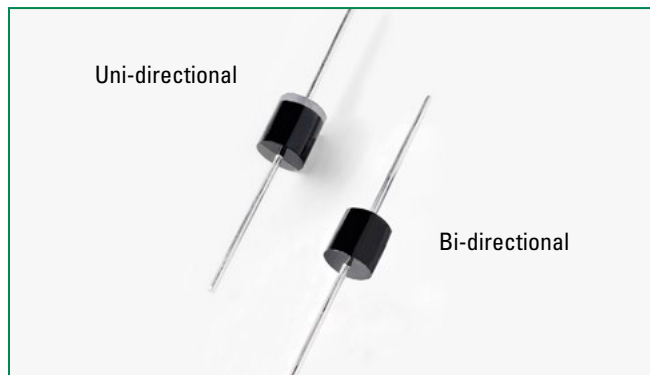


### 30KPA Series



#### Agency Approvals

| AGENCY | AGENCY FILE NUMBER |
|--------|--------------------|
|        | E230531            |

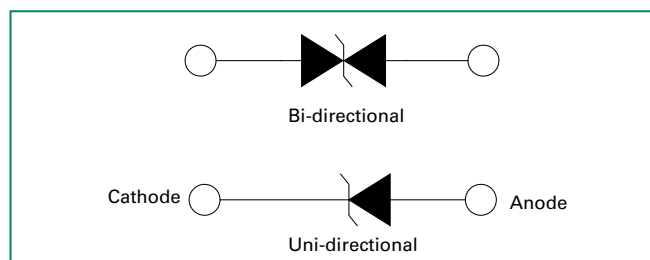
#### Maximum Ratings and Thermal Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                                                                                 | Symbol         | Value      | Unit                 |
|-------------------------------------------------------------------------------------------|----------------|------------|----------------------|
| Peak Pulse Power Dissipation by 10x1000 $\mu\text{s}$ Test Waveform (Fig.1) (Note 1)      | $P_{PPM}$      | 30000      | W                    |
| Steady State Power Dissipation on Infinite Heat Sink at $T_L=75^{\circ}\text{C}$ (Fig. 5) | $P_D$          | 8.0        | W                    |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave Unidirectional Only (Note 2)      | $I_{FSM}$      | 400        | A                    |
| Operating Junction and Storage Temperature Range                                          | $T_J, T_{STG}$ | -55 to 175 | $^{\circ}\text{C}$   |
| Typical Thermal Resistance Junction to Lead                                               | $R_{JL}$       | 8.0        | $^{\circ}\text{C/W}$ |
| Typical Thermal Resistance Junction to Ambient                                            | $R_{JA}$       | 40         | $^{\circ}\text{C/W}$ |

#### Notes:

1. Non-repetitive current pulse, per Fig. 4 and derated above  $T_A = 25^{\circ}\text{C}$  per Fig. 3.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.

#### Functional Diagram



#### Description

The 30KPA Series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

#### Features

- Typical maximum temperature coefficient  $\Delta V_{BR} = 0.1\% \times V_{BR@25^{\circ}\text{C}} \times \Delta T$
- Glass passivated chip junction in P600 package
- 30000W peak pulse capability at 10x1000 $\mu\text{s}$  waveform, repetition rate (duty cycles):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to BV min
- Excellent clamping capability
- Typical failure mode is short from over-specified voltage or current
- Whisker test is conducted based on JEDEC JESD201A per its table 4a and 4c
- IEC-61000-4-2 ESD 15kV(Air), 8kV (Contact)
- ESD protection of data lines in accordance with IEC 61000-4-2 (IEC801-2)
- EFT protection of data lines in accordance with IEC 61000-4-4 (IEC801-4)
- Low incremental surge resistance
- Typical  $I_R$  less than 2 $\mu\text{A}$  above 73V
- High temperature soldering guaranteed: 260 $^{\circ}\text{C}$ /40 seconds / 0.375"(9.5mm) lead length, 5 lbs., (2.3kg) tension
- Plastic package has underwriters laboratory flammability classification 94V-0
- Matte tin lead-free plated
- Halogen free and RoHS compliant

#### Applications

TVS devices are ideal for the protection of I/O interfaces,  $V_{CC}$  bus and other vulnerable circuits used in telecom, computer, industrial and consumer electronic applications.

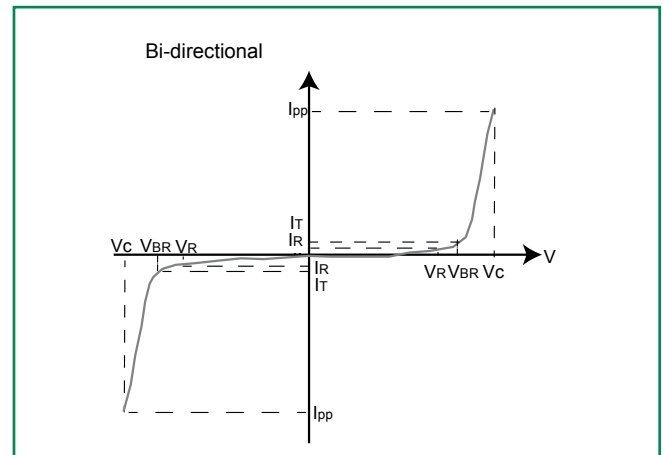
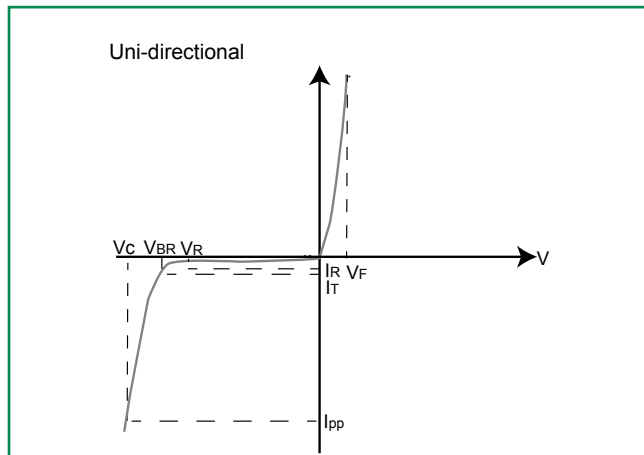
### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Part Number (Uni) | Part Number (Bi) | Reverse Stand off Voltage $V_R$ (Volts) | Breakdown Voltage $V_{BR}$ (Volts) @ $I_T$ | Test Current $I_T$ (mA) | Maximum Peak Pulse Current $I_{PP}$ (A) | Maximum Reverse Leakage $I_R$ @ $V_R$ ( $\mu\text{A}$ ) | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V) | Agency Approval  |
|-------------------|------------------|-----------------------------------------|--------------------------------------------|-------------------------|-----------------------------------------|---------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------|
|                   |                  |                                         | MIN                                        |                         |                                         |                                                         |                                               |                                                                                                     |
| 30KPA28A          | 30KPA28CA        | 28                                      | 31.28                                      | 50                      | 606.0                                   | 5000                                                    | 50.0                                          | X                                                                                                   |
| 30KPA30A          | 30KPA30CA        | 30                                      | 33.51                                      | 50                      | 548.9                                   | 5000                                                    | 55.2                                          | X                                                                                                   |
| 30KPA33A          | 30KPA33CA        | 33                                      | 36.90                                      | 50                      | 517.9                                   | 5000                                                    | 58.5                                          | X                                                                                                   |
| 30KPA36A          | 30KPA36CA        | 36                                      | 40.20                                      | 50                      | 490.3                                   | 5000                                                    | 61.8                                          | X                                                                                                   |
| 30KPA39A          | 30KPA39CA        | 39                                      | 43.60                                      | 20                      | 450.9                                   | 2000                                                    | 67.2                                          | X                                                                                                   |
| 30KPA42A          | 30KPA42CA        | 42                                      | 46.90                                      | 10                      | 420.8                                   | 1000                                                    | 72.0                                          | X                                                                                                   |
| 30KPA43A          | 30KPA43CA        | 43                                      | 48.00                                      | 10                      | 415.1                                   | 1000                                                    | 73.0                                          | X                                                                                                   |
| 30KPA45A          | 30KPA45CA        | 45                                      | 50.30                                      | 5                       | 391.5                                   | 250                                                     | 77.4                                          | X                                                                                                   |
| 30KPA48A          | 30KPA48CA        | 48                                      | 53.60                                      | 5                       | 371.3                                   | 150                                                     | 81.6                                          | X                                                                                                   |
| 30KPA51A          | 30KPA51CA        | 51                                      | 57.00                                      | 5                       | 350.7                                   | 50                                                      | 86.4                                          | X                                                                                                   |
| 30KPA54A          | 30KPA54CA        | 54                                      | 60.30                                      | 5                       | 331.5                                   | 20                                                      | 91.4                                          | X                                                                                                   |
| 30KPA58A          | 30KPA58CA        | 58                                      | 64.80                                      | 5                       | 327.9                                   | 20                                                      | 92.4                                          | X                                                                                                   |
| 30KPA60A          | 30KPA60CA        | 60                                      | 67.00                                      | 5                       | 297.1                                   | 15                                                      | 102.0                                         | X                                                                                                   |
| 30KPA64A          | 30KPA64CA        | 64                                      | 71.50                                      | 5                       | 291.3                                   | 10                                                      | 104.0                                         | X                                                                                                   |
| 30KPA66A          | 30KPA66CA        | 66                                      | 73.70                                      | 5                       | 283.2                                   | 2                                                       | 107.0                                         | X                                                                                                   |
| 30KPA70A          | 30KPA70CA        | 70                                      | 78.20                                      | 5                       | 278.0                                   | 2                                                       | 109.0                                         | X                                                                                                   |
| 30KPA71A          | 30KPA71CA        | 71                                      | 79.30                                      | 5                       | 271.7                                   | 2                                                       | 111.5                                         | X                                                                                                   |
| 30KPA72A          | 30KPA72CA        | 72                                      | 80.40                                      | 5                       | 265.8                                   | 2                                                       | 114.0                                         | X                                                                                                   |
| 30KPA75A          | 30KPA75CA        | 75                                      | 83.80                                      | 5                       | 253.8                                   | 2                                                       | 119.4                                         | X                                                                                                   |
| 30KPA78A          | 30KPA78CA        | 78                                      | 87.10                                      | 5                       | 234.9                                   | 2                                                       | 129.0                                         | X                                                                                                   |
| 30KPA84A          | 30KPA84CA        | 84                                      | 93.80                                      | 5                       | 217.7                                   | 2                                                       | 139.2                                         | X                                                                                                   |
| 30KPA90A          | 30KPA90CA        | 90                                      | 100.50                                     | 5                       | 207.0                                   | 2                                                       | 146.4                                         | X                                                                                                   |
| 30KPA96A          | 30KPA96CA        | 96                                      | 107.20                                     | 5                       | 194.2                                   | 2                                                       | 156.0                                         | X                                                                                                   |
| 30KPA102A         | 30KPA102CA       | 102                                     | 113.90                                     | 5                       | 183.0                                   | 2                                                       | 165.6                                         | X                                                                                                   |
| 30KPA108A         | 30KPA108CA       | 108                                     | 120.60                                     | 5                       | 172.9                                   | 2                                                       | 175.2                                         | X                                                                                                   |
| 30KPA120A         | 30KPA120CA       | 120                                     | 134.00                                     | 5                       | 155.9                                   | 2                                                       | 194.4                                         | X                                                                                                   |
| 30KPA132A         | 30KPA132CA       | 132                                     | 147.40                                     | 5                       | 142.3                                   | 2                                                       | 213.0                                         | X                                                                                                   |
| 30KPA144A         | 30KPA144CA       | 144                                     | 160.80                                     | 5                       | 135.8                                   | 2                                                       | 223.2                                         | X                                                                                                   |
| 30KPA150A         | 30KPA150CA       | 150                                     | 167.60                                     | 5                       | 129.8                                   | 2                                                       | 233.4                                         | X                                                                                                   |
| 30KPA156A         | 30KPA156CA       | 156                                     | 174.30                                     | 5                       | 123.7                                   | 2                                                       | 245.0                                         | X                                                                                                   |
| 30KPA160A         | 30KPA160CA       | 160                                     | 178.70                                     | 5                       | 120.0                                   | 2                                                       | 252.6                                         | X                                                                                                   |
| 30KPA168A         | 30KPA168CA       | 168                                     | 187.70                                     | 5                       | 111.2                                   | 2                                                       | 272.4                                         | X                                                                                                   |
| 30KPA170A         | 30KPA170CA       | 170                                     | 189.90                                     | 5                       | 110.2                                   | 2                                                       | 275.0                                         | X                                                                                                   |
| 30KPA180A         | 30KPA180CA       | 180                                     | 201.10                                     | 5                       | 104.3                                   | 2                                                       | 290.4                                         | X                                                                                                   |
| 30KPA198A         | 30KPA198CA       | 198                                     | 221.20                                     | 5                       | 94.7                                    | 2                                                       | 319.8                                         | X                                                                                                   |
| 30KPA216A         | 30KPA216CA       | 216                                     | 241.30                                     | 5                       | 86.9                                    | 2                                                       | 348.6                                         | X                                                                                                   |
| 30KPA240A         | 30KPA240CA       | 240                                     | 268.10                                     | 5                       | 78.3                                    | 2                                                       | 387.0                                         | X                                                                                                   |
| 30KPA258A         | 30KPA258CA       | 258                                     | 288.20                                     | 5                       | 72.8                                    | 2                                                       | 416.4                                         | X                                                                                                   |
| 30KPA260A         | 30KPA260CA       | 260                                     | 290.40                                     | 5                       | 72.8                                    | 2                                                       | 416.0                                         | X                                                                                                   |
| 30KPA270A         | 30KPA270CA       | 270                                     | 301.60                                     | 5                       | 69.5                                    | 2                                                       | 436.2                                         | X                                                                                                   |
| 30KPA280A         | 30KPA280CA       | 280                                     | 312.80                                     | 5                       | 65.3                                    | 2                                                       | 464.0                                         | X                                                                                                   |
| 30KPA288A         | 30KPA288CA       | 288                                     | 321.70                                     | 5                       | 64.5                                    | 2                                                       | 469.9                                         | X                                                                                                   |
| 30KPA300A         | 30KPA300CA       | 300                                     | 334.00                                     | 5                       | 62.0                                    | 2                                                       | 484.0                                         |                                                                                                     |

For bidirectional type having  $V_{RWM}$  of 60 volts and less, the  $I_R$  limit is double.

For parts without A, the  $V_{BR}$  is + 10% and  $V_C$  is 5% higher than with A parts.

## I-V Curve Characteristics



**$P_{PPM}$  Peak Pulse Power Dissipation** – Max power dissipation

**$V_R$  Stand-off Voltage** – Maximum voltage that can be applied to the TVS without operation

**$V_{BR}$  Breakdown Voltage** – Maximum current that flows through the TVS at a specified test current ( $I_T$ )

**$V_C$  Clamping Voltage** – Peak voltage measured across the suppressor at a specified  $I_{PPM}$  (peak impulse current)

**$I_R$  Reverse Leakage Current** – Current measured at  $V_R$

**$V_F$  Forward Voltage Drop for Uni-directional**

## Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 1 - TVS Transients Clamping Waveform

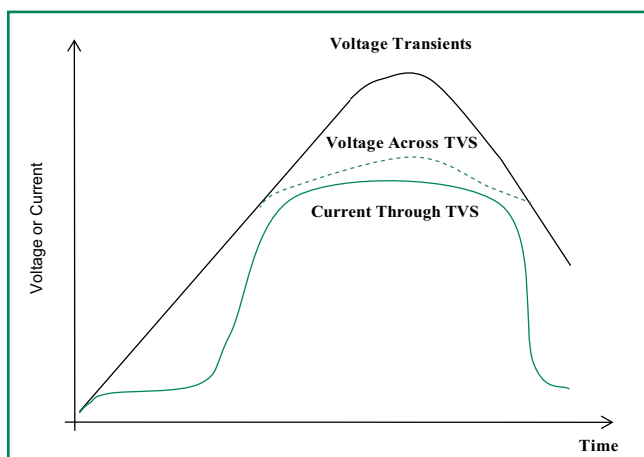
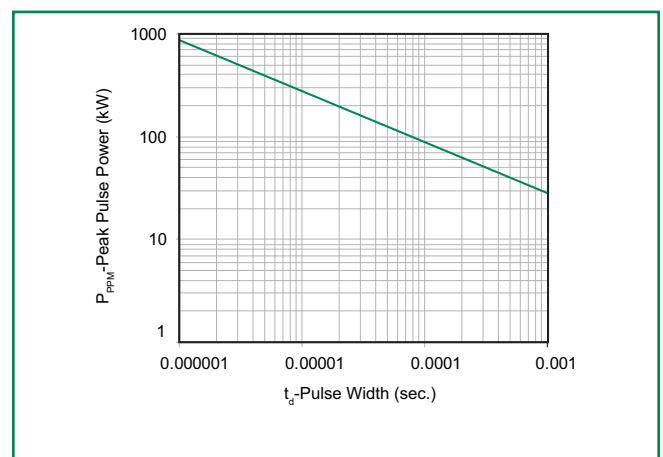


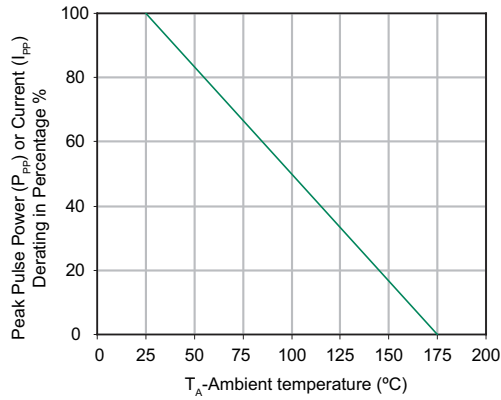
Figure 2 - Peak Pulse Power Rating Curve



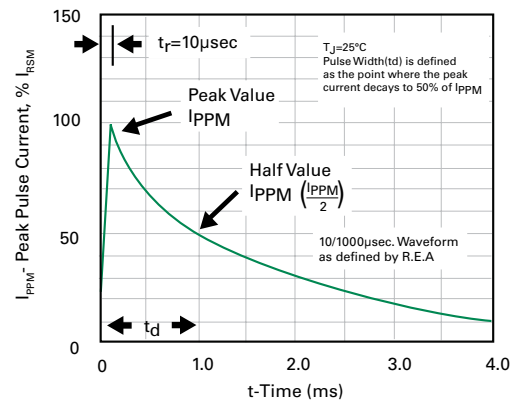
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### Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$ unless otherwise noted) (Continued)

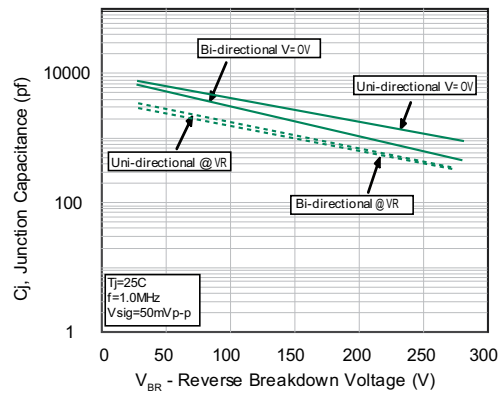
**Figure 3 - Pulse Derating Curve**



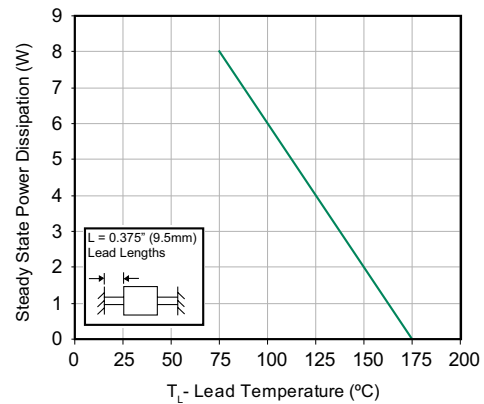
**Figure 4 - Pulse Waveform**



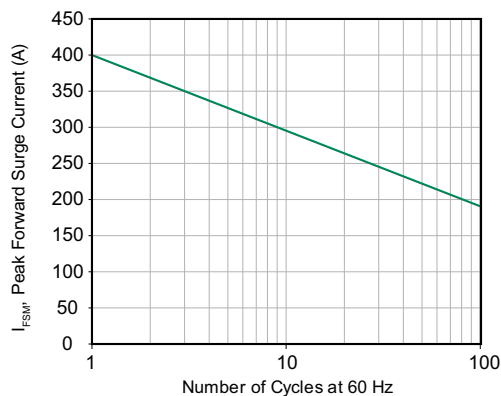
**Figure 5 - Typical Junction Capacitance**



**Figure 6 - Steady State Power Derating Curve**

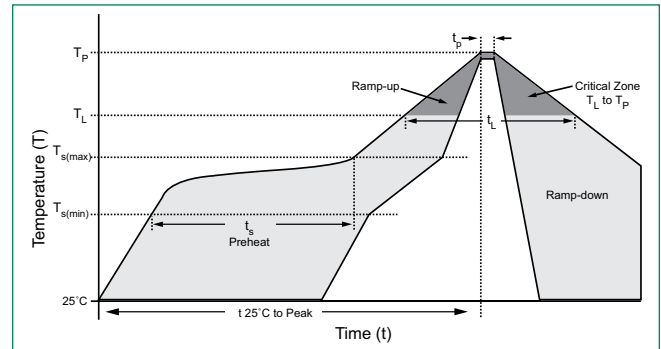


**Figure 7 - Maximum Non-Repetitive Peak Forward Surge Current**



### Soldering Parameters

|                                                       |                                    |                         |
|-------------------------------------------------------|------------------------------------|-------------------------|
| Reflow Condition                                      |                                    | Lead-free assembly      |
| Pre Heat                                              | - Temperature Min ( $T_{s(min)}$ ) | 150°C                   |
|                                                       | - Temperature Max ( $T_{s(max)}$ ) | 200°C                   |
|                                                       | - Time (min to max) ( $t_s$ )      | 60 – 180 secs           |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak |                                    | 3°C/second max          |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                  |                                    | 3°C/second max          |
| Reflow                                                | - Temperature ( $T_L$ ) (Liquidus) | 217°C                   |
|                                                       | - Time (min to max) ( $t_s$ )      | 60 – 150 seconds        |
| Peak Temperature ( $T_p$ )                            |                                    | 260 <sup>+0/-5</sup> °C |
| Time within 5°C of actual peak Temperature ( $t_p$ )  |                                    | 20 – 40 seconds         |
| Ramp-down Rate                                        |                                    | 6°C/second max          |
| Time 25°C to peak Temperature ( $T_p$ )               |                                    | 8 minutes Max.          |
| Do not exceed                                         |                                    | 280°C                   |



### Flow/Wave Soldering (Solder Dipping)

|                    |            |
|--------------------|------------|
| Peak Temperature : | 265°C      |
| Dipping Time :     | 10 seconds |
| Soldering :        | 1 time     |

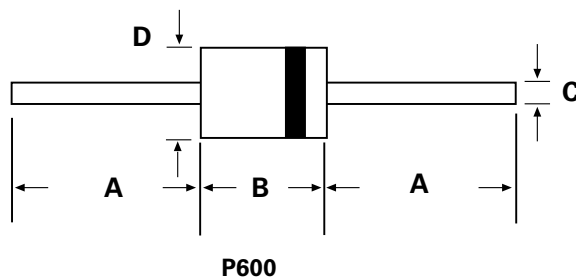
### Physical Specifications

|          |                                                     |
|----------|-----------------------------------------------------|
| Weight   | 0.07oz., 2.5g                                       |
| Case     | P600 molded plastic body over passivated junction.  |
| Polarity | Color band denotes the cathode except Bipolar.      |
| Terminal | Matte Tin axial leads, solderable per JESD22-B102D. |

### Environmental Specifications

|                    |              |
|--------------------|--------------|
| Temperature Cycle  | JESD22-A104  |
| Pressure Cooker    | JESD 22-A102 |
| High Temp. Storage | JESD22-A103  |
| HTRB               | JESD22-A108  |
| Thermal Shock      | JESD22-A106  |

### Dimensions



| Dimensions | Inches |       | Millimeters |      |
|------------|--------|-------|-------------|------|
|            | Min    | Max   | Min         | Max  |
| A          | 1.000  | -     | 25.40       | -    |
| B          | 0.340  | 0.360 | 8.60        | 9.10 |
| C          | 0.048  | 0.052 | 1.22        | 1.32 |
| D          | 0.340  | 0.360 | 8.60        | 9.10 |

### Part Numbering System

**30KPA xxx XX X**

**OPTION CODE:**

**BLANK** Reel Tape

**-B** Bulk Packaging

**TYPE CODE:**

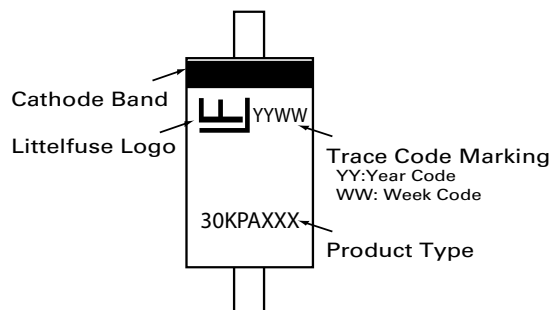
**A** Uni-Directional (5%  $V_{BR}$  Voltage Tolerance)

**CA** Bi-Directional (5%  $V_{BR}$  Voltage Tolerance)

**$V_R$  VOLTAGE**

**SERIES CODE**

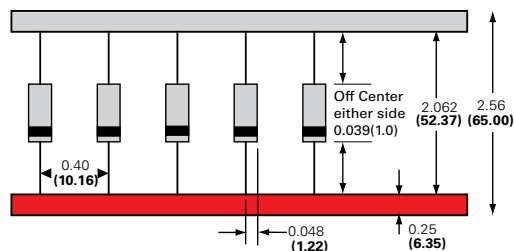
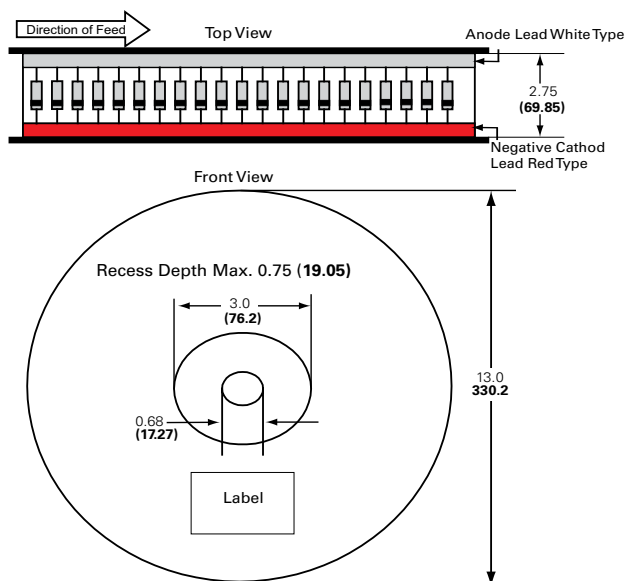
### Part Marking System



### Packing Options

| Part Number  | Component Package | Quantity | Packaging Option | Packaging Specification                  |
|--------------|-------------------|----------|------------------|------------------------------------------|
| 30KPAxxxXX   | P600              | 800      | Tape & Reel      | EIA STD RS-296E                          |
| 30KPAxxxXX-B | P600              | 100      | Bulk             | Littelfuse Concord Packing Spec. DM-0016 |

### Tape and Reel Specification



Dimensions are in inches/mm



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

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**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

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