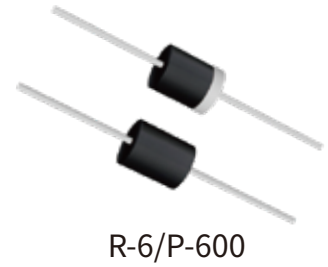


## FEATURES

- | Low incremental surge resistance.
- | Excellent clamping capability.
- | Color band denoted cathode except bidirectional.
- | Plastic package has under writers laboratory flammability 94V-0.
- | 30000W peak pulse power capability at 10/1000μs waveform.
- | Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- | Terminal: solder plated, solderable per J-STD-002.
- | Fast response time: typically less than 1.0ps from 0V to  $V_{BR}$  min.
- | IEC61000-4-2 (ESD)  $\pm 30$ kV (air),  $\pm 30$ kV (contact).



Schematic Symbol

## APPROVALS

|      |                                    |
|------|------------------------------------|
| RoHS | Compliance with 2011/65/EU         |
| HF   | Compliance with IEC61249-2-21:2003 |

## MAXIMUM RATINGS AND CHARACTERISTICS( $T_A=25^{\circ}\text{C}$ )

| Parameter                                                                       | Symbol          | Value       | Unit                        |
|---------------------------------------------------------------------------------|-----------------|-------------|-----------------------------|
| Peak pulse power dissipation at 10/1000μs waveform                              | $P_{PPM}$       | 30000       | W                           |
| Peak pulse current of at 10/1000μs waveform                                     | $I_{PPM}$       | See Table   | A                           |
| Steady state power dissipation at $T_L=75^{\circ}\text{C}$                      | $P_{M(AV)}$     | 8.0         | W                           |
| Peak forward surge current, 8.3ms single half sine-wave for unidirectional only | $I_{FSM}$       | 500         | A                           |
| Typical thermal resistance junction to lead                                     | $R_{\theta JL}$ | 8           | $^{\circ}\text{C}/\text{W}$ |
| Typical thermal resistance junction to ambient                                  | $R_{\theta JA}$ | 40          |                             |
| Operating junction and Storage Temperature Range                                | $T_J, T_{STG}$  | -55 to +175 | $^{\circ}\text{C}$          |

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

| Part Number |            | Marking Code |            | V <sub>R</sub> | V <sub>BR</sub> @I <sub>T</sub> |         | I <sub>T</sub> | V <sub>C</sub> @I <sub>PP</sub> | I <sub>PP</sub> <sup>①</sup> | I <sub>R</sub> @V <sub>R</sub> |
|-------------|------------|--------------|------------|----------------|---------------------------------|---------|----------------|---------------------------------|------------------------------|--------------------------------|
| Uni-Polar   | Bi-Polar   | Uni-Polar    | Bi-Polar   | V              | Min(V)                          | Max (V) | mA             | V                               | A                            | Max(μA)                        |
| 30KPA28A    | 30KPA28CA  | 30KPA28A     | 30KPA28CA  | 28.0           | 31.28                           | 34.57   | 50             | 50.0                            | 606.0                        | 5000                           |
| 30KPA30A    | 30KPA30CA  | 30KPA30A     | 30KPA30CA  | 30.0           | 33.51                           | 37.04   | 50             | 55.2                            | 548.9                        | 5000                           |
| 30KPA33A    | 30KPA33CA  | 30KPA33A     | 30KPA33CA  | 33.0           | 36.90                           | 40.78   | 50             | 58.5                            | 517.9                        | 5000                           |
| 30KPA36A    | 30KPA36CA  | 30KPA36A     | 30KPA36CA  | 36.0           | 40.20                           | 44.43   | 50             | 61.8                            | 490.3                        | 5000                           |
| 30KPA39A    | 30KPA39CA  | 30KPA39A     | 30KPA39CA  | 39.0           | 43.60                           | 48.19   | 20             | 67.2                            | 450.9                        | 2000                           |
| 30KPA42A    | 30KPA42CA  | 30KPA42A     | 30KPA42CA  | 42.0           | 46.90                           | 51.84   | 10             | 72.0                            | 420.8                        | 1000                           |
| 30KPA43A    | 30KPA43CA  | 30KPA43A     | 30KPA43CA  | 43.0           | 48.00                           | 53.05   | 10             | 73.0                            | 415.1                        | 1000                           |
| 30KPA45A    | 30KPA45CA  | 30KPA45A     | 30KPA45CA  | 45.0           | 50.30                           | 55.59   | 5              | 77.4                            | 391.5                        | 250                            |
| 30KPA48A    | 30KPA48CA  | 30KPA48A     | 30KPA48CA  | 48.0           | 53.60                           | 59.24   | 5              | 81.6                            | 371.3                        | 150                            |
| 30KPA51A    | 30KPA51CA  | 30KPA51A     | 30KPA51CA  | 51.0           | 57.00                           | 63.00   | 5              | 86.4                            | 350.7                        | 50                             |
| 30KPA54A    | 30KPA54CA  | 30KPA54A     | 30KPA54CA  | 54.0           | 60.30                           | 66.65   | 5              | 91.4                            | 331.5                        | 20                             |
| 30KPA58A    | 30KPA58CA  | 30KPA58A     | 30KPA58CA  | 58.0           | 64.80                           | 71.62   | 5              | 92.4                            | 327.9                        | 20                             |
| 30KPA60A    | 30KPA60CA  | 30KPA60A     | 30KPA60CA  | 60.0           | 67.00                           | 74.05   | 5              | 102.0                           | 297.1                        | 15                             |
| 30KPA64A    | 30KPA64CA  | 30KPA64A     | 30KPA64CA  | 64.0           | 71.50                           | 79.03   | 5              | 104.0                           | 291.3                        | 10                             |
| 30KPA66A    | 30KPA66CA  | 30KPA66A     | 30KPA66CA  | 66.0           | 73.70                           | 81.46   | 5              | 107.0                           | 283.2                        | 2                              |
| 30KPA70A    | 30KPA70CA  | 30KPA70A     | 30KPA70CA  | 70.0           | 78.20                           | 86.43   | 5              | 109.0                           | 278.0                        | 2                              |
| 30KPA71A    | 30KPA71CA  | 30KPA71A     | 30KPA71CA  | 71.0           | 79.30                           | 87.65   | 5              | 111.5                           | 271.7                        | 2                              |
| 30KPA72A    | 30KPA72CA  | 30KPA72A     | 30KPA72CA  | 72.0           | 80.40                           | 88.86   | 5              | 114.0                           | 265.8                        | 2                              |
| 30KPA75A    | 30KPA75CA  | 30KPA75A     | 30KPA75CA  | 75.0           | 83.80                           | 92.62   | 5              | 119.4                           | 253.8                        | 2                              |
| 30KPA78A    | 30KPA78CA  | 30KPA78A     | 30KPA78CA  | 78.0           | 87.10                           | 96.27   | 5              | 129.0                           | 234.9                        | 2                              |
| 30KPA84A    | 30KPA84CA  | 30KPA84A     | 30KPA84CA  | 84.0           | 93.80                           | 103.67  | 5              | 139.2                           | 217.7                        | 2                              |
| 30KPA90A    | 30KPA90CA  | 30KPA90A     | 30KPA90CA  | 90.0           | 100.50                          | 111.08  | 5              | 146.4                           | 207.0                        | 2                              |
| 30KPA96A    | 30KPA96CA  | 30KPA96A     | 30KPA96CA  | 96.0           | 107.20                          | 118.48  | 5              | 156.0                           | 194.2                        | 2                              |
| 30KPA102A   | 30KPA102CA | 30KPA102A    | 30KPA102CA | 102.0          | 113.90                          | 125.89  | 5              | 165.6                           | 183.0                        | 2                              |

| Part Number |            | Marking Code |            | $V_R$ | $V_{BR}@I_T$ |         | $I_T$ | $V_C@I_{PP}$ | $I_{PP}^{①}$ | $I_R@V_R$ |
|-------------|------------|--------------|------------|-------|--------------|---------|-------|--------------|--------------|-----------|
| Uni-Polar   | Bi-Polar   | Uni-Polar    | Bi-Polar   | V     | Min(V)       | Max (V) | mA    | V            | A            | Max(μA)   |
| 30KPA108A   | 30KPA108CA | 30KPA108A    | 30KPA108CA | 108.0 | 120.60       | 133.29  | 5     | 175.2        | 172.9        | 2         |
| 30KPA120A   | 30KPA120CA | 30KPA120A    | 30KPA120CA | 120.0 | 134.00       | 148.11  | 5     | 194.4        | 155.9        | 2         |
| 30KPA132A   | 30KPA132CA | 30KPA132A    | 30KPA132CA | 132.0 | 147.40       | 162.92  | 5     | 213.0        | 142.3        | 2         |
| 30KPA144A   | 30KPA144CA | 30KPA144A    | 30KPA144CA | 144.0 | 160.80       | 177.73  | 5     | 223.2        | 135.8        | 2         |
| 30KPA150A   | 30KPA150CA | 30KPA150A    | 30KPA150CA | 150.0 | 167.60       | 184.36  | 5     | 233.4        | 129.8        | 2         |
| 30KPA156A   | 30KPA156CA | 30KPA156A    | 30KPA156CA | 156.0 | 174.30       | 192.65  | 5     | 245.0        | 123.7        | 2         |
| 30KPA160A   | 30KPA160CA | 30KPA160A    | 30KPA160CA | 160.0 | 178.70       | 197.51  | 5     | 252.6        | 120.0        | 2         |
| 30KPA168A   | 30KPA168CA | 30KPA168A    | 30KPA168CA | 168.0 | 187.70       | 207.46  | 5     | 272.4        | 111.2        | 2         |
| 30KPA170A   | 30KPA170CA | 30KPA170A    | 30KPA170CA | 170.0 | 189.90       | 209.89  | 5     | 275.0        | 110.2        | 2         |
| 30KPA180A   | 30KPA180CA | 30KPA180A    | 30KPA180CA | 180.0 | 201.10       | 222.27  | 5     | 290.4        | 104.3        | 2         |
| 30KPA198A   | 30KPA198CA | 30KPA198A    | 30KPA198CA | 198.0 | 221.20       | 244.48  | 5     | 319.8        | 94.7         | 2         |
| 30KPA216A   | 30KPA216CA | 30KPA216A    | 30KPA216CA | 216.0 | 241.30       | 266.70  | 5     | 348.6        | 86.9         | 2         |
| 30KPA240A   | 30KPA240CA | 30KPA240A    | 30KPA240CA | 240.0 | 268.10       | 296.32  | 5     | 387.0        | 78.3         | 2         |
| 30KPA258A   | 30KPA258CA | 30KPA258A    | 30KPA258CA | 258.0 | 288.20       | 318.54  | 5     | 416.4        | 72.8         | 2         |
| 30KPA260A   | 30KPA260CA | 30KPA260A    | 30KPA260CA | 260.0 | 290.40       | 320.97  | 5     | 416.0        | 72.8         | 2         |
| 30KPA270A   | 30KPA270CA | 30KPA270A    | 30KPA270CA | 270.0 | 301.60       | 333.35  | 5     | 436.2        | 69.5         | 2         |
| 30KPA280A   | 30KPA280CA | 30KPA280A    | 30KPA280CA | 280.0 | 312.80       | 345.73  | 5     | 464.0        | 65.3         | 2         |
| 30KPA288A   | 30KPA288CA | 30KPA288A    | 30KPA288CA | 288.0 | 321.70       | 355.56  | 5     | 469.9        | 64.5         | 2         |
| 30KPA300A   | 30KPA300CA | 30KPA300A    | 30KPA300CA | 300.0 | 334.0        | 367.4   | 5     | 484.0        | 62.0         | 2         |
| 30KPA320A   | 30KPA320CA | 30KPA320A    | 30KPA320CA | 320.0 | 357.0        | 391.4   | 5     | 530.0        | 57.2         | 2         |
| 30KPA350A   | 30KPA350CA | 30KPA350A    | 30KPA350CA | 350.0 | 391.0        | 428.1   | 5     | 567.0        | 53.4         | 2         |
| 30KPA360A   | 30KPA360CA | 30KPA360A    | 30KPA360CA | 360.0 | 402.1        | 440.3   | 5     | 640.0        | 47.3         | 2         |
| 30KPA400A   | 30KPA400CA | 30KPA400A    | 30KPA400CA | 400.0 | 447.0        | 494.0   | 5     | 648.0        | 46.3         | 2         |

Note:

①.Surge waveform:10/1000μs

$V_R$ : Stand-off voltage -- Maximum voltage that can be applied

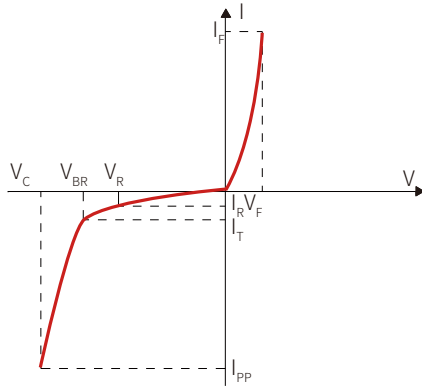
$V_{BR}$ : Breakdown voltage

$V_C$ : Clamping voltage -- Peak voltage measured across the suppressor at a specified  $I_{PP}$

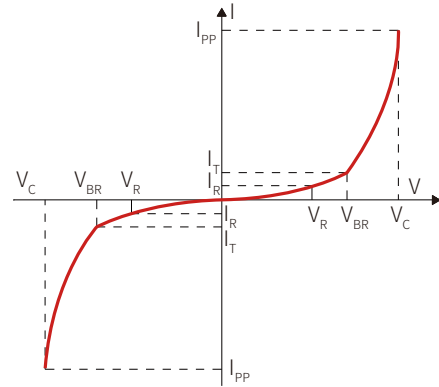
$I_R$ : Reverse leakage current

# CHARACTERISTIC CURVES

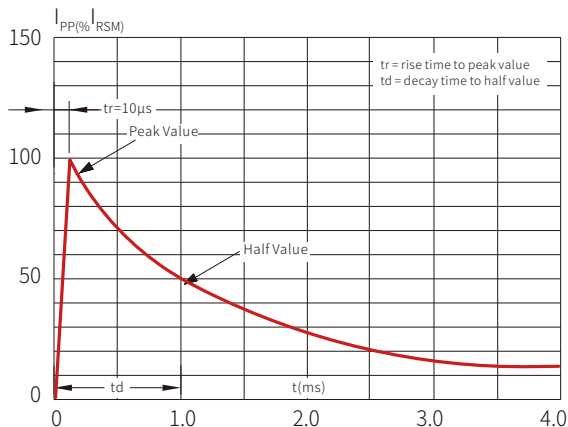
**Figure 1: V- I curve characteristics (Uni-directional)**



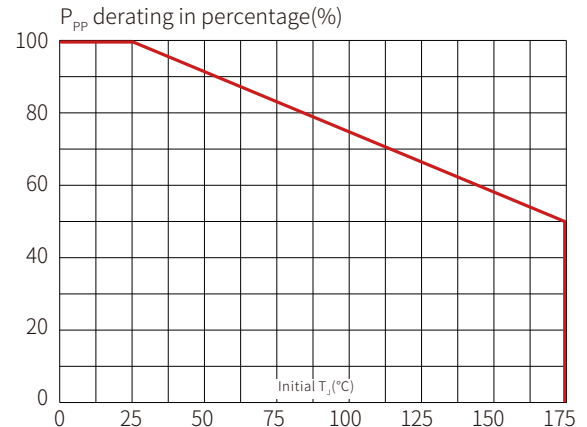
**Figure 2: V- I curve characteristics (Bi-directional)**



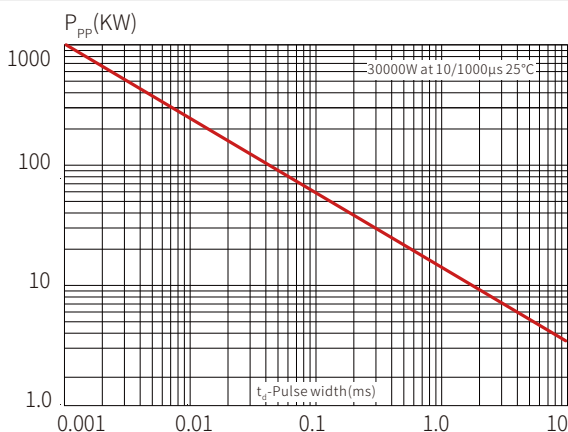
**Figure 3: Pulse waveform**



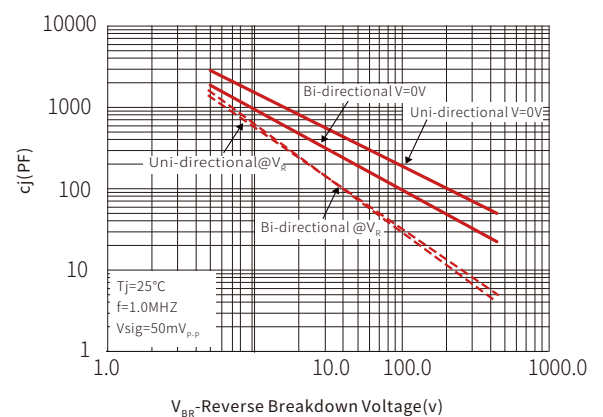
**Figure 4: Power derating curve**

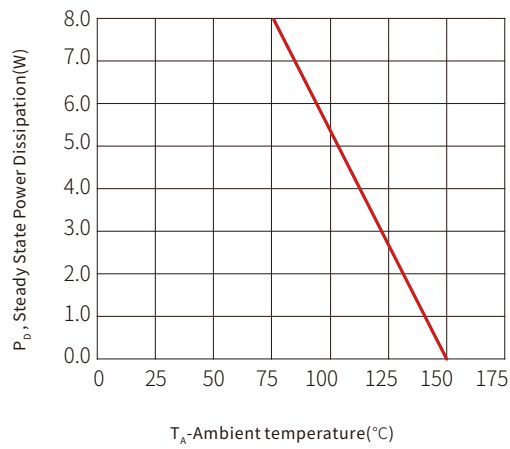


**Figure 5: Peak pulse power dissipation vs. pulse width**

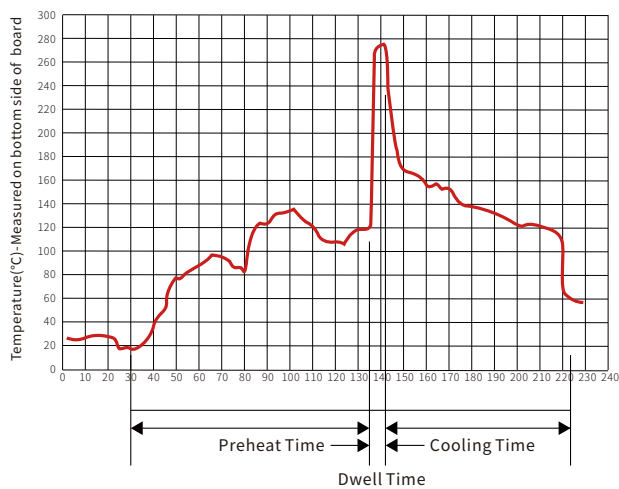


**Figure 6: Typical Junction Capacitance**



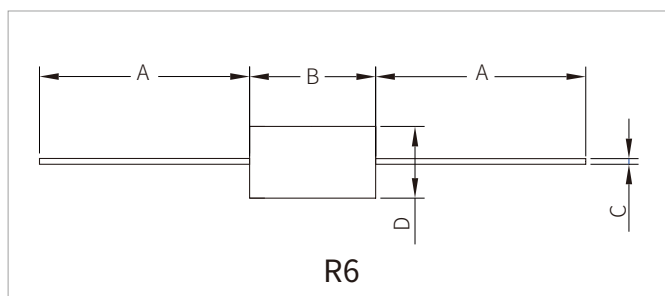
**Figure 7: Steady State Power Dissipation Derating Curve**

## WAVE SOLDERING



| Wave Parameter         |                  | Lead-free assembly |
|------------------------|------------------|--------------------|
| Pre Heat               | Temperature Min  | 100°C              |
|                        | Temperature Max  | 150°C              |
|                        | Time(min to max) | 60 – 180 secs      |
| Solder pot Temperature |                  | 280°C Max          |
| Solder Dwell Time      |                  | 2-5 seconds        |

## P600 PACKAGE INFORMATION



| Ref. | Millimeters |      | Inches |       |
|------|-------------|------|--------|-------|
|      | Min.        | Max. | Min.   | Max.  |
| A    | 25.40       | -    | 1.000  | -     |
| B    | 8.60        | 9.40 | 0.339  | 0.370 |
| C    | 1.20        | 1.40 | 0.047  | 0.055 |
| D    | 8.60        | 9.10 | 0.339  | 0.358 |

## ORDERING INFORMATION

| Part Number | Component Package | Per BOX | Description |
|-------------|-------------------|---------|-------------|
| 30KPAxxA/CA | R6/P600           | 300pcs  | Box         |
| 30KPAxxA/CA | R6/P600           | 800pcs  | Reel        |

**Headquarters**

No.3387 Shendu Road  
Pujiang I&E Park  
Minhang Shanghai China  
201000

**Hotline**

400-021-5756

**Web**

<https://www.semiware.com>

**Sales Center**

Tel: 86-21-3463-7458  
Email: [sales18@semiware.com](mailto:sales18@semiware.com)

**Customer Service**

Tel: 86-21-5484-1001  
Email: [sales17@semiware.com](mailto:sales17@semiware.com)

**Technical Support**

Tel: 86-21-3463-7654  
Email: [fae01@semiware.com](mailto:fae01@semiware.com)

**Complaint & Suggestions**

Tel: 86-21-3463-7172  
Ext: 8868  
Email: [cs03@semiware.com](mailto:cs03@semiware.com)

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