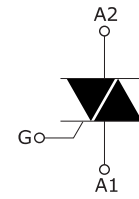


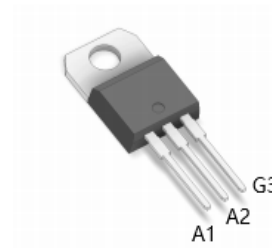
Product features and main applications:

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.



TO-220A

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 | 16 | A |
| I_{TSM} | Non repetitive surge peak on-state current (full cycle, Tj initial = 25 ° C) | F=50HZ tp=20ms | 160 | A |
| I^2t | I ² t value for fusing | tp=10ms | 144 | 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 | $T_j=25^{\circ}C$ | | 600/800 | V |
| I_{GM} | Peak gate current | $t_p=20\mu s$ | $T_j=150^{\circ}C$ | 4 | A |
| $P_{G(AV)}$ | Average gate power dissipation | | $T_j=150^{\circ}C$ | 1 | W |
| T_{stg} T_j | Storage junction temperature range Operating junction temperature range | | | -40 to+150 -40 to+150 | $^{\circ}C$ |

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

| Symbol | Name and test conditions | Quadrant | Range | value | | | Unit |
|----------|---|----------------|-------|-------|-----|-----|------------|
| | | | | Min | Typ | Max | |
| I_{GT} | $V_D=12V$ $R_L=100\Omega$ | I II III | MAX | 15 | 25 | 35 | mA |
| V_{GT} | | | | 1.5 | | | |
| V_{GD} | V_D V_{DRM} R $3.3\ k\Omega$, T_j | | MIN | 0.2 | | | V |
| I_H | $I_T = 100\ mA$ | | MAX | 60 | | | mA |
| I_L | $I_G = 1.2 \times I_{GT}$ | | MAX | 60 | | | mA |
| | | | | 100 | | | |
| dv/dt | $V_D = 67\% V_{DRM}$, gate open, $T_j = 125^{\circ}C$ | | MIN | 500 | | | V/ μs |
| (dv/dt)c | Critical rise rate of commutation voltage $T_j = 150^{\circ}C$ | | MIN | 10 | | | V/ μs |

Table 3. Electrical characteristics (T_j = 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 | I | II | III | IV | mA |
| | | | | ≅ 25 | ≅ 35 | ≅ 35 | ≅ 120 | |
| V _{GT} | V _D = V _{DRM} , R _L = 3.3 kΩ, T _j = 125 ° C | IV | MAX | 1.5 | | | | V |
| V _{GD} | | | MIN | 0.2 | | | | V |
| I _H | I _T =500mA | | MAX | 60 | | | | mA |
| I _L | I _G = 1.2 x I _{GT} | | MAX | 60 | | | | mA |
| | | | | 100 | | | | |
| 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} = 32A | T _j =25°C | MAX | 1.50 | V |
| V _{T0} | threshold on-state voltage | T _j =150°C | MAX | 0.87 | V |
| R _d | Dynamic resistance | T _j =150°C | MAX | 14.6 | mΩ |
| I _{DRM} I _{RDM} | V _{DRM} = V _{RDM} | T _j =25°C | MAX | 5 | uA |
| | | T _j =150°C | | 1 | mA |
| R _{th(j-c)} | Junction to ambient | BTA | MAX | 2.10 | °C/W |

BTA16 characteristic curve

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

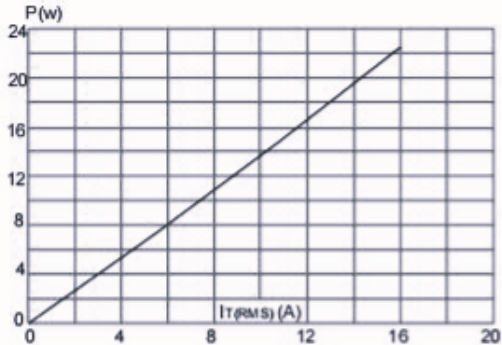
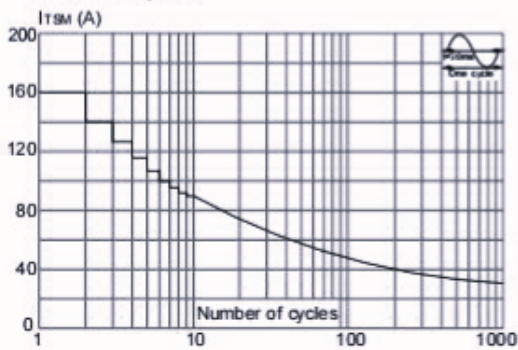


FIG.3: Surge peak on-state current versus number of cycles



sinusoidal pulse with width $t_p < 20\text{ms}$, and
 average value of $I^2 t$ ($dI/dt < 50\text{A}/\mu\text{s}$)
 $I^2 t$ (A^2s)

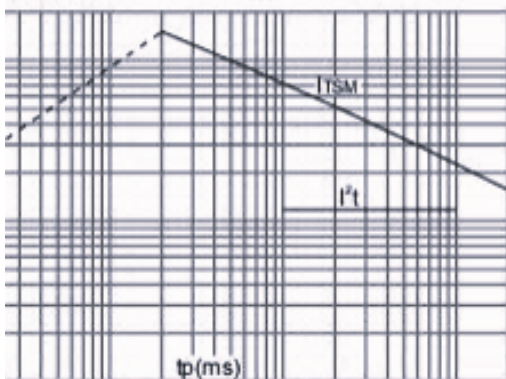


FIG.2: RMS on-state current versus case temperature

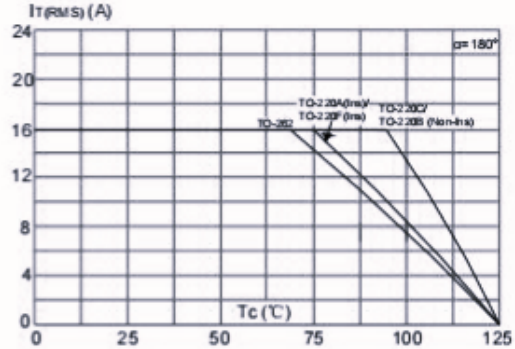
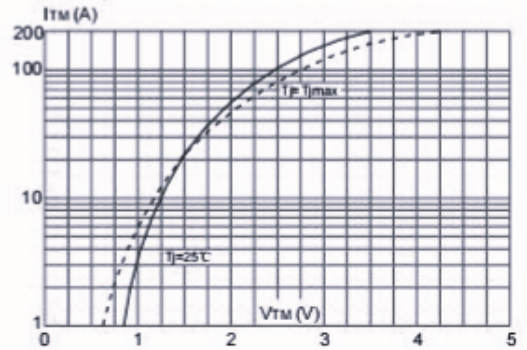
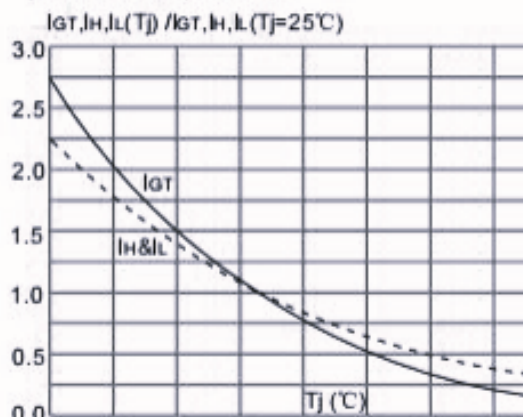


FIG.4: On-state characteristics (maximum values)

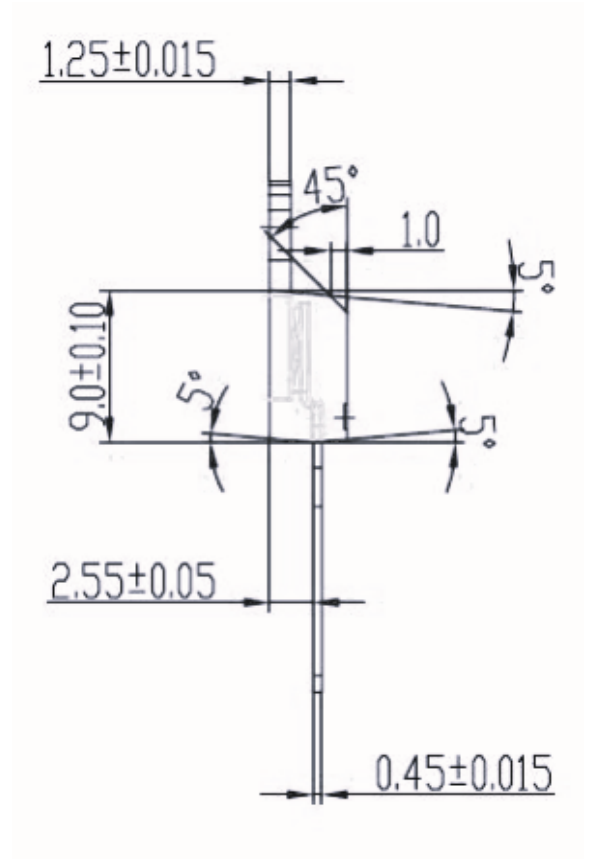
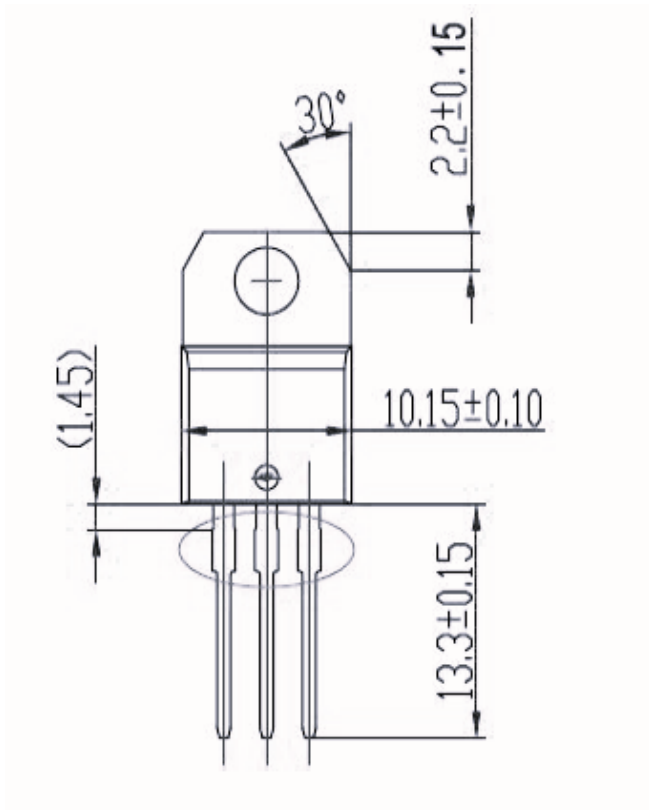


holding current and latching current versus
 junction temperature



TO-220A Dimensional drawing:

Unit: mm (± 0.1)



Ordering information

| Order code | Package | Baseqty | Deliverymode |
|-------------------|----------------|----------------|---------------------|
| UMW BTA16-600BRG | TO-220A | 1000 | Tube and box |
| UMW BTA16-600CRG | TO-220A | 1000 | Tube and box |
| UMW BTA16-800BRG | TO-220A | 1000 | Tube and box |
| UMW BTA16-600BWRG | TO-220A | 1000 | Tube and box |
| UMW BTA16-600CWRG | TO-220A | 1000 | Tube and box |
| UMW BTA16-800BWRG | TO-220A | 1000 | Tube and box |
| UMW BTA16-800CWRG | TO-220A | 1000 | Tube and box |
| UMW BTA16-600SWRG | TO-220A | 1000 | Tube and box |
| UMW BTA16-800SWRG | TO-220A | 1000 | Tube and box |