

1500W, 6.8V - 440V Transient Voltage Suppressor

FEATURES

- Excellent clamping capability
- Low dynamic impedance
- 1500W surge capability at 10 / 1000 μ s waveform
- Fast response time: Typically less than 1.0ps from 0 volt to V_{BR} for unidirectional and 5.0ns for bidirectional
- Typical I_R less than 1 μ A above 10V
- UL recognized file # E-326243
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21



DO-201

MECHANICAL DATA

Case: DO-201

Molding compound: UL flammability classification rating 94V-0

Part No. with suffix "H" means AEC-Q101 qualified

Packing code with suffix "G" means green compound (halogen-free)

Terminal: Pure tin plated leads, solderable per JESD22-B102

Meet JESD 201 class 2 whisker test

Weight: 0.94g (approximately)

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted) | | | |
|---|-----------|--------------|------------------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Peak power dissipation at $T_A=25^\circ\text{C}$, $T_p=1\text{ms}$ (Note 1) | P_{PK} | 1500 | W |
| Steady state power dissipation at $T_L=75^\circ\text{C}$ lead lengths .375", 9.5mm (Note 2) | P_D | 5 | W |
| Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 200 | A |
| Maximum Instantaneous Forward Voltage at 50 A for Unidirectional Only (Note 3) | V_F | 3.5 / 5.0 | V |
| Operating junction temperature range | T_J | - 55 to +175 | $^\circ\text{C}$ |
| Storage temperature range | T_{STG} | - 55 to +175 | $^\circ\text{C}$ |

Note 1: Non-repetitive current pulse per fig. 3 and derated above $T_A=25^\circ\text{C}$ per fig. 2

Note 2: Mounted on copper pad area of 0.6" x 0.6" (16mm x 16mm)

Note 3: $V_F=3.5\text{V}$ for devices of $V_{BR} \leq 200\text{V}$ and $V_F=5.0\text{V}$ max. for devices $V_{BR} > 200\text{V}$

Devices for Bipolar Applications

1. For bidirectional use C or CA suffix for types 1.5KE6.8 - types 1.5KE440
2. Electrical characteristics apply in both directions

| ORDERING INFORMATION | | | | | |
|----------------------|-----------------|--------------|---------------------|---------|------------------------|
| PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | PACKAGE | PACKING |
| 1.5KExxx (Note 1) | H | A0 | G | DO-201 | 500 / Ammo box |
| | | R0 | | DO-201 | 1,250 / 13" Paper reel |
| | | B0 | | DO-201 | 500 / Bulk packing |

Note 1: "xxx" defines voltage from 6.8V (1.5KE6.8) to 440V (1.5KE440)

| EXAMPLE | | | | | |
|------------------|-----------|-----------------|--------------|---------------------|--------------------------------------|
| EXAMPLE PART NO. | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION |
| 1.5KE100AHR0G | 1.5KE100A | H | R0 | G | AEC-Q101 qualified Green compound |

RATINGS AND CHARACTERISTICS CURVES ($T_A=25^\circ\text{C}$ unless otherwise noted)

FIG. 1 PEAK PULSE POWER RATING CURVE



FIG.2 PULSE DERATING CURVE



FIG. 3 CLAMPING POWER PULSE WAVEFORM



FIG. 4 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY



FIG. 5 TYPICAL JUNCTION CAPACITANCE



| JEDEC TYPE NUMBER | GENERAL PART NUMBER | Nominal Voltage V | Breakdown Voltage V_{BR} (V) (Note 1) | | Test Current I_T (mA) | Stand-Off Voltage V_{WM} (V) | Maximum Reverse Leakage @ V_{WM} I_R (μ A) | Maximum Peak Pulse Current I_{PPM} (A) (Note 2) | Maximum Clamping Voltage @ I_{PPM} V_C (V) | Maximum Temperature Coefficient of V_{BR} (%/°C) |
|-------------------|---------------------|----------------------|---|-------|-------------------------------|--------------------------------------|---|--|--|--|
| | | | Min | Max | | | | | | |
| 1N6267 | 1.5KE6.8 | 6.8 | 6.12 | 7.48 | 10 | 5.50 | 1000 | 145 | 10.8 | 0.057 |
| 1N6267A | 1.5KE6.8A | 6.8 | 6.45 | 7.14 | 10 | 5.80 | 1000 | 150 | 10.5 | 0.057 |
| 1N6268 | 1.5KE7.5 | 7.5 | 6.75 | 8.25 | 10 | 6.05 | 500 | 134 | 11.7 | 0.061 |
| 1N6268A | 1.5KE7.5A | 7.5 | 7.13 | 7.88 | 10 | 6.40 | 500 | 139 | 11.3 | 0.061 |
| 1N6269 | 1.5KE8.2 | 8.2 | 7.38 | 9.02 | 10 | 6.63 | 200 | 126 | 12.5 | 0.065 |
| 1N6269A | 1.5KE8.2A | 8.2 | 7.79 | 8.61 | 10 | 7.02 | 200 | 130 | 12.1 | 0.065 |
| 1N6270 | 1.5KE9.1 | 9.1 | 8.19 | 10.00 | 1.0 | 7.37 | 50 | 114 | 13.8 | 0.068 |
| 1N6270A | 1.5KE9.1A | 9.1 | 8.65 | 9.55 | 1.0 | 7.78 | 50 | 117 | 13.4 | 0.068 |
| 1N6271 | 1.5KE10 | 10 | 9.00 | 11.00 | 1.0 | 8.10 | 10 | 105 | 15.0 | 0.073 |
| 1N6271A | 1.5KE10A | 10 | 9.50 | 10.5 | 1.0 | 8.55 | 10 | 108 | 14.5 | 0.073 |
| 1N6272 | 1.5KE11 | 11 | 9.90 | 12.1 | 1.0 | 8.92 | 1 | 97 | 16.2 | 0.075 |
| 1N6272A | 1.5KE11A | 11 | 10.5 | 11.6 | 1.0 | 9.40 | 1 | 100 | 15.6 | 0.075 |
| 1N6273 | 1.5KE12 | 12 | 10.8 | 13.2 | 1.0 | 9.72 | 1 | 91 | 17.3 | 0.078 |
| 1N6273A | 1.5KE12A | 12 | 11.4 | 12.6 | 1.0 | 10.20 | 1 | 94 | 16.7 | 0.078 |
| 1N6274 | 1.5KE13 | 13 | 11.7 | 14.3 | 1.0 | 10.50 | 1 | 82 | 19.0 | 0.081 |
| 1N6274A | 1.5KE13A | 13 | 12.4 | 13.7 | 1.0 | 11.10 | 1 | 86 | 18.2 | 0.081 |
| 1N6275 | 1.5KE15 | 15 | 13.5 | 16.5 | 1.0 | 12.10 | 1 | 71 | 22.0 | 0.084 |
| 1N6275A | 1.5KE15A | 15 | 14.3 | 15.8 | 1.0 | 12.80 | 1 | 74 | 21.2 | 0.084 |
| 1N6276 | 1.5KE16 | 16 | 14.4 | 17.6 | 1.0 | 12.90 | 1 | 67 | 23.5 | 0.086 |
| 1N6276A | 1.5KE16A | 16 | 15.2 | 16.8 | 1.0 | 13.60 | 1 | 70 | 22.5 | 0.086 |
| 1N6277 | 1.5KE18 | 18 | 16.2 | 19.8 | 1.0 | 14.50 | 1 | 59 | 26.5 | 0.088 |
| 1N6277A | 1.5KE18A | 18 | 17.1 | 18.9 | 1.0 | 15.30 | 1 | 60 | 25.5 | 0.088 |
| 1N6278 | 1.5KE20 | 20 | 18.0 | 22.0 | 1.0 | 16.20 | 1 | 54 | 29.1 | 0.090 |
| 1N6278A | 1.5KE20A | 20 | 19.0 | 21.0 | 1.0 | 17.10 | 1 | 56 | 27.7 | 0.090 |
| 1N6279 | 1.5KE22 | 22 | 19.8 | 24.2 | 1.0 | 17.80 | 1 | 49 | 31.9 | 0.092 |
| 1N6279A | 1.5KE22A | 22 | 20.9 | 23.1 | 1.0 | 18.80 | 1 | 51 | 30.6 | 0.092 |
| 1N6280 | 1.5KE24 | 24 | 21.6 | 26.4 | 1.0 | 19.40 | 1 | 45 | 34.7 | 0.094 |
| 1N6280A | 1.5KE24A | 24 | 22.8 | 25.2 | 1.0 | 20.50 | 1 | 47 | 33.2 | 0.094 |
| 1N6281 | 1.5KE27 | 27 | 24.3 | 29.7 | 1.0 | 21.80 | 1 | 40 | 39.1 | 0.096 |
| 1N6281A | 1.5KE27A | 27 | 25.7 | 28.4 | 1.0 | 23.10 | 1 | 42 | 37.5 | 0.096 |
| 1N6282 | 1.5KE30 | 30 | 27.0 | 33.0 | 1.0 | 24.30 | 1 | 36 | 43.5 | 0.097 |
| 1N6282A | 1.5KE30A | 30 | 28.5 | 31.5 | 1.0 | 25.60 | 1 | 38 | 41.4 | 0.097 |
| 1N6283 | 1.5KE33 | 33 | 29.7 | 36.3 | 1.0 | 26.80 | 1 | 33 | 47.7 | 0.098 |
| 1N6283A | 1.5KE33A | 33 | 31.4 | 34.7 | 1.0 | 28.20 | 1 | 34 | 45.7 | 0.098 |
| 1N6284 | 1.5KE36 | 36 | 32.4 | 39.6 | 1.0 | 29.10 | 1 | 30 | 52.0 | 0.099 |
| 1N6284A | 1.5KE36A | 36 | 34.2 | 37.8 | 1.0 | 30.80 | 1 | 31 | 49.9 | 0.099 |
| 1N6285 | 1.5KE39 | 39 | 35.1 | 42.9 | 1.0 | 31.60 | 1 | 27 | 56.4 | 0.100 |
| 1N6285A | 1.5KE39A | 39 | 37.1 | 41.0 | 1.0 | 33.30 | 1 | 29 | 53.9 | 0.100 |
| 1N6286 | 1.5KE43 | 43 | 38.7 | 47.3 | 1.0 | 34.80 | 1 | 25 | 61.9 | 0.101 |
| 1N6286A | 1.5KE43A | 43 | 40.9 | 45.2 | 1.0 | 36.80 | 1 | 26 | 59.3 | 0.101 |
| 1N6287 | 1.5KE47 | 47 | 42.3 | 51.7 | 1.0 | 38.10 | 1 | 23 | 67.8 | 0.101 |
| 1N6287A | 1.5KE47A | 47 | 44.7 | 49.4 | 1.0 | 40.20 | 1 | 24 | 64.8 | 0.101 |
| 1N6288 | 1.5KE51 | 51 | 45.9 | 56.1 | 1.0 | 41.30 | 1 | 21 | 73.5 | 0.102 |
| 1N6288A | 1.5KE51A | 51 | 48.5 | 53.6 | 1.0 | 43.60 | 1 | 22 | 70.1 | 0.102 |
| 1N6289 | 1.5KE56 | 56 | 50.4 | 61.6 | 1.0 | 45.40 | 1 | 19 | 80.5 | 0.103 |
| 1N6289A | 1.5KE56A | 56 | 53.2 | 58.8 | 1.0 | 47.80 | 1 | 20 | 77.0 | 0.103 |

| JEDEC TYPE NUMBER | GENERAL PART NUMBER | Nominal Voltage V | Breakdown Voltage V_{BR} (V) (Note 1) | | Test Current I_T (mA) | Stand-Off Voltage V_{WM} (V) | Maximum Reverse Leakage @ V_{WM} I_R (μ A) | Maximum Peak Pulse Current I_{PPM} (A) (Note 2) | Maximum Clamping Voltage @ I_{PPM} V_c (V) | Maximum Temperature Coefficient of V_{BR} (%/°C) |
|-------------------|---------------------|----------------------|---|------|-------------------------------|--------------------------------------|---|--|--|--|
| | | | Min | Max | | | | | | |
| 1N6290 | 1.5KE62 | 62 | 55.8 | 68.2 | 1.0 | 50.2 | 1 | 17 | 89.0 | 0.104 |
| 1N6290A | 1.5KE62A | 62 | 58.9 | 65.1 | 1.0 | 53.0 | 1 | 18 | 85.0 | 0.104 |
| 1N6291 | 1.5KE68 | 68 | 61.2 | 74.8 | 1.0 | 55.1 | 1 | 16 | 98.0 | 0.104 |
| 1N6291A | 1.5KE68A | 68 | 64.6 | 71.4 | 1.0 | 58.1 | 1 | 17 | 92.0 | 0.104 |
| 1N6292 | 1.5KE75 | 75 | 67.5 | 82.5 | 1.0 | 60.7 | 1 | 14 | 108 | 0.105 |
| 1N6292A | 1.5KE75A | 75 | 71.3 | 78.8 | 1.0 | 64.1 | 1 | 15 | 103 | 0.105 |
| 1N6293 | 1.5KE82 | 82 | 73.8 | 90.2 | 1.0 | 66.4 | 1 | 13 | 118 | 0.105 |
| 1N6293A | 1.5KE82A | 82 | 77.9 | 86.1 | 1.0 | 70.1 | 1 | 13.9 | 113 | 0.105 |
| 1N6294 | 1.5KE91 | 91 | 81.9 | 100 | 1.0 | 73.7 | 1 | 12 | 131 | 0.106 |
| 1N6294A | 1.5KE91A | 91 | 86.5 | 95.5 | 1.0 | 77.8 | 1 | 12.6 | 125 | 0.106 |
| 1N6295 | 1.5KE100 | 100 | 90 | 110 | 1.0 | 81.0 | 1 | 10.9 | 144 | 0.106 |
| 1N6295A | 1.5KE100A | 100 | 95 | 105 | 1.0 | 85.5 | 1 | 11.4 | 137 | 0.106 |
| 1N6296 | 1.5KE110 | 110 | 99 | 121 | 1.0 | 89.2 | 1 | 9.9 | 158 | 0.107 |
| 1N6296A | 1.5KE110A | 110 | 105 | 116 | 1.0 | 94.0 | 1 | 10.3 | 152 | 0.107 |
| 1N6297 | 1.5KE120 | 120 | 108 | 132 | 1.0 | 97.2 | 1 | 9.1 | 173 | 0.107 |
| 1N6297A | 1.5KE120A | 120 | 114 | 126 | 1.0 | 102 | 1 | 9.5 | 165 | 0.107 |
| 1N6298 | 1.5KE130 | 130 | 117 | 143 | 1.0 | 105 | 1 | 8.4 | 187 | 0.107 |
| 1N6298A | 1.5KE130A | 130 | 124 | 137 | 1.0 | 111 | 1 | 8.7 | 179 | 0.107 |
| 1N6299 | 1.5KE150 | 150 | 135 | 165 | 1.0 | 121 | 1 | 7.3 | 215 | 0.108 |
| 1N6299A | 1.5KE150A | 150 | 143 | 158 | 1.0 | 128 | 1 | 7.6 | 207 | 0.108 |
| 1N6300 | 1.5KE160 | 160 | 144 | 176 | 1.0 | 130 | 1 | 6.8 | 230 | 0.108 |
| 1N6300A | 1.5KE160A | 160 | 152 | 168 | 1.0 | 136 | 1 | 7.1 | 219 | 0.108 |
| 1N6301 | 1.5KE170 | 170 | 153 | 187 | 1.0 | 138 | 1 | 6.4 | 244 | 0.108 |
| 1N6301A | 1.5KE170A | 170 | 162 | 179 | 1.0 | 145 | 1 | 6.7 | 234 | 0.108 |
| 1N6302 | 1.5KE180 | 180 | 162 | 198 | 1.0 | 146 | 1 | 6.1 | 258 | 0.108 |
| 1N6302A | 1.5KE180A | 180 | 171 | 189 | 1.0 | 154 | 1 | 6.4 | 246 | 0.108 |
| 1N6303 | 1.5KE200 | 200 | 180 | 220 | 1.0 | 162 | 1 | 5.4 | 287 | 0.108 |
| 1N6303A | 1.5KE200A | 200 | 190 | 210 | 1.0 | 171 | 1 | 5.7 | 274 | 0.108 |
| | 1.5KE220 | 220 | 198 | 242 | 1.0 | 175 | 1 | 4.5 | 344 | 0.110 |
| | 1.5KE220A | 220 | 209 | 231 | 1.0 | 185 | 1 | 4.8 | 328 | 0.110 |
| | 1.5KE250 | 250 | 225 | 275 | 1.0 | 202 | 1 | 4.3 | 360 | 0.110 |
| | 1.5KE250A | 250 | 237 | 263 | 1.0 | 214 | 1 | 4.5 | 344 | 0.110 |
| | 1.5KE300 | 300 | 270 | 330 | 1.0 | 243 | 1 | 3.6 | 430 | 0.110 |
| | 1.5KE300A | 300 | 285 | 315 | 1.0 | 256 | 1 | 3.8 | 414 | 0.110 |
| | 1.5KE350 | 350 | 315 | 385 | 1.0 | 284 | 1 | 3.1 | 504 | 0.110 |
| | 1.5KE350A | 350 | 333 | 368 | 1.0 | 300 | 1 | 3.2 | 482 | 0.110 |
| | 1.5KE400 | 400 | 360 | 440 | 1.0 | 324 | 1 | 2.7 | 574 | 0.110 |
| | 1.5KE400A | 400 | 380 | 420 | 1.0 | 342 | 1 | 2.8 | 548 | 0.110 |
| | 1.5KE440 | 440 | 396 | 484 | 1.0 | 356 | 1 | 2.4 | 631 | 0.110 |
| | 1.5KE440A | 440 | 418 | 462 | 1.0 | 376 | 1 | 2.5 | 602 | 0.110 |

Notes:

1. V_{BR} measure after I_T applied for 300 μ s, I_T =square wave pulse or equivalent.
2. Surge current waveform per figure. 3 and derate per figure. 2.
3. For bipolar types having V_{WM} of 10 volts and under, the I_R limit is doubled.
4. All terms and symbols are consistent with ANSI/IEEE C62.35.

PACKAGE OUTLINE DIMENSIONS

DO-201



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min | Max | Min | Max |
| A | 5.00 | 5.60 | 0.197 | 0.220 |
| B | 0.96 | 1.06 | 0.038 | 0.042 |
| C | 25.40 | - | 1.000 | - |
| D | 8.50 | 9.50 | 0.335 | 0.375 |
| E | 25.40 | - | 1.000 | - |

MARKING DIAGRAM



- P/N = Specific Device Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code

Note: Cathode band for uni-directional products only

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.