 2014-09-05



| | |
|---|---|
| Peak pulse power dissipation Maximale Verlustleistung | 1500 W |
| Standard breakdown voltage range Standard Abbruch-Spannungsbereich | 6.8...440 V |
| Plastic case Kunststoffgehäuse | Ø 5.4 x 7.5 [mm] |
| Weight approx. Gewicht ca. | 1.0 g |
| Plastic material has UL classification 94V-0 Gehäusematerial UL94V-0 klassifiziert |  |
| Standard packaging taped in ammo pack 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) Impuls-Verlustleistung (Strom-Impuls 10/1000 µs) | $T_A = 25^\circ\text{C}$ | P_{PPM} | 1500 W ¹⁾ |
| Steady state power dissipation Verlustleistung im Dauerbetrieb | $T_A = 75^\circ\text{C}$ | $P_{M(AV)}$ | 6.5 W ²⁾ |
| Peak forward surge current, 60 Hz half sine-wave Stoßstrom für eine 60 Hz Sinus-Halbwelle | $T_A = 25^\circ\text{C}$ | I_{FSM} | 200 A ³⁾ |
| Max. instantaneous forward voltage Augenblickswert der Durchlass-Spannung | $I_F = 100\text{ A}$ | $V_{BR} \leq 200\text{ V}$ $V_{BR} > 200\text{ V}$ | $V_F < 3.5\text{ V}^3)$ $V_F < 5\text{ V}^3)$ |
| Junction temperature – Sperrschichttemperatur Storage temperature – Lagerungstemperatur | | T_j T_s | -50...+175°C -50...+175°C |
| Thermal resistance junction to ambient air Wärmewiderstand Sperrschicht – umgebende Luft | | R_{thA} | < 19 K/W ²⁾ |
| Thermal resistance junction to terminal 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

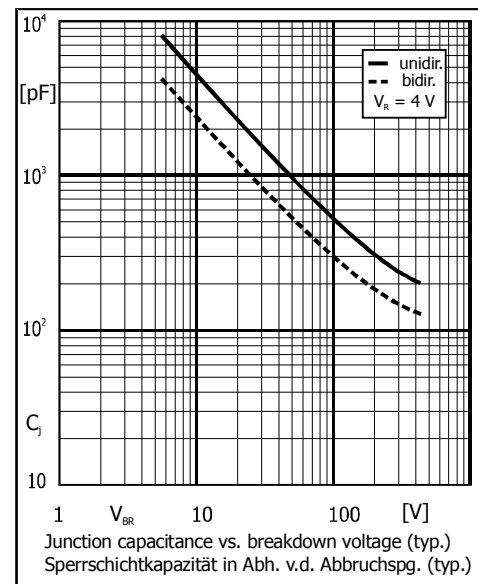
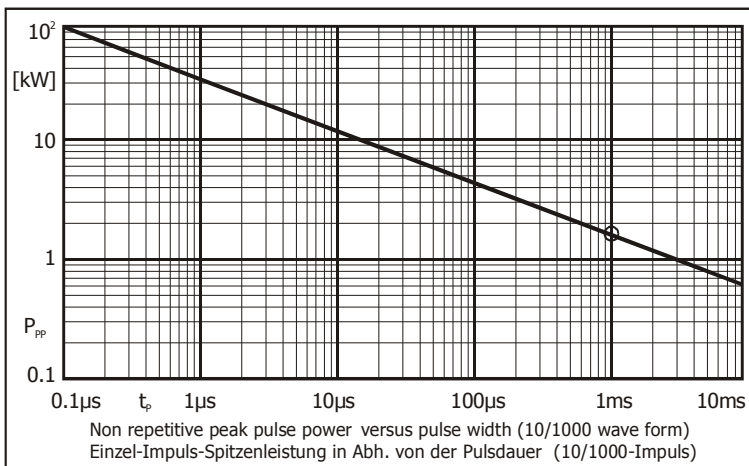
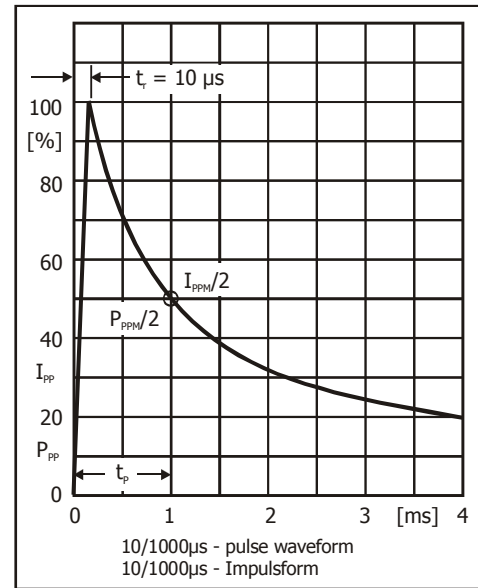
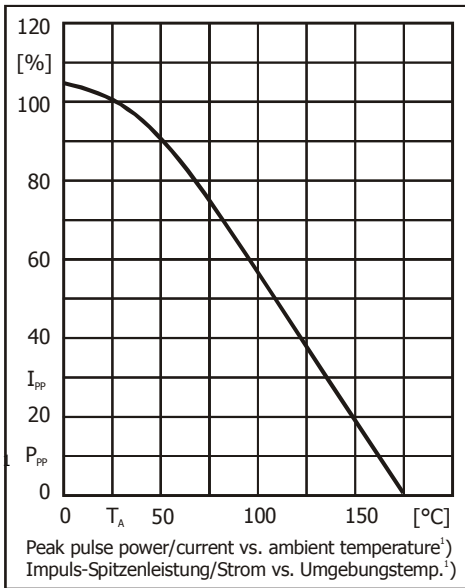
3 Unidirectional diodes only – Nur für unidirektionale Dioden

Maximum ratings
Grenzwerte

| Type Typ | Breakdown voltage at $I_T = 1$ mA Abbruch-Spannung bei $I_T = 1$ mA *) at / bei $I_T = 10$ mA | | Stand-off voltage Sperrspannung | Max. rev. current Max. Sperrstrom at / bei V_{WM} | Max. clamping voltage Max. Begrenzer-Spannung at / bei I_{PPM} (10/1000 μ s) | |
|-------------|---|----------------|------------------------------------|---|--|---------------|
| | V_{BR} [V] | | V_{WM} [V] | I_D [μ A] | V_C [V] | I_{PPM} [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...33.0 | 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 Typ | Breakdown voltage at $I_T = 1$ mA Abbruch-Spannung bei $I_T = 1$ mA *) at / bei $I_T = 10$ mA | | Stand-off voltage Sperrspannung | Max. rev. current Max. Sperrstrom at / bei V_{WM} | Max. clamping voltage Max. Begrenzer-Spannung at / bei I_{PPM} (10/1000 μ s) | |
|-------------|---|-------------|------------------------------------|---|--|---------------|
| | V_{BR} [V] | | V_{WM} [V] | I_D [μ A] | V_C [V] | I_{PPM} [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 beträgt in der Standardausführung $\pm 10\%$. Suffix "A" kennzeichnet eine Toleranz der Abbruchspannung von $\pm 5\%$.

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