

**BTX18-100/BTX18-200/BTX18-300  
BTX18-400/BTX18-500**

## SILICON THYRISTORS

The BTX18 series is a range of p-gate reverse blocking thyristors, in a TO-39 metal envelope, intended for use in general low power applications up to a A average on-state current.

### RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

#### Anode to Cathode - Ratings

Voltage <sup>1)</sup>

| Symbol    | Ratings  | BTX18-100 | BTX18-200 | BTX18-300 | BTX18-400 | BTX18-500 |                 |
|-----------|--|-----------|-----------|-----------|-----------|-----------|-----------------|
| $V_R$     | Continuous Reverse Voltage   | 100       | 200       | 300       | 400       | 500       | V               |
| $V_{RWM}$ | Crest Working Reverse Voltage  | 100       | 200       | 300       | 400       | 500       | V               |
| $V_{RRM}$ | Repetitive Peak Reverse Voltage<br>( $\delta = 0.01$ ; $f=50\text{Hz}$ )   | 120       | 240       | 350       | 500       | 600       | V               |
| $V_{RSM}$ | Non-repetitive peak reverse voltage<br>( $t<10\text{ms}$ )                 | 120       | 240       | 350       | 500       | 600       | V               |
| $V_{DWM}$ | Crest Working off-state Voltage  | 100       | 200       | 300       | 400       | 500       | V               |
| $V_D$     | Continuous off-state Voltage   | 100       | 200       | 300       | 400       | 500       | V               |
| $V_{DRM}$ | Repetitive peak off-state voltage<br>( $\delta = 0.01$ ; $f=50\text{Hz}$ ) | 120       | 240       | 350       | 500       | 600       | V <sup>2)</sup> |
| $V_{DSM}$ | Non-repetitive peak off-state voltage<br>( $t<10\text{ms}$ )               | 120       | 240       | 350       | 500       | 600       | V <sup>2)</sup> |

#### Currents

| Symbol       | Ratings  | BTX18-100                                | BTX18-200 | BTX18-300 | BTX18-400 | BTX18-500 |           |    |
|--------------|--|--|-----------|-----------|-----------|-----------|-----------|----|
| $I_{T(AV)}$  | Average on-state current<br>(averaged over any 20 ms period) | $T_{CASE}=105^\circ\text{C}$             |           |           |           |           | Max : 1.0 | A  |
|              |  | $T_{AMB}=60^\circ\text{C}$ , in free air |           |           |           |           | Max : 250 | mA |
| $I_T$        | On-state Current (D.C.)<br>$T_{CASE}=100^\circ\text{C}$      | Max : 1.6                                |           |           |           |           |           | A  |
| $I_{T(RMS)}$ | RMS on-state Current   | Max : 1.6                                |           |           |           |           |           | A  |

## BTX18-100/BTX18-200/BTX18-300 BTX18-400/BTX18-500

| Symbol             | Ratings   | BTX18-100                                    | BTX18-200 | BTX18-300 | BTX18-400 | BTX18-500 |            |
|--------------------|---|--|-----------|-----------|-----------|-----------|------------|
| $I_{TRM}$          | Repetitive Peak on-state Current  | Max : 10                                     |           |           |           |           | A          |
| $I_{TSM}$          | Non-repetitive peak on-state current<br>$t=10ms$ ; $T_J=125^\circ C$ prior to surge | 10 A   |           |           |           |           | V          |
| $T_J$<br>$T_{stg}$ | Junction Temperature<br>Storage Temperature   | Max : $125^\circ C$<br>-55 to $+125^\circ C$ |           |           |           |           | $^\circ C$ |

- 1) These ratings apply for zero or negative bias on the gate with respect to the cathode, and when a resistor  $R < 1\text{ k}\Omega$  is connected between gate and cathode
- 2) The device is not suitable for operation in the forward breakover mode.

### Gate to Cathode - Ratings

With  $1\Omega$  resistor between gate and cathode

| Symbol      | Ratings  | BTX18-100  | BTX18-200 | BTX18-300 | BTX18-400 | BTX18-500 |   |
|-------------|--|------------|-----------|-----------|-----------|-----------|---|
| $V_{FGM}$   | Forward Peak Voltage                                       | Max : 10 V |           |           |           |           | V |
| $V_{RGM}$   | Reverse Peak Voltage                                       | Max : 5 V  |           |           |           |           | V |
| $I_{FGM}$   | Forward Peak Current                                       | Max : 0.2  |           |           |           |           | A |
| $P_{G(AV)}$ | Average Power Dissipation (averaged over any 20 ms period) | Max : 0.05 |           |           |           |           | W |
| $P_{GM}$    | Peak Power Dissipation                                     | Max : 0.5  |           |           |           |           | W |

### Temperatures

| Symbol        | Ratings   | BTX18-100 | BTX18-200 | BTX18-300 | BTX18-400 | BTX18-500 |              |
|---------------|---|-----------|-----------|-----------|-----------|-----------|--------------|
| $R_{th\ j-c}$ | From Junction to Case                             | 10        |           |           |           |           | $^\circ C/W$ |
| $R_{th\ j-a}$ | From Junction to Ambient                          | 200       |           |           |           |           | $^\circ C/W$ |
| $Z_{th\ j-c}$ | Transient Thermal Resistance ( $t=10\text{ ms}$ ) | 2.5       |           |           |           |           | $^\circ C/W$ |

### Anode to Cathode - Characteristics

| Symbol | Ratings   | BTX18-100 | BTX18-200 | BTX18-300 | BTX18-400 | BTX18-500 |        |
|--------|---|-----------|-----------|-----------|-----------|-----------|--------|
| $V_T$  | On State Voltage<br>$I_T=1.0\text{ A}$ , $T_J=25^\circ C$ | < 1.5     | < 1.5     | < 1.5     | < 1.5     | < 1.5     | $V^1)$ |

## BTX18-100/BTX18-200/BTX18-300 BTX18-400/BTX18-500

| Symbol   | Ratings  | BTX18<br>-100 | BTX18<br>-200     | BTX18<br>-300 | BTX18<br>-400 | BTX18<br>-500 |     |         |
|----------|--|---------------|-------------------|---------------|---------------|---------------|-----|---------|
| $I_{RM}$ | Peak Reverse Current<br>$V_{RM}=V_{RWmax}$ ; $T_j=125^\circ C$   | <             | 800               | 400           | 275           | 200           | 160 | $\mu A$ |
| $I_{DM}$ | Peak off-state Current<br>$V_{DM}=V_{DWmax}$ ; $T_j=125^\circ C$ | <             | 800               | 400           | 275           | 200           | 160 | $\mu A$ |
| $I_L$    | Latching current, $T_j=125^\circ C$                              | Typ : 10      |                   |               |               |               |     | mA      |
| $I_H$    | Holding Current ; $T_j=25^\circ C$                               | <             | 5.0 <sup>2)</sup> |               |               |               |     | mA      |

### Gate to Cathode – Characteristics

| Symbol   | Ratings   | BTX18<br>-100 | BTX18<br>-200 | BTX18<br>-300 | BTX18<br>-400 | BTX18<br>-500 |  |    |
|----------|---|---------------|---------------|---------------|---------------|---------------|--|----|
| $V_{GT}$ | Voltage that will trigger all devices<br>$T_j=25^\circ C$     | >             | 2.0           |               |               |               |  | V  |
| $V_{GD}$ | Voltage that will not trigger any device<br>$T_j=125^\circ C$ | <             | 200           |               |               |               |  | mV |
| $I_{GT}$ | Current that will trigger all devices<br>$T_j=25^\circ C$     | >             | 5.0           |               |               |               |  | mA |

### Switching Characteristics

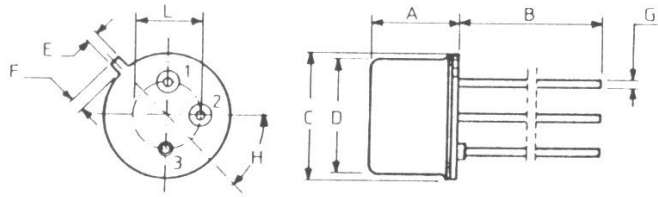
| Symbol   | Ratings  | BTX18<br>-100 | BTX18<br>-200 | BTX18<br>-300 | BTX18<br>-400 | BTX18<br>-500 |         |         |
|--|--|---------------|---------------|---------------|---------------|---------------|---------|---------|
| Turn off time when switched from<br>$I_T=300\text{ mA}$ to $I_R=175\text{ mA}$ | $T_j=25^\circ C$   | Type : 20     |               |               |               |               | $\mu s$ |         |
|  | $T_j=125^\circ C$  | Typ : 35      |               |               |               |               |         |         |
| $I_{DM}$   | Peak off-state Current<br>$V_{DM}=V_{DWmax}$ ; $T_j=125^\circ C$ | <             | 800           | 400           | 275           | 200           | 160     | $\mu s$ |

- 1)  $V_T$  is measured along the leads at 1 cm from the case
- 2) Measured under the following conditions :  
Anode supply voltage = +6.0V  
Initial on-state current after gate triggering = 50mA  
The current is reduced until the device turns off.

# BTX18-100/BTX18-200/BTX18-300 BTX18-400/BTX18-500

## MECHANICAL DATA CASE TO-39

| DIMENSIONS |      |        |
|------------|------|--------|
|            | mm   | inches |
| A          | 6,71 | 0,26   |
| B          | 13,2 | 0,51   |
| C          | 9,23 | 0,36   |
| D          | 8,34 | 0,32   |
| E          | 0,8  | 0,03   |
| F          | 0,8  | 0,03   |
| G          | 0,42 | 0,016  |
| H          | 45°  |        |
| L          | 4,97 | 0,2    |



|         |         |
|---------|---------|
| Pin 1 : | Kathode |
| Pin 2 : | Gate    |
| Pin 3 : | Anode   |