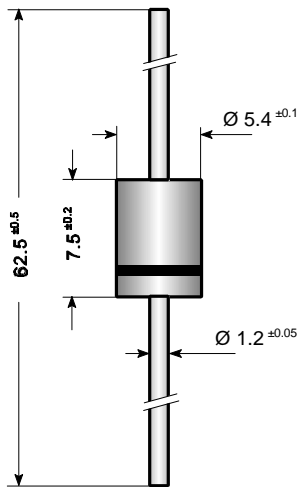


**Unidirectional and bidirectional
Transient Voltage Suppressor Diodes**

**Unidirektionale und bidirektionale
Spannungs-Begrenzer-Dioden**



| | |
|---|-------------------------------|
| Peak pulse power dissipation Impuls-Verlustleistung | 1500 W |
| Nominal breakdown voltage Nenn-Arbeitsspannung | 6.8...440 V |
| Plastic case – Kunststoffgehäuse | Ø 5.6 x 7.5 [mm] |
| Weight approx. – Gewicht ca. | 1.4 g |
| Plastic material has UL classification 94V-0 Gehäusematerial UL94V-0 klassifiziert | |
| Standard packaging taped in ammo pack Standard Lieferform gegurtet in Ammo-Pack | see page 17 siehe Seite 17 |

Dimensions / Maße in mm

For bidirectional types use suffix “C” or “CA” Suffix “C” oder “CA” für bidirektionale Typen

Maximum ratings

Grenzwerte

| | | | |
|--|--------------------------|-------------|----------------------|
| 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 | $T_A = 25^\circ\text{C}$ | $P_{M(AV)}$ | 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⁾ |
| Operating junction temperature – Sperrschichttemperatur | | T_j | - 50...+175°C |
| Storage temperature – Lagerungstemperatur | | T_s | - 50...+175°C |

Characteristics

Kennwerte

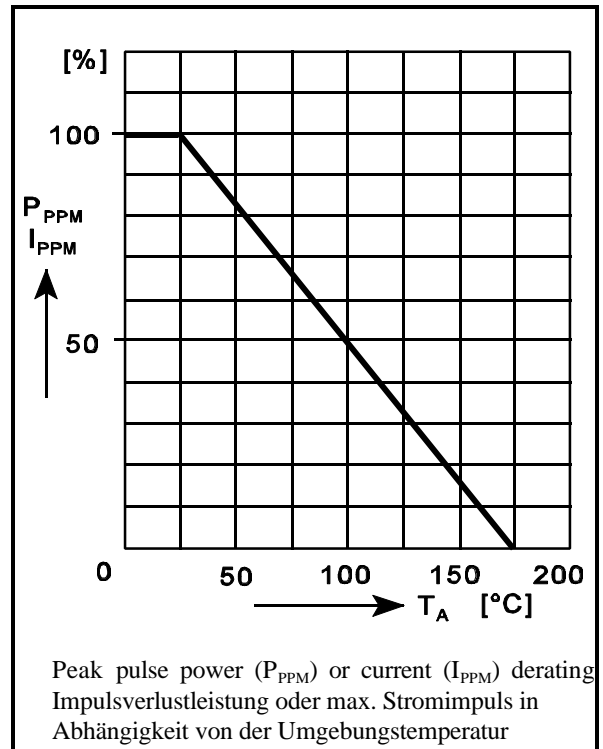
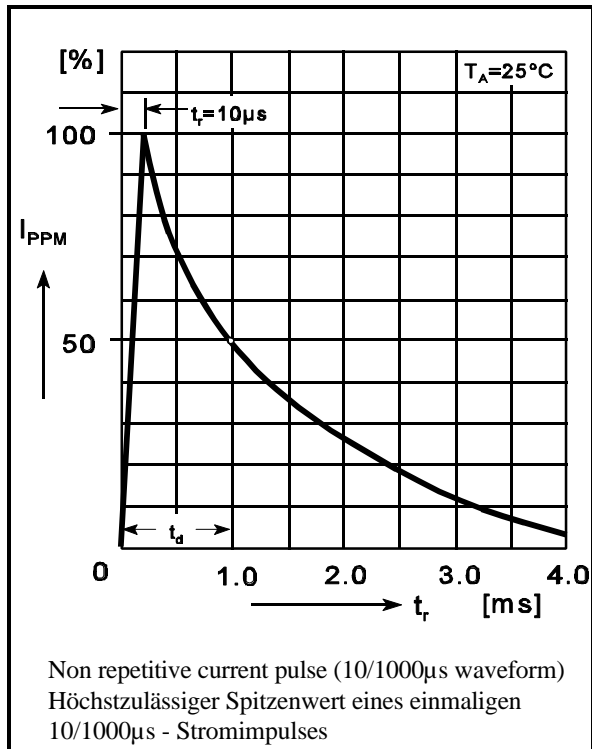
| | | | | |
|---|---------------------|---|----------------|--|
| Max. instantaneous forward voltage Augenblickswert der Durchlaßspannung | $I_F = 50\text{ A}$ | $V_{BR} \leq 200\text{ V}$ $V_{BR} > 200\text{ V}$ | V_F V_F | < 3.5 V ³⁾ < 5.0 V ³⁾ |
| Thermal resistance junction to ambient air Wärmewiderstand Sperrschicht – umgebende Luft | | | R_{thA} | < 25 K/W ²⁾ |

1) Non-repetitive current pulse see curve $I_{PPM} = f(t_r)$
Höchstzulässiger Spitzenwert eines einmaligen Strom-Impulses, siehe Kurve $I_{PPM} = f(t_r)$
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 Arbeitsspannung bei $I_T = 1$ mA *) tested at / gemessen bei 10 mA | | Max. stand-off voltage at leakage current Max. Sperrspannung bei Sperrstrom | | Max. clamping voltage at 10/1000 μ s-pulse current Max. Begrenzerspannung bei 10/1000 μ s-Stromimp. | |
| | 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 | 25.5 | 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 Arbeitsspannung bei $I_T = 1$ mA *) tested at / gemessen bei 10 mA | | Max. stand-off voltage at leakage current Max. Sperrspannung bei Sperrstrom | | Max. clamping voltage at 10/1000 μ s-pulse current Max. Begrenzerspannung bei 10/1000 μ s-Stromimp. | |
| | 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 | 80.5 | 19 |
| 1.5KE56A | 56 \pm 5% | 53.2...58.8 | 43.6 | 5 | 77.0 | 20 |
| 1.5KE62 | 62 \pm 10% | 55.8...68.8 | 50.2 | 5 | 89.0 | 17 |
| 1.5KE62A | 62 \pm 5% | 58.9...65.1 | 53.0 | 5 | 85.0 | 18 |
| 1.5KE68 | 68 \pm 10% | 61.2...74.8 | 55.1 | 5 | 98.0 | 16.0 |
| 1.5KE68A | 68 \pm 5% | 64.6...71.4 | 58.1 | 5 | 92.0 | 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...267 | 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 | 350 \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 |

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



The order 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.: 1.5KE160CA = bidirectional diode, $V_{BR} = 160V (\pm 5\%)$
1.5KE27A = unidirectional diode, $V_{BR} = 27V (\pm 5\%)$

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

z.B.: 1.5KE160CA = bidirektionale Diode, $V_{BR} = 160V (\pm 5\%)$
1.5KE27A = unidirektionale Diode, $V_{BR} = 27V (\pm 5\%)$