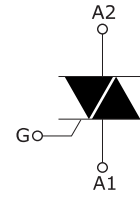


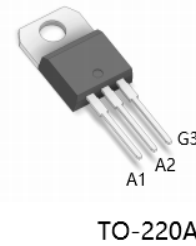
Product features and main applications:

NPNP five-layer structure of silicon bidirectional devices; with independent intellectual property rights of single-sided digging technology, table glass passivation process; multi-layer metallized electrodes on the back; with high blocking voltage and high temperature stability.



Mainly used in:

vacuum cleaners, power tools and other motor speed controllers; solid state relays; heating controllers (temperature regulation); other phase control circuits.



Characteristics

Table 1. Absolute maximum ratings (Tj = 25 ° C unless otherwise stated)

| Symbol | Parameter name | | value | Unit |
|--------------|--|-------------------|-------|------------------|
| $I_{T(RMS)}$ | RMS on-state current (full sine wave) | BTA Tc=80°C | 12 | A |
| I_{TSM} | Non repetitive surge peak on-state current (full cycle, Tj initial = 25 ° C) | F=50HZ tp=20ms | 120 | A |
| I^2t | I ² t value for fusing | tp=10ms | 72 | A ² S |
| di/dt | Critical rate of rise of on-state current IG = 2 x IGT, tr ≤ 100 ns | Tj=125 | 50 | A/us |

| | | | | | |
|--------------------|--|--------------------------|---------------------------|--------------------------|--------------------|
| V_{DRM}/V_{RRM} | Off state repetitive peak voltage Reverse repetitive peak voltage | $T_j=25^{\circ}\text{C}$ | | 600/800 | V |
| I_{GM} | Peak gate current | $t_p=20\mu\text{s}$ | $T_j=150^{\circ}\text{C}$ | 4 | A |
| $P_{G(AV)}$ | Average gate power dissipation | | $T_j=150^{\circ}\text{C}$ | 1 | W |
| T_{stg} T_j | Storage junction temperature range Operating junction temperature range | | | -40 to+150 -40 to+125 | $^{\circ}\text{C}$ |

Table 2. Electrical characteristics ($T_j = 25^{\circ}\text{C}$, unless otherwise specified) --3 quadrants

| Symbol | Name and test conditions | Quadrant | Range | value | | | | Unit |
|----------------------|--|----------------|-------|-------|-----|-----|-----|------|
| | | | | BW | CW | SW | TW | |
| I_{GT} | $V_D=12\text{V}$ $R_L=100\Omega$ | I II III | MAX | 50 | 35 | 10 | 5 | mA |
| V_{GT} | | | | 1.5 | | | | |
| V_{GD} | $V_D = V_{DRM}$ $R_L = 3.3\text{ k}\Omega$, $T_j = 125^{\circ}\text{C}$ | | MIN | 0.2 | | | | V |
| I_H | $I_T = 100\text{ mA}$ | | MAX | 60 | 40 | 20 | 15 | mA |
| I_L | $I_G = 1.2 \times I_{GT}$ | | MAX | 100 | 60 | 40 | 30 | mA |
| dv/dt | $V_D = 67\% V_{DRM}$, gate open, $T_j = 125^{\circ}\text{C}$ | | MIN | 500 | 500 | 200 | 100 | V/us |
| (dv/dt) _c | Critical rise rate of commutation voltage $T_J = 150^{\circ}\text{C}$ | | MIN | 8 | | | | V/us |

Table 3 Electrical characteristics (Tj = 25 °C unless otherwise specified) -Standard Triac (4 quadrants)

| Symbol | Name and test conditions | Quadrant | Range | value | | Unit |
|----------------------|---|-------------|-------|-------|----|------|
| I _{GT} | V _D =12V R _L =100Ω | I - II -III | MAX | B | C | mA |
| | | IV | | 50 | 20 | |
| | | | | 100 | 60 | |
| V _{GT} | | ALL | MAX | 1.5 | | V |
| V _{GD} | V _D = V _{DRM} , R _L = 3.3 kΩ, T _j = 125 ° C | ALL | MIN | 0.2 | | V |
| I _H | I _T =500mA | | MAX | 60 | 50 | mA |
| I _L | I _G = 1.2 x I _{GT} | I - II -III | MAX | 60 | 50 | mA |
| | | IV | | 100 | 80 | |
| dv/dt | V _D = 67% V _{DRM} , gate open, T _j = 125 ° C | | MIN | 500 | | V/us |
| (dv/dt) _c | Critical rise rate of commutation voltage T _J = 150 ° C | | MIN | 10 | | V/us |

Static parameters

| Symbol | Parameter name | | | value | Unit |
|------------------------|----------------------------|---------------------------|-----|-------|---------------|
| V_{TM} | $I_{TM} = 24A$ | $T_j = 25^{\circ}C$ | MAX | 1.50 | V |
| V_{TO} | threshold on-state voltage | $T_j = 150^{\circ}C$ | MAX | 0.86 | V |
| R_d | Dynamic resistance | $T_j = 150^{\circ}C$ | MAX | 36.6 | mΩ |
| I_{DRM} I_{RRM} | VDRM = VRRM | $T_j = 25$ $T_j = 150$ | MAX | 5 | uA |
| | | | | 1 | mA |
| $R_{th(j-c)}$ | Junction to ambient | BTA | MAX | 2.05 | $^{\circ}C W$ |

BTA12 characteristic curve

FIG.1 Maximum power dissipation versus RMS on-state current

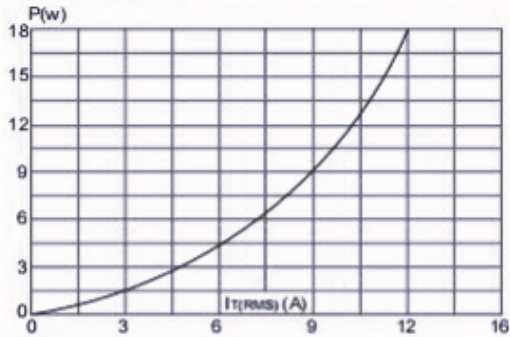


FIG.3: Surge peak on-state current versus number of cycles

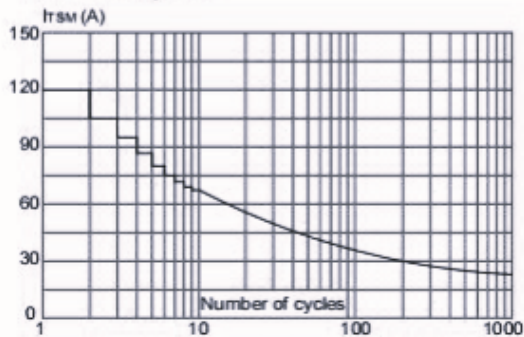


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of $I^2 t$ ($di/dt < 50\text{A}/\mu\text{s}$)

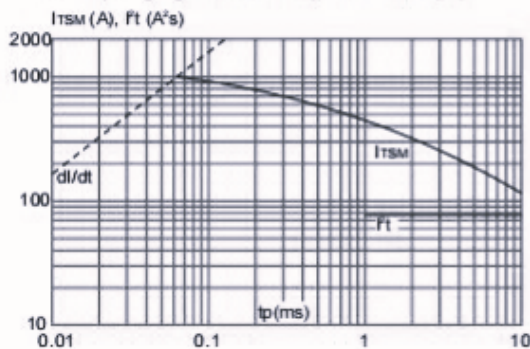


FIG.2: RMS on-state current versus case temperature

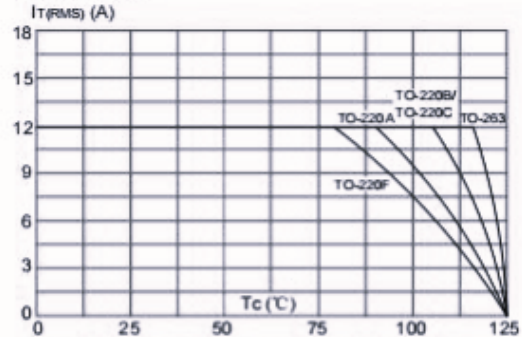


FIG.4: On-state characteristics (maximum values)

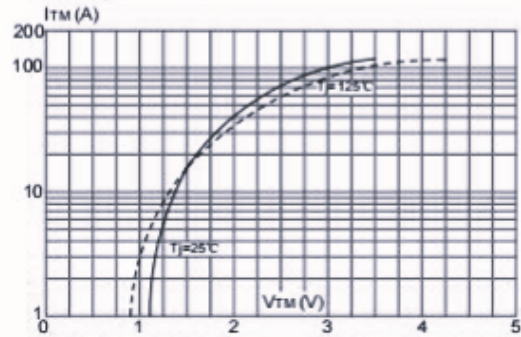
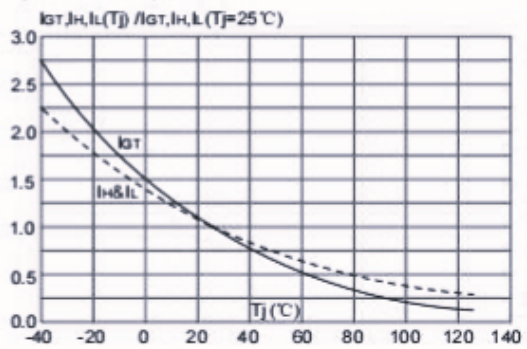
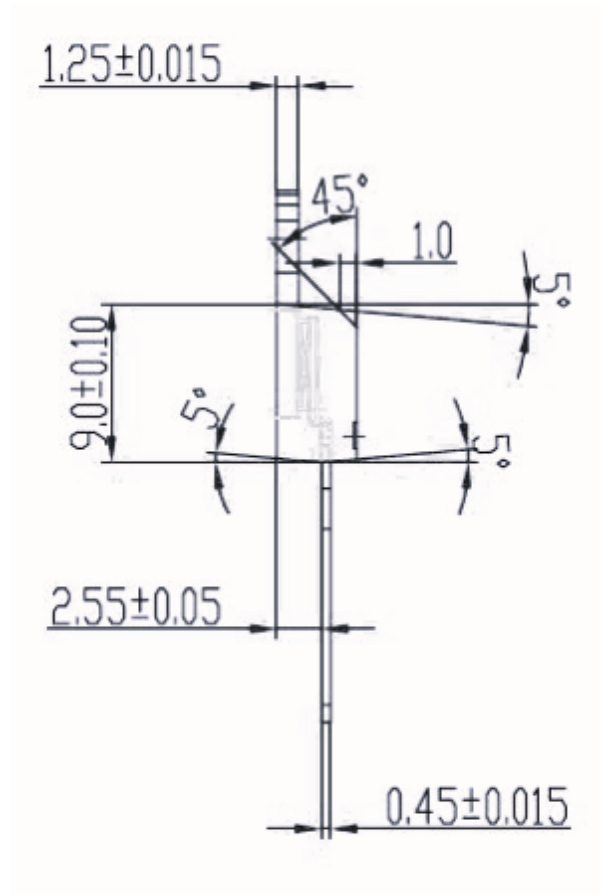
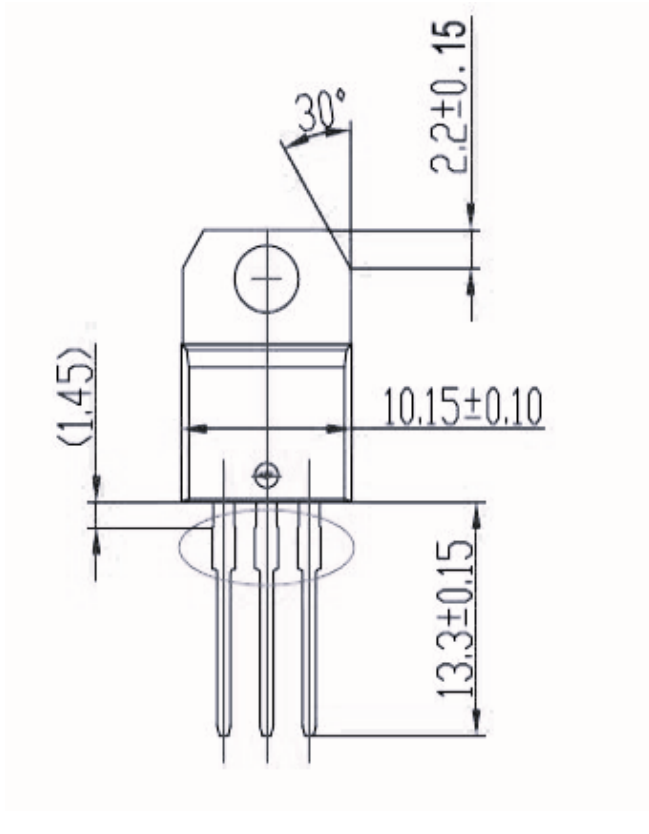


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



TO-220 Dimensional drawing:

Unit: mm (± 0.1)



Ordering information

| Order code | Package | Baseqty | Deliverymode |
|-------------------|---------|---------|--------------|
| UMW BTA12-600BRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-600CRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-800BRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-800CRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-600BWRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-600CWRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-800BWRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-800CWRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-600SWRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-600TWRG | TO-220A | 1000 | Tube and box |
| UMW BTA12-800SWRG | TO-220A | 1000 | Tube and box |