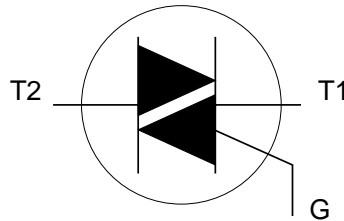


GENERAL DESCRIPTION

Glass passivated triacs in a plastic envelope, intended for use in applications requiring high bidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.

SYMBOL

TO220AB

QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | MAX. | MAX. | UNIT |
|--------------|--------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------|
| V_{DRM} | Repetitive peak off-state voltages | 500 500F 500G 500 | 600 600F 600G 600 | 800 800F 800G 800 | V |
| $I_{T(RMS)}$ | RMS on-state current | 8 | 8 | 8 | A |
| I_{TSM} | Non-repetitive peak on-state current | 65 | 65 | 65 | A |

LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | | | UNIT |
|--------------|--------------------------------------------------------------|-----------------------------------------------------------------------------------------|------|------------------|------------------|------|------------------|
| | | | | -500 | -600 | -800 | |
| V_{DRM} | Repetitive peak off-state voltages | | - | 500 ¹ | 600 ¹ | 800 | V |
| $I_{T(RMS)}$ | RMS on-state current | full sine wave; $T_{mb} \leq 102^\circ\text{C}$ | - | 8 | | | A |
| I_{TSM} | Non-repetitive peak on-state current | full sine wave; $T_j = 25^\circ\text{C}$ prior to surge $t = 20\text{ ms}$ | - | 65 | | | A |
| | | $t = 16.7\text{ ms}$ | - | 71 | | | A |
| I^2t | I^2t for fusing | $t = 10\text{ ms}$ | - | 21 | | | A ² s |
| di_T/dt | Repetitive rate of rise of on-state current after triggering | $I_{TM} = 12\text{ A}$; $I_G = 0.2\text{ A}$; $di_G/dt = 0.2\text{ A}/\mu\text{s}$ | | | | | |
| | | T2+ G+ | - | 50 | | | A/ μs |
| | | T2+ G- | - | 50 | | | A/ μs |
| | | T2- G- | - | 50 | | | A/ μs |
| | | T2- G+ | - | 10 | | | A/ μs |
| I_{GM} | Peak gate current | | - | 2 | | | A |
| V_{GM} | Peak gate voltage | | - | 5 | | | V |
| P_{GM} | Peak gate power | | - | 5 | | | W |
| $P_{G(AV)}$ | Average gate power | over any 20 ms period | - | 0.5 | | | W |
| T_{stg} | Storage temperature | | -40 | 150 | | | $^\circ\text{C}$ |
| T_j | Operating junction temperature | | - | 125 | | | $^\circ\text{C}$ |

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 6 A/ μs .

THERMAL RESISTANCES

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|----------------|----------------------------------------------|---------------------------|------|------|------|------|
| $R_{th\ j-mb}$ | Thermal resistance junction to mounting base | full cycle | - | - | 2.0 | K/W |
| $R_{th\ j-a}$ | Thermal resistance junction to ambient | half cycle in free air | - | 60 | 2.4 | K/W |

STATIC CHARACTERISTICS
 $T_j = 25\text{ °C}$ unless otherwise stated

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | | | UNIT |
|----------|---------------------------|--------------------------------------------------------------------|------|------|------|------|------|------|
| I_{GT} | Gate trigger current | BT137- $V_D = 12\text{ V}; I_T = 0.1\text{ A}$ | - | 5 | ... | ...F | ...G | |
| | | T2+ G+ | - | 8 | 35 | 25 | 50 | mA |
| | | T2+ G- | - | 11 | 35 | 25 | 50 | mA |
| | | T2- G- | - | 30 | 35 | 25 | 50 | mA |
| | | T2- G+ | - | 7 | 70 | 70 | 100 | mA |
| I_L | Latching current | $V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$ | - | 7 | 30 | 30 | 45 | mA |
| | | T2+ G+ | - | 16 | 45 | 45 | 60 | mA |
| | | T2+ G- | - | 5 | 30 | 30 | 45 | mA |
| | | T2- G- | - | 7 | 45 | 45 | 60 | mA |
| | | T2- G+ | - | 5 | 20 | 20 | 40 | mA |
| I_H | Holding current | $V_D = 12\text{ V}; I_{GT} = 0.1\text{ A}$ | - | 5 | 20 | 20 | 40 | mA |
| V_T | On-state voltage | $I_T = 10\text{ A}$ | - | 1.3 | 1.65 | | | V |
| V_{GT} | Gate trigger voltage | $V_D = 12\text{ V}; I_T = 0.1\text{ A}$ | - | 0.7 | 1.5 | | | V |
| | | $V_D = 400\text{ V}; I_T = 0.1\text{ A};$ $T_j = 125\text{ °C}$ | 0.25 | 0.4 | - | | | V |
| I_D | Off-state leakage current | $V_D = V_{DRM(max)};$ $T_j = 125\text{ °C}$ | - | 0.1 | 0.5 | | | mA |

DYNAMIC CHARACTERISTICS
 $T_j = 25\text{ °C}$ unless otherwise stated

| SYMBOL | PARAMETER | CONDITIONS | MIN. | | | TYP. | MAX. | UNIT |
|---------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|------|------------|
| dV_D/dt | Critical rate of rise of off-state voltage | BT137- $V_{DM} = 67\% V_{DRM(max)};$ $T_j = 125\text{ °C};$ exponential waveform; gate open circuit | ... | ...F | ...G | 250 | - | V/ μ s |
| dV_{com}/dt | Critical rate of change of commutating voltage | $V_{DM} = 400\text{ V}; T_j = 95\text{ °C};$ $I_{T(RMS)} = 8\text{ A};$ $dl_{com}/dt = 3.6\text{ A/ms};$ gate open circuit | - | - | 10 | 20 | - | V/ μ s |
| t_{gt} | Gate controlled turn-on time | $I_{TM} = 12\text{ A}; V_D = V_{DRM(max)};$ $I_G = 0.1\text{ A}; dl_G/dt = 5\text{ A}/\mu$ s | - | - | - | 2 | - | μ s |

