

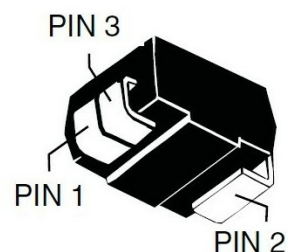


# WEOS4-100/XXAS-3

## Thyristor Surge Protector

### Features

- Bi-directional crowbar transient voltage protection
- High surge capability
- High off-state impedance, Low leakage current
- Short-circuit failure mode
- Low on-state voltage



### Main Application

- Data lines and security systems.
- CATV line amplifiers and power inserters.
- Sprinkler systems.

### Absolute Maximum Ratings (TA =25°C)

| Parameter   | Symbol     | Value | Unit |
|---|------------|-------|------|
| Non-repetitive peak impulse current<br>10/1000 $\mu$ s (Telcordia GR-1089-CORE)       | $I_{PPSM}$ | 100   | A    |
| Non-repetitive peak impulse Voltage<br>10/700 $\mu$ s (ITU-T K.20, K.21 & K.44, K.45) | $V_{PPSM}$ | 6000  | V    |

### Electrical Parameters (TA =25°C)

| Part Number      | Marking code | $V_{DRM}$    | $I_{DRM}$ | $V_{BO}$     | $I_{BO}$ | $V_T$ | $I_T$ | $C_o$ | $I_H$ |
|------------------|--------------|--------------|-----------|--------------|----------|-------|-------|-------|-------|
|                  |              | Max.         | Max.      | Max.         | Max.     | Max.  | Max.  | Typ.  | Min.  |
|                  |              | V(PIN 1,3-2) | $\mu$ A   | V(PIN 1,3-2) | mA       | V     | A     | pF    | mA    |
| WEOS4-100/25AS-3 | W03S3C       | 25           | 5         | 40           | 800      | 4     | 2.2   | 110   | 50    |
| WEOS4-100/58AS-3 | W06S3C       | 58           | 5         | 77           | 800      | 4     | 2.2   | 100   | 120   |
| WEOS4-100/65AS-3 | W07S3C       | 65           | 5         | 88           | 800      | 4     | 2.2   | 40    | 120   |

$V_{DRM}$ : Stand-off voltage, is measured at  $I_{DRM}$ .

$I_{DRM}$ : Leakage current at  $V_{DRM}$ .

$V_{BO}$ : Breakover voltage, is measured at 100V/ $\mu$ s.

$I_{BO}$ : Breakover current.

**V<sub>T</sub>**: On-state voltage.

**I<sub>T</sub>**: On-state current.

**C<sub>o</sub>**: Off-state capacitance.

**I<sub>H</sub>**: Holding current.

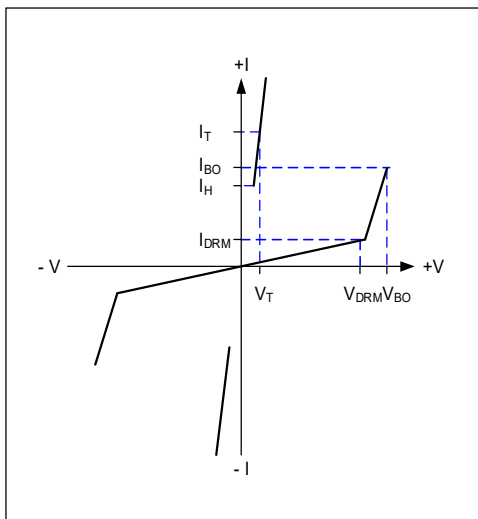
**I<sub>ppsm</sub>**: Peak pulse current, is a repetitive surge rating and is guaranteed for the life of the product.

**V<sub>ppsm</sub>**: Peak pulse voltage, is a repetitive surge rating and is guaranteed for the life of the product.

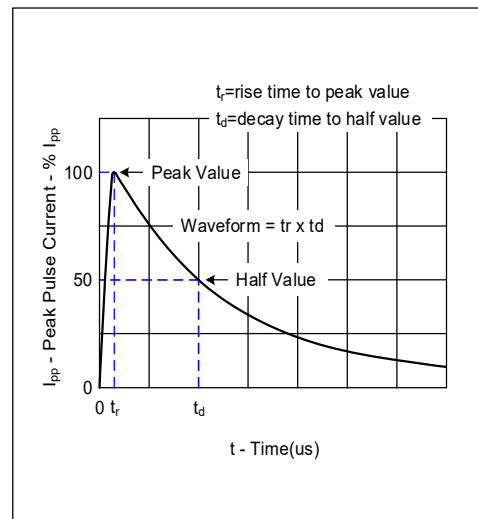
**General Notes:**

- All measurements are made at an ambient temperature of 25 °C. I<sub>pp</sub> applies to -40 °C through +85 °C temperature range.
- WEOS4 devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- Special voltage (V<sub>BO</sub> and V<sub>DRM</sub>) and holding current (I<sub>H</sub>) requirements are available up on request. Off-state capacitance is measured at 1 MHz with a 2 V bias.

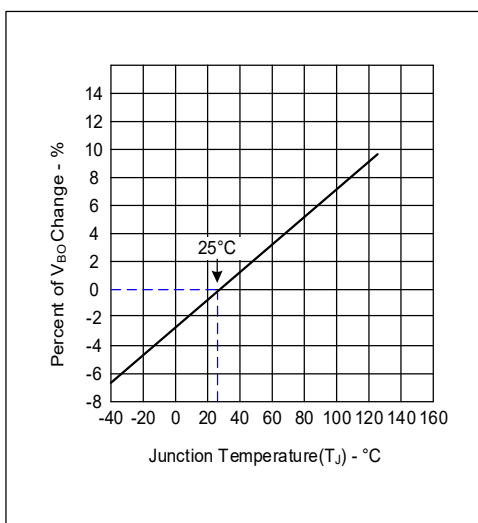
**Electrical Characteristics Curves**



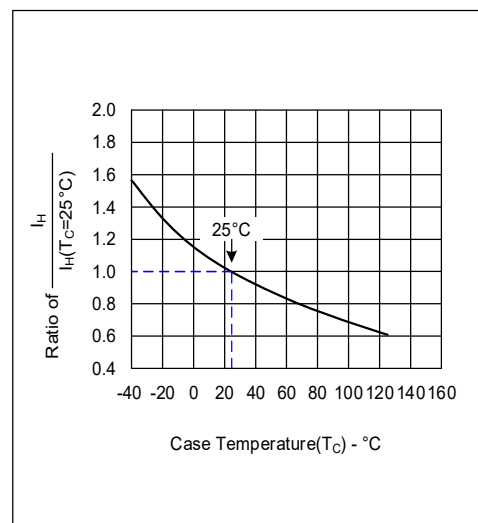
V - I Characteristics



t<sub>r</sub> X t<sub>d</sub> Pulse Waveform



Normalized V<sub>BO</sub> Change versus Junction Temperature



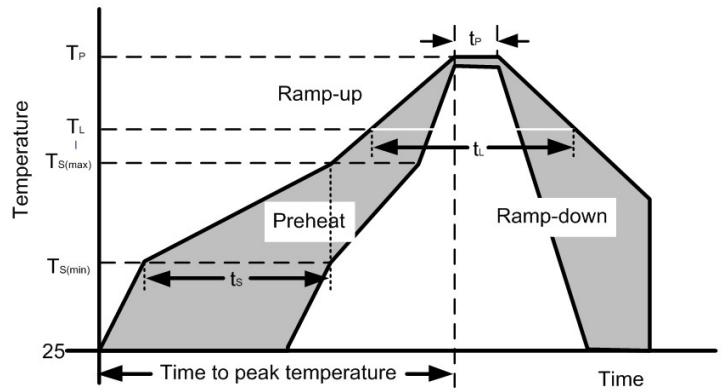
Normalized DC Holding Current versus Case Temperature

### Thermal Resistances

| Symbol | Parameter                  | Value       | Unit |
|--------|----------------------------|-------------|------|
| Ts     | Storage temperature range  | -55 to +150 | °C   |
| Tj     | Junction temperature range | -40 to +125 | °C   |

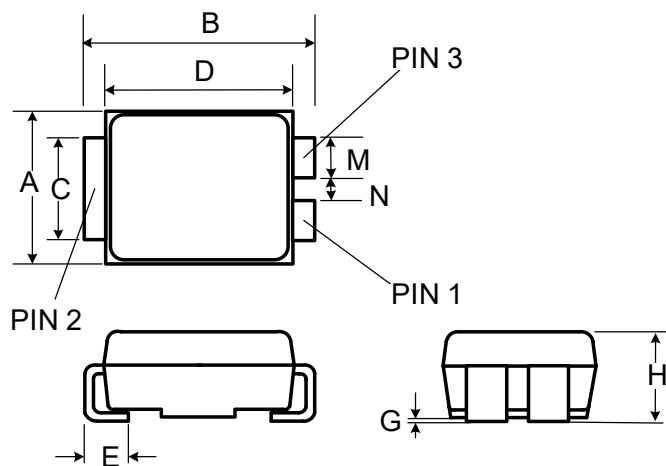
### Soldering Parameters

| Reflow Condition                                       |                                  |                         |
|--|----------------------------------|-------------------------|
| Pre Heat   | Temperature Min ( $T_{s(min)}$ ) | 150°C                   |
|  | Temperature Max ( $T_{s(max)}$ ) | 200°C                   |
|  | Time (min to max) ( $t_s$ )      | 60-190 s                |
| Average ramp up rate (Liquidus Temp) ( $T_L$ ) to peak |                                  | 3°C/s max               |
| Ts(max) to TL - Ramp-up Rate                           |                                  | 3°C/s max               |
| Reflow   | Temperature ( $T_L$ ) (Liquidus) | 217°C                   |
|  | Temperature ( $t_L$ )            | 60-150 s                |
| Peak Temperature ( $T_P$ )                             |                                  | 260 <sup>+0/-5</sup> °C |
| Time within actual peak Temperature ( $t_p$ )          |                                  | 20-40 s                 |
| Ramp-down Rate   |                                  | 5°C/s max               |
| Time 25°C to peak Temperature ( $T_P$ )                |                                  | 8 minutes Max.          |
| Do not exceed  |                                  | 260°C                   |

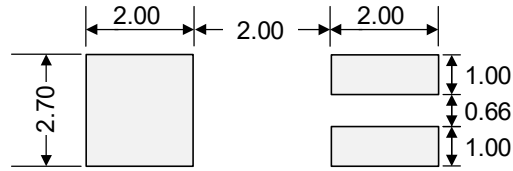


### Product Dimensions

| Ref. (mm) | Millimeters |      |
|-----------|-------------|------|
|           | Min.        | Max. |
| A         | 3.30        | 3.94 |
| B         | 5.21        | 5.59 |
| C         | 1.90        | 2.20 |
| D         | 4.10        | 4.75 |
| E         | 0.76        | 1.52 |
| G         | 0.05        | 0.30 |
| H         | 1.95        | 2.65 |
| M         | 0.50        | 0.75 |
| N         | 0.50        | 0.85 |

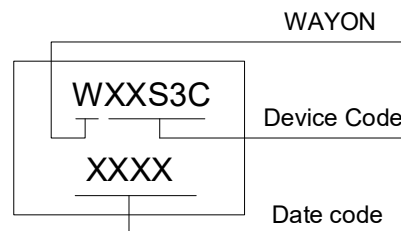
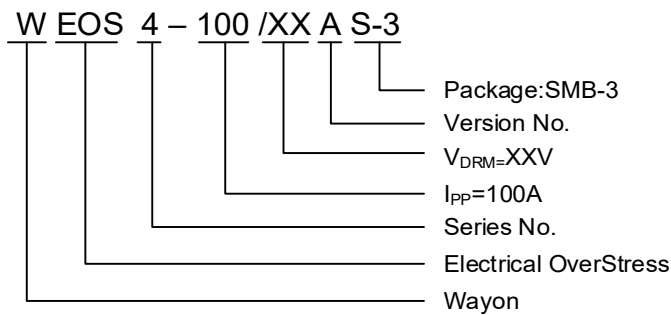


### Recommended Solder Pad Layout



Dimensions in mm

### Part Numbering System and Marking



### Package Information

| Package Type | Description      | Quantity (pcs) |
|--------------|------------------|----------------|
| SMB-3        | Tape & Reel Pack | 2500           |

### Contact Information

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*Specifications are subject to change without notice.  
 The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.  
 Users should verify actual device performance in their specific applications.*