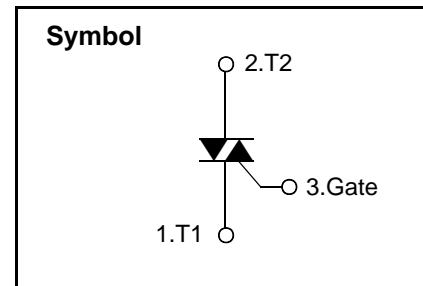
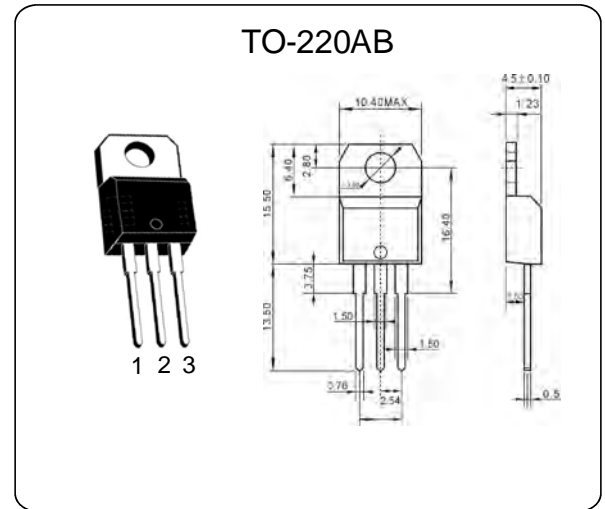


Bi-Directional Triode Thyristor

Designed for high performance full-wave ac control applications where high noise immunity and high commutating di/dt are required.

Features

- Blocking Voltage to 800 V
- On-State Current Rating of 6A RMS at 100°C
- Uniform Gate Trigger Currents in Three Quadrants
- High Immunity to dV/dt-1500V/us minimum at 125°C
- Minimizes Snubber Networks for Protection
- Industry Standard TO-220AB Package
- High Commutating di/dt- 4.0A/ms minimum at 125°C
- Internally Isolated (2500VRMS)
- These are Pb-Free Devices



Absolute Maximum Ratings

| Symbol | Parameter | | Value | Unit |
|---------------------|---|--------------------------------|-------------|------------------|
| I _{T(RMS)} | RMS on-state current(full sine wave) | TO-220AB TC=110 °C | 6 | A |
| | | TO-220AB Ins. TC=100 °C | | |
| I _{TSM} | Non repetitive surge peak on-state current(full cycle, T _j initial=25 °C) | F=50Hz t=20ms | 60 | A |
| | | F=60Hz t=16.7ms | 65 | |
| I ² t | I ² t Value for fusing | tp=10ms | 31 | A ² s |
| DI/DT | Critical rate of rise of on-state current I _G =2X _{IGT} , tr≤100ns | F=120Hz T _j =125 °C | 50 | A/us |
| I _{GM} | Peak gate current | tp=20us T _j =125 °C | 2 | A |
| P _{G(AV)} | Average gate power dissipation | T _j =125 °C | 0.5 | W |
| T _{stg} | Storage junction temperature range | | -40 to +150 | °C |
| T _j | Operating junction temperature range | | -40 to +125 | |



BTA06-800B

Electrical Characteristics (Tj=25°C, unless otherwise specified)

Snubberless™ and Logic Level(3 quadrants)

| Symbol | Test conditions | Quadrant | BTA06-800B | | Unit |
|---------------------|--|-------------------|------------|------|------|
| I _{GT} (1) | V _D =12V R _L =30Ω | I - II - III - IV | MAX | 50 | mA |
| V _{GT} | | I - II - III - IV | MAX | 1.3 | V |
| V _{GD} | V _D =V _{DRM} R _L =3.3KΩTj=125°C | I - II - III - IV | MIN | 0.2 | V |
| I _H (2) | IT=100mA | | MAX | 50 | mA |
| I _L | I _G =1.2I _{GT} | I - II - III - IV | MAX | 70 | mA |
| | | II | | 80 | |
| Dv / Dt(2) | V _D =67%V _{DRM} Gate open Tj=125°C | | MIN | 1000 | V/us |
| (DI/dt)c(2) | (Dv/dt)c=0.1 V/us Tj=125°C | | MIN | - | A/ms |
| | (Dv/dt)c=10V/us Tj=125°C | | | - | |
| | Without snubber Tj=125°C | | | 7 | |

Standard (4Quadrants)

| Symbol | Test conditions | Quadrant | BTA06-800B | | Unit |
|---------------------|--|--------------|------------|-----|------|
| I _{GT} (1) | V _D =12V R _L =30Ω | I - II - III | MAX | 50 | mA |
| | | IV | | 100 | |
| V _{GT} | | ALL | MAX | 1.3 | V |
| V _{GD} | V _D =V _{DRM} R _L =3.3KΩTj=125°C | ALL | MIN | 0.2 | V |
| I _H (2) | IT=500mA | | MAX | 50 | mA |
| I _L | I _G =1.2I _{GT} | I - III- IV | MAX | 50 | mA |
| | | II | | 100 | |
| (DI/dt)(2) | V _D =67%V _{DRM} Gate open Tj=125°C | | MIN | 400 | V/us |
| (DI/dt)c(2) | (Dv/dt)c=3.5 A/ms Tj=125°C | | MIN | 10 | V/us |

Static Characteristics

| Symbol | Test conditions | | | Value | Unit |
|--|--|-----------------------|-----|-------|------|
| V _{TM} (2) | ITM=5A tp=380us | T _J =25°C | MAX | 1.70 | V |
| V _{to} (2) | Threshold voltage | T _J =125°C | MAX | 0.85 | V |
| R _d (2) | Dynamic resistance | T _J =125°C | MAX | 50 | mΩ |
| I _{DRM} | V _{DRM} =V _{R_{RRM}} | T _J =25°C | | 5 | uA |
| I _{R_{RRM}} | | T _J =125°C | MAX | 1 | mA |
| V _{DRM} /V _{R_{RRM}} | Voltage | T _J =25°C | MIN | 800 | V |

Note 1: minimum I_{GT} is guaranteed at 5% of I_{GT} max

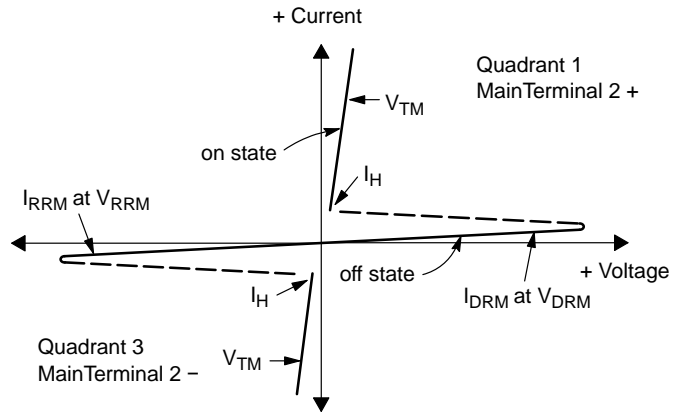
Note 2: for both polarities of A2 referenced to A1

Thermal Resistances

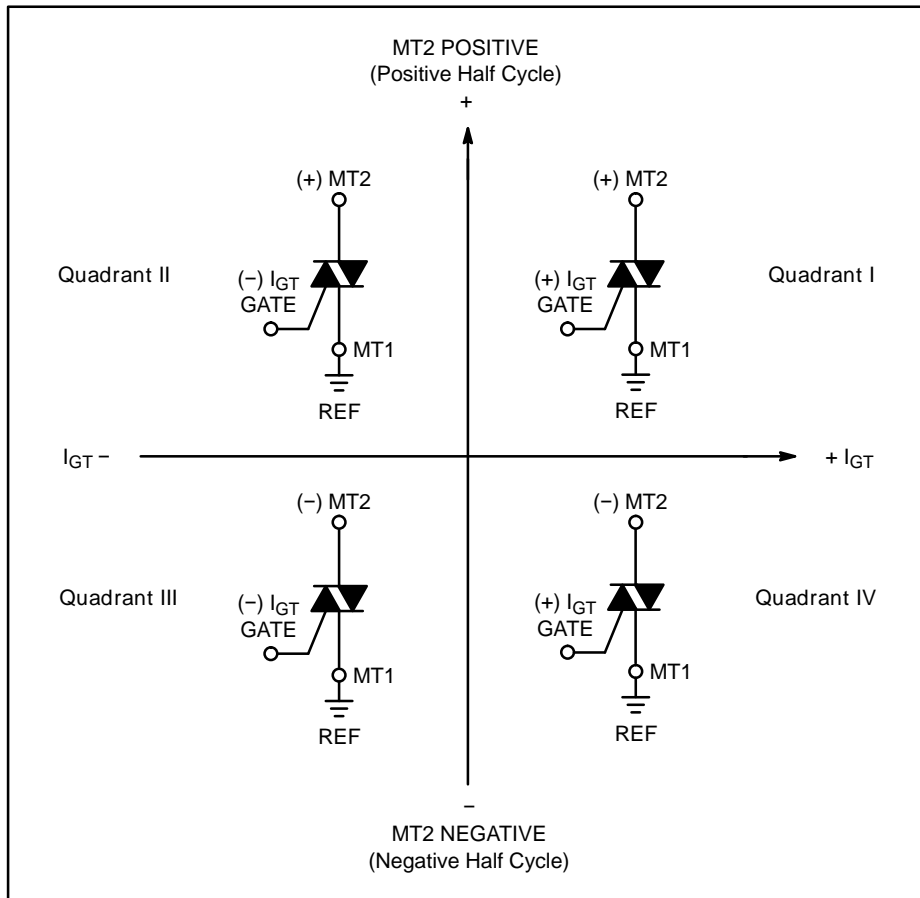
| Symbol | Parameter | Value | Unit |
|-----------------------|----------------------|-------|------|
| R _{th} (J-C) | Junction to case(AC) | 3.0 | °C/W |

Voltage Current Characteristic of Triacs (Bidirectional Device)

| Symbol | Parameter |
|-----------|---|
| V_{DRM} | Peak Repetitive Forward Off State Voltage |
| I_{DRM} | Peak Forward Blocking Current |
| V_{RRM} | Peak Repetitive Reverse Off State Voltage |
| I_{RRM} | Peak Reverse Blocking Current |
| V_{TM} | Maximum On State Voltage |
| I_H | Holding Current |



Quadrant Definitions for a Triac



All polarities are referenced to MT1.
With in-phase signals (using standard AC lines) quadrants I and III are used.

Description

Fig. 1: Maximum power dissipation versus RMS on-state current (full cycle).

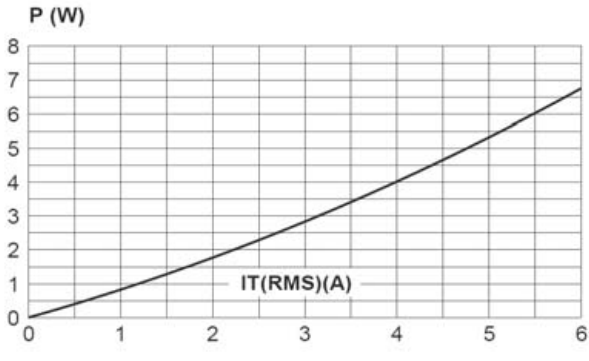


Fig. 2: RMS on-state current versus case temperature (full cycle).

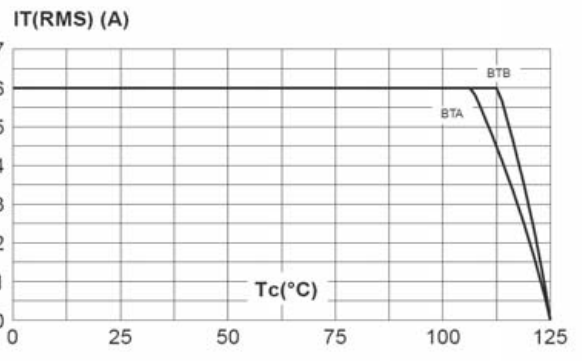


Fig. 3: Relative variation of thermal impedance versus pulse duration.

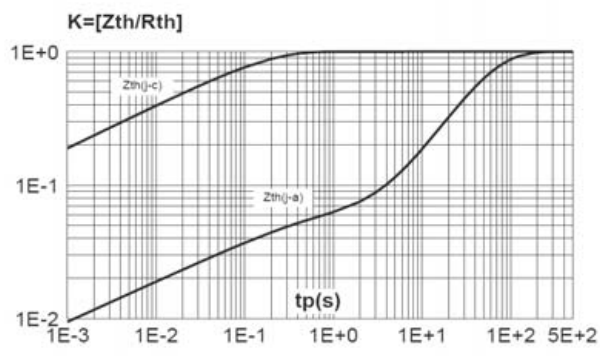


Fig. 4: On-state characteristics (maximum values).

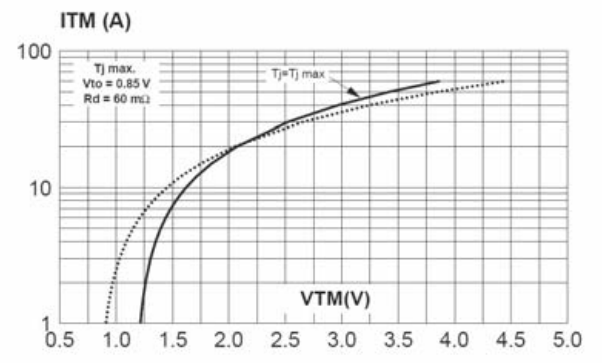


Fig. 5: Surge peak on-state current versus number of cycles.

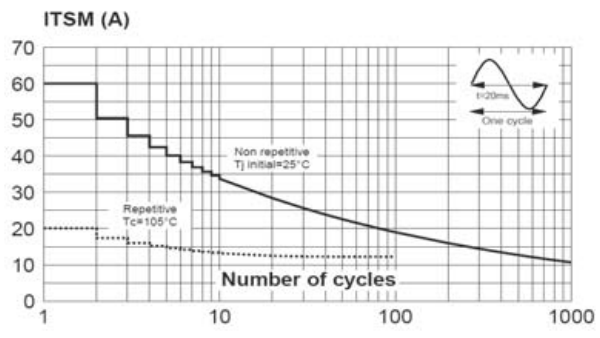
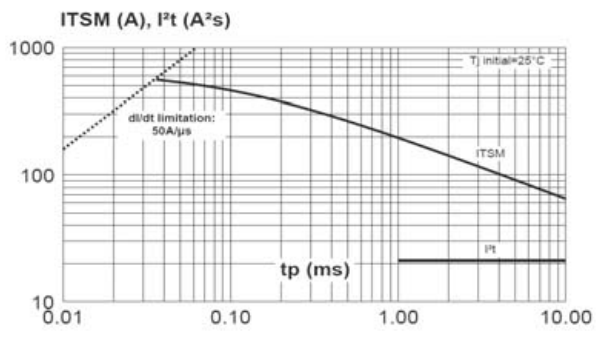


Fig. 6: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t .



Description

Fig. 7: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

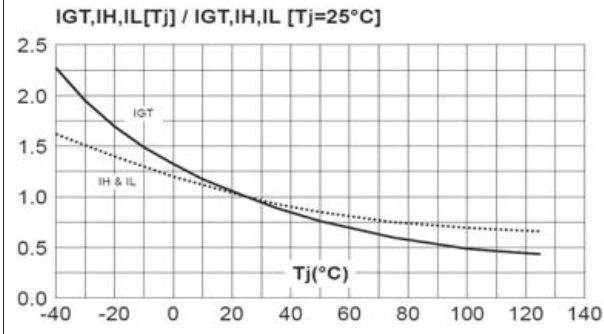


Fig. 8-1: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values). Snubberless & Logic Level Types

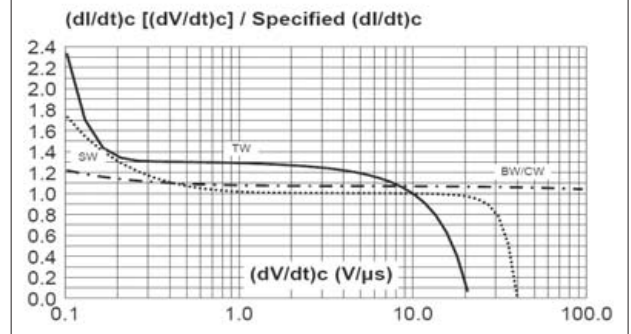


Fig. 8-2: Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values). Standard Types

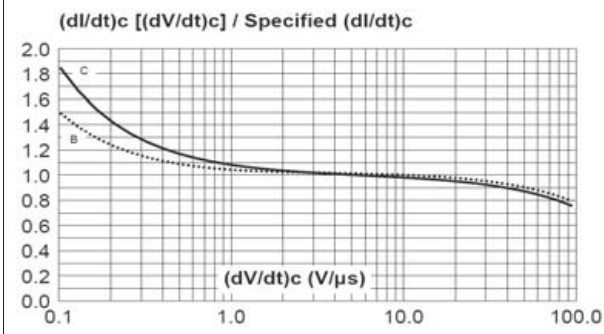


Fig. 9: Relative variation of critical rate of decrease of main current versus junction temperature.

