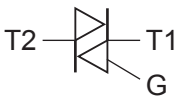
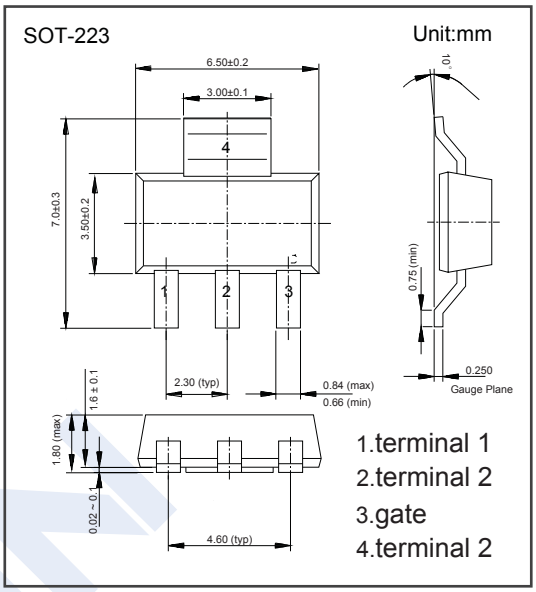
# Triacs

# BT131 Series

## ■ Features

- $V_{DRM}$ ⩽ 600 V (BT131-600)
- $V_{DRM}$ ⩽ 800 V (BT131-800)
- $I_{T(RMS)}$ ⩽ 1 A
- $I_{TSM}$ ⩽ 12.5 A




## ■ Absolute Maximum Ratings

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Repetitive Peak off-state Voltage | BT131-600 *1<br>BT131-800 | $V_{DRM}$ | 600<br>800 | V |
| RMS on-state Current | | $I_{T(RMS)}$ | 1 | A |
| Non-Repetitive Peak on-state Current | t=20ms<br>t=16.7ms | $I_{TSM}$ | 12.5<br>13.8 | |
| Circuit Fusing Considerations | t = 10ms | $I^2t$ | 1.28 | $A^2s$ |
| Rate of Rise of on-state Current<br>$I_{TM}$ = 1.5 A; $I_G$ = 20mA;<br>$dI_G/dt$ = 200 mA/μs | T2+ G+<br>T2+ G-<br>T2- G-<br>T2- G+ | $dI_T/dt$ | 50<br>50<br>50<br>10 | A/μs |
| Peak Gate Current | | $I_{GM}$ | 2 | A |
| Peak Gate Power | | $P_{GM}$ | 5 | W |
| Average Gate Power | | $P_{G(AV)}$ | 0.1 | |
| Thermal Resistance Junction to Ambient *2 | | $R_{th\ j-a}$ | 150 | ℃/W |
| Junction Temperature | | $T_J$ | 125 | ℃ |
| Storage Temperature Range | | $T_{stg}$ | -40 ~ 150 | |

*1: Although not recommended, off-state voltages up to 800V may be applied without damage, but the triac may switch to the on-state. The rate of rise of current should not exceed 3 A/μs.

*2: Mounted on a printed-circuit board

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## ■ Electrical Characteristics ($T_j$ = 25℃, unless otherwise noted.)

| Parameter | | Symbol | Test Conditions | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Repetitive Peak off-state Voltage | BT131-600 | $V_{DRM}$ | $I_{DRM}$=50μA | 600 | | | V |
| | BT131-800 | | | 800 | | | |
| Gate Trigger Current | T2+ G+ | $I_{GT}$ | $V_D$ = 12 V; $I_T$ = 100mA; see Figure 4 | | 0.4 | 3 | mA |
| | T2+ G- | | | | 1.3 | 3 | |
| | T2- G- | | | | 1.4 | 3 | |
| | T2- G+ | | | | 3.8 | 7 | |
| Latching Current | T2+ G+ | $I_L$ | $V_D$ = 12 V; $I_T$ = 100mA; see Figure 6 | | 1.2 | 5 | |
| | T2+ G- | | | | 4 | 8 | |
| | T2- G- | | | | 1 | 5 | |
| | T2- G+ | | | | 2.5 | 8 | |
| Holding Current | | $I_H$ | $V_D$ = 12 V; $I_T$ = 100mA; see Figure 7 | | 1.3 | 5 | |
| On-state Voltage | | $V_T$ | $I_T$ = 1.4 A; see Figure 5 | | 1.2 | 1.5 | V |
| Gate Trigger Voltage | | $V_{GT}$ | $I_T$ = 10 mA; gate open circuit, see Figure 3; $V_D$ = 12 V; $I_{GT}$ = 100 mA | | 0.7 | 1.5 | |
| | | | IT = 10 mA; gate open circuit, see Figure 3; $V_D$ = 400 V; $I_{GT}$ = 100 mA;$T_j$ = 125℃ | 0.2 | 0.3 | | |
| Off-state Current | | $I_D$ | $V_D$ = $V_{DRM(max)}$; $T_j$ = 125 °C | | 0.1 | 0.5 | mA |
| Rate of Rrise of off-state Voltage | | $dV_D/dt$ | $V_{DM}$=67% $V_{DRM}$(max); $T_j$=125 ℃; Exponential waveform; $R_{GK}$=1kΩ; see Figure 8 | 10 | 20 | | V/μs |
| Rate of Change of Commutating Current | | $dV_{COM}/dt$ | $V_{DM}$ = 400 V; $T_j$ = 125℃; $dI_{com}/dt$ = 0.5 A/ms | 2 | | | |
| Gate Controlled turn-on time | | tgt | $I_{TM}$=1.5A; $V_D$=$V_{DRM}$(max); $I_G$=100mA; $dI_G/dt$=5A/μs | | 2 | | μs |

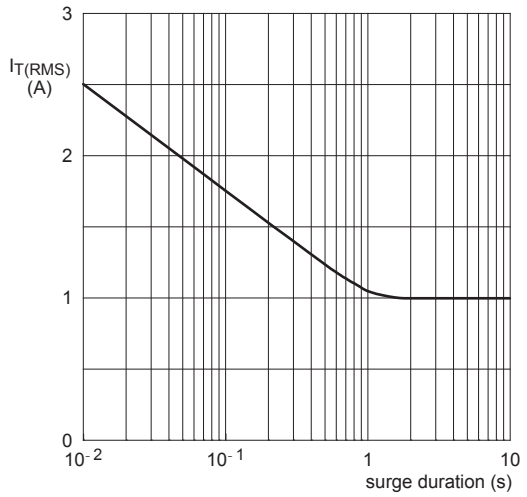
## ■ Marking

| | |
|---|---|
| Marking | BT131<br>K**** |

# Triacs

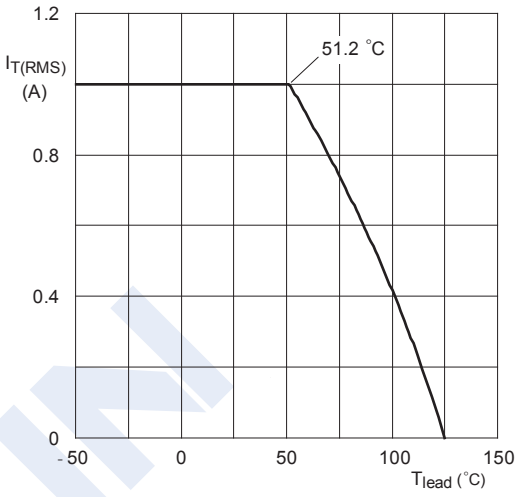
# BT131 Series

■ Typical Characterisitics




f = 50 Hz; $T_{lead} \leqslant 51.2$

**Fig 1. RMS on-state current as a function of surge duration, for sinusoidal currents; maximum values**




$T_{lead}$ = 51.2 ℃

**Fig 2. RMS on-state current as a function of lead temperature; maximum values**

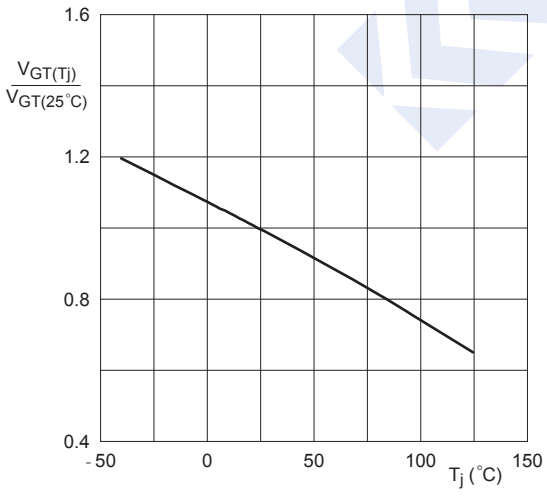
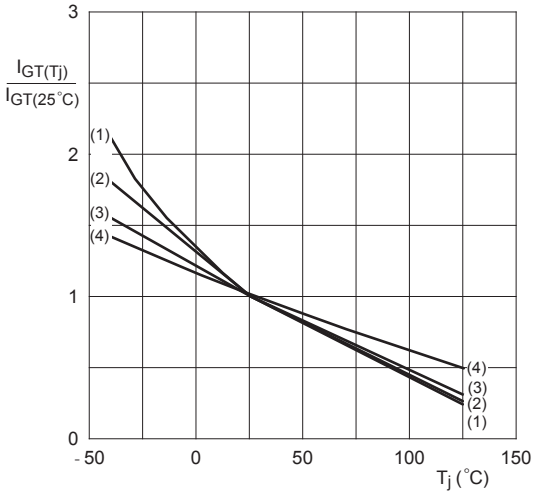



**Fig 3. Normalized gate trigger voltage as a function of junction temperature**

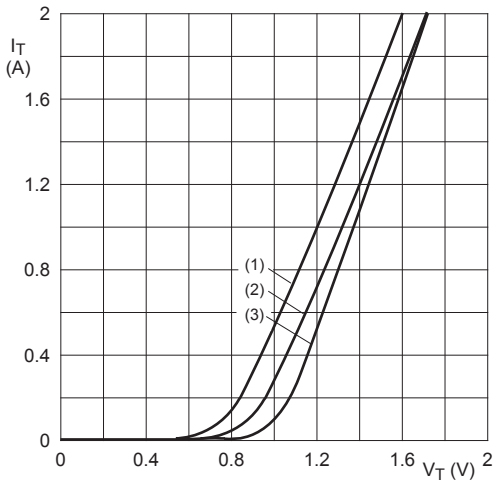



(1) T2- G+
(2) T2- G-
(3) T2+ G-
(4) T2+ G+

**Fig 4. Normalized gate trigger current as a function of junction temperature**

# Triacs

## BT131 Series




$V_o$ = 0.92 V

$R_s$ = 0.4 Ω.

(1) $T_j$ = 125 ℃; typical values

(2) $T_j$ = 125 ℃; maximum values

(3) $T_j$ = 25 ℃; maximum values

**Fig 5. On-state current characteristics**

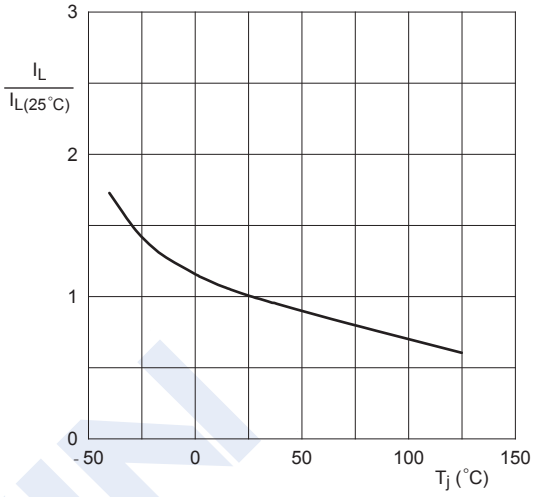



**Fig 6. Normalized latching current as a function of junction temperature**

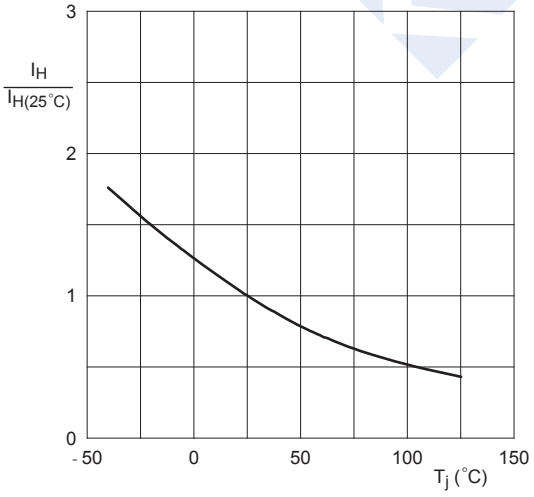



**Fig 7. Normalized holding current as a function of junction temperature**

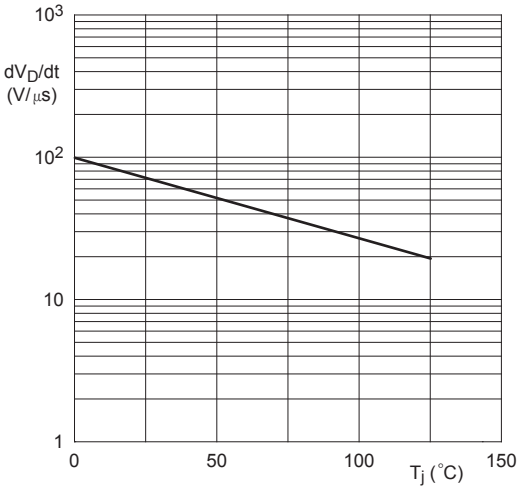



**Fig 8. Rate of rise of off-state voltage as a function of junction temperature; minimum values**

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