

DESCRIPTION:

High current density due to double mesa technology; SIPOS and Glass Passivation.

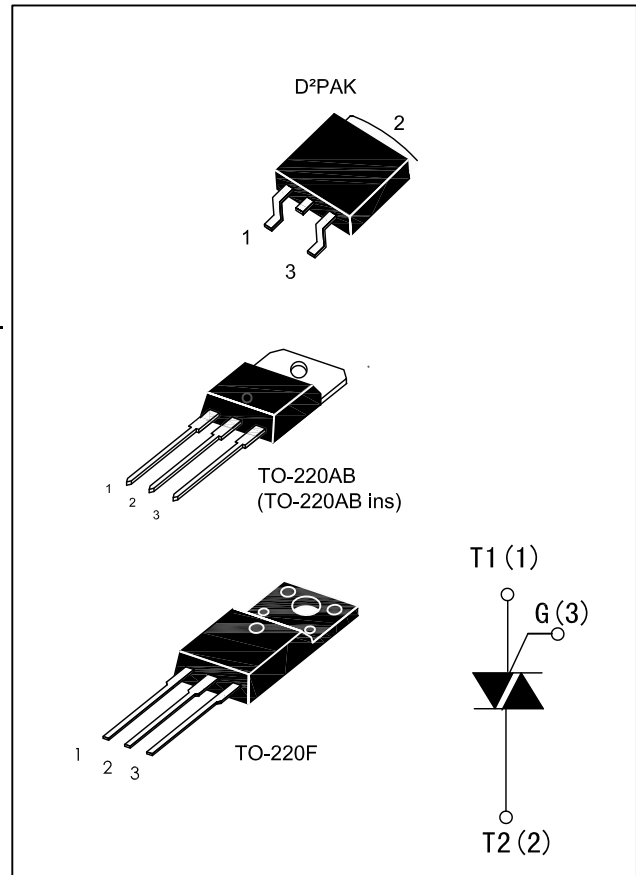
BTB16/BTB16 series triacs is suitable for general purpose AC switching. They can be used as an ON/OFF Function in applications such as static relays, heating regulation, induction motor starting circuits... or for phase control operation light dimmers, motorspeed controllers.

BTB16/BTB16- $\times\times\times$ SW, - $\times\times\times$ CW, - $\times\times\times$ BW are 3 Quadrants triacs, They are specially recommended for use on inductive loads.

TO-220ABins and TO-220F are isolated internally, they provides a 2500V RMS isolation voltage from all three terminals to external heatsink.

MAIN FEATURES

| Symbol | Value | Unit |
|-------------------|-------------|------|
| $I_{T(RMS)}$ | 16 | A |
| V_{DRM}/V_{RRM} | 600 and 800 | V |
| V_{TM} | ≤ 1.55 | V |



ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|-------------------------|-------------|-----------|
| Storage junction temperature range | Tstg | -40 to +150 | °C |
| Operating junction temperature range | Tj | -40 to +125 | °C |
| Repetitive Peak Off-state Voltage | Tj=25°C | VDRM | 600and800 |
| Repetitive Peak Reverse Voltage | Tj=25°C | VRRM | 600and800 |
| Non repetitive Surge Peak Off-state Voltage | tp=10ms, Tj=25°C | VDSM | 700and900 |
| Non repetitive Peak Reverse Voltage | | VRSM | 700and900 |
| RMS on-state current (full sine wave) | D²PAK/TO-220AB Tc=100°C | IT(RMS) | 16 |
| | TO-220F Tc=78°C | | |
| | TO-220AB Ins Tc=85°C | | |
| Non repetitive surge peak on-state current (full cycle, Tj=25°C) | f = 60 Hz t=16.7ms | ITSM | 168 |
| | f = 50 Hz t=20ms | | |
| I²t Value for fusing | tp=10ms | I²t | 144 |
| Critical rate of rise of on-state current IG=2×IGT, tr≤100 ns, f=120Hz, Tj=125°C | | di / dt | 50 |
| Peak gate current | tp=20us, Tj=125°C | IGM | 4 |
| Average gate power dissipation | Tj=125°C | PG(AV) | 1 |

ELECTRICAL CHARACTERISTICS(T_j=25°C unless otherwise specified)

● 3 Quadrants

| Symbol | Test Condition | Quadrant | | BTA16/BTB16 | | | Unit |
|----------------------|--|----------|------|-------------|-----|------|------|
| | | | | SW | CW | BW | |
| I _{GT} | V _D =12V R _L =33Ω | I-II-III | MAX. | 10 | 35 | 50 | mA |
| V _{GT} | | I-II-III | MAX. | 1.3 | | | V |
| V _{GD} | V _D =V _{DRM} R _L =3.3KΩ T _j =125°C | I-II-III | MIN. | 0.2 | | | V |
| I _L | I _G =1.2I _{GT} | I-III | MAX. | 25 | 50 | 70 | mA |
| | | II | MAX. | 30 | 60 | 80 | mA |
| I _H | I _T =500mA | | MAX. | 15 | 35 | 50 | mA |
| dV/dt | V _D =67%V _{DRM} gate open T _j =125°C | | MIN. | 40 | 500 | 1000 | V/μs |
| (dI/dt) _c | (dV/dt) _c =0.1V/μs T _j =125°C | | MIN. | 8.5 | --- | --- | A/mS |
| | (dV/dt) _c =10V/μs T _j =125°C | | | 3.0 | --- | --- | |
| | Without snubber T _j =125°C | | | --- | 8.5 | 14 | |

● 4 Quadrants

| Symbol | Test Condition | Quadrant | | BTA16/BTB16 | | Unit |
|----------------------|--|----------------|------|-------------|-----------|------|
| | | | | C | B | |
| I _{GT} | V _D =12V R _L =33Ω | I-II-III IV | MAX. | 25 50 | 50 100 | mA |
| V _{GT} | | ALL | MAX. | 1.3 | | V |
| V _{GD} | V _D =V _{DRM} R _L =3.3KΩ T _j =125°C | ALL | MIN. | 0.2 | | V |
| I _L | I _G =1.2I _{GT} | I-III-IV | MAX. | 40 | 60 | mA |
| | | II | MAX. | 80 | 120 | mA |
| I _H | I _T =500mA | | MAX. | 25 | 50 | mA |
| dV/dt | V _D =67%V _{DRM} gate open T _j =125°C | | MIN. | 200 | 400 | V/μs |
| (dI/dt) _c | (dI/dt) _c =7A/ms T _j =125°C | | MIN. | 5 | 10 | V/μs |

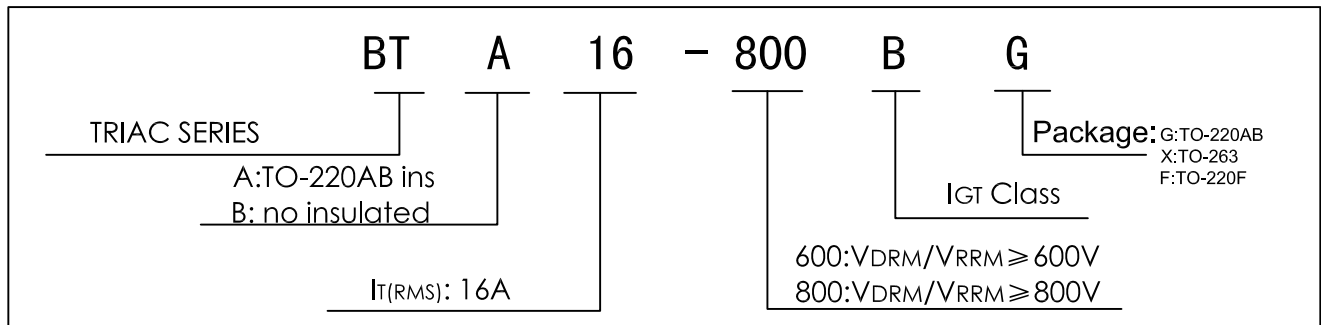
STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|--------------------------------------|---|-----------------------|-------------|------|
| V _{TM} | I _{TM} =22.5A, t _p =380μs | T _j =25°C | 1.55 | V |
| I _{DRM} I _{RRM} | V _D =V _{DRM} V _R =V _{RRM} | T _j =25°C | 5 | μA |
| | | T _j =125°C | 2 | mA |

THERMAL RESISTANCES

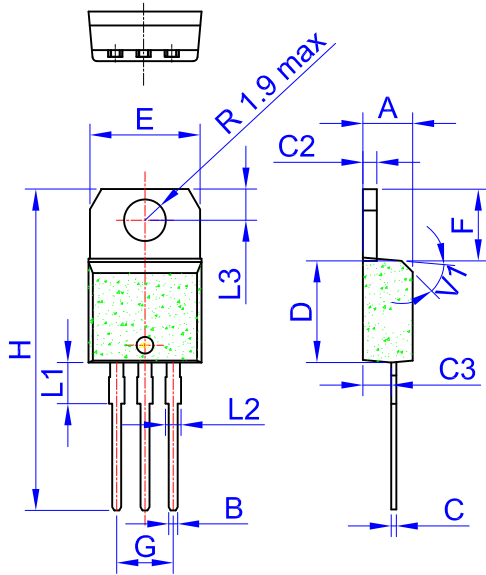
| Symbol | Parameter | | Value | Unit |
|-------------------------|----------------------|-----------------------------|-------|------|
| R _{th} (J -C) | Junction to Case(AC) | D ² PAK/TO-220AB | 1.2 | °C/W |
| | | TO-220AB INS /TO-220F | 2.1 | |

ORDERING INFORMATION



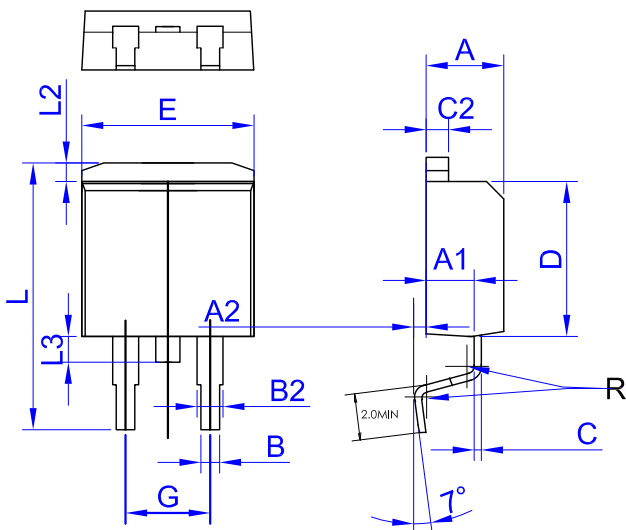
PACKAGE MECHANICAL DATA

TO-220AB



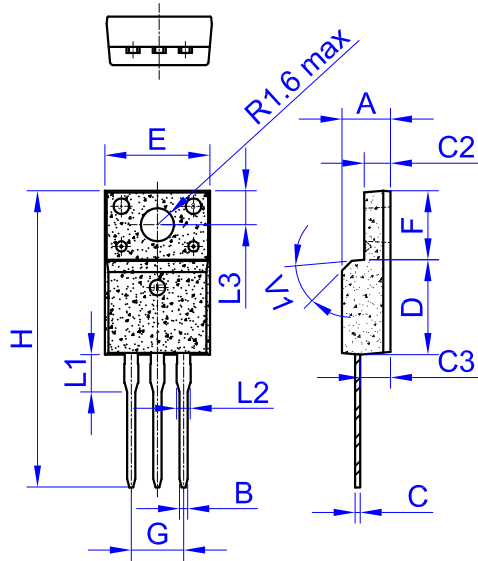
| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.4 | | 4.6 | 0.173 | | 1.181 |
| B | 0.61 | | 0.88 | 0.024 | | 0.034 |
| C | 0.46 | | 0.70 | 0.018 | | 0.027 |
| C2 | 1.23 | | 1.32 | 0.048 | | 0.051 |
| C3 | 2.4 | | 2.72 | 0.094 | | 0.107 |
| D | 8.6 | | 9.7 | 0.338 | | 0.382 |
| E | 9.8 | | 10.4 | 0.386 | | 0.409 |
| F | 6.2 | | 6.6 | 0.244 | | 0.259 |
| G | 4.8 | | 5.4 | 0.189 | | 0.213 |
| H | 28.0 | | 29.8 | 11.0 | | 11.7 |
| L1 | | 3.75 | | | 0.147 | |
| L2 | 1.14 | | 1.7 | 0.044 | | 0.066 |
| L3 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| V1 | | 40° | | | 40° | |

D² PAK



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.30 | | 4.60 | 0.169 | | 0.181 |
| A1 | 2.49 | | 2.69 | 0.098 | | 0.106 |
| A2 | 0.03 | | 0.23 | 0.001 | | 0.009 |
| B | 0.70 | | 0.93 | 0.027 | | 0.037 |
| B2 | 1.25 | 1.40 | | 0.048 | 0.055 | |
| C | 0.45 | | 0.60 | 0.017 | | 0.024 |
| C2 | 1.21 | | 1.36 | 0.047 | | 0.054 |
| D | 8.95 | | 9.35 | 0.352 | | 0.368 |
| E | 10.0 | | 10.28 | 0.393 | | 0.405 |
| G | 4.88 | | 5.28 | 0.192 | | 0.208 |
| L | 15.0 | | 15.85 | 0.590 | | 0.624 |
| L2 | 1.27 | | 1.40 | 0.050 | | 0.055 |
| L3 | 1.40 | | 1.75 | 0.055 | | 0.069 |
| R | | 0.40 | | | 0.016 | |

TO-220F



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.4 | | 4.8 | 0.173 | | 0.189 |
| B | 0.74 | 0.8 | 0.83 | 0.029 | 0.031 | 0.033 |
| C | 0.5 | | 0.75 | 0.020 | | 0.030 |
| C2 | 2.4 | | 2.7 | 0.094 | | 0.106 |
| C3 | 2.6 | | 3.0 | 0.102 | | 0.118 |
| D | 8.8 | | 9.3 | 0.346 | | 0.367 |
| E | 9.7 | | 10.3 | 0.382 | | 0.406 |
| F | 6.4 | | 6.8 | 0.252 | | 0.268 |
| G | 5.0 | | 5.2 | 0.197 | | 0.205 |
| H | 28.0 | | 29.8 | 11.0 | | 11.7 |
| L1 | | 3.63 | | | 0.143 | |
| L2 | 1.14 | | 1.7 | 0.044 | | 0.067 |
| L3 | | 3.3 | | | 0.130 | |
| V1 | | 40° | | | 40° | |

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

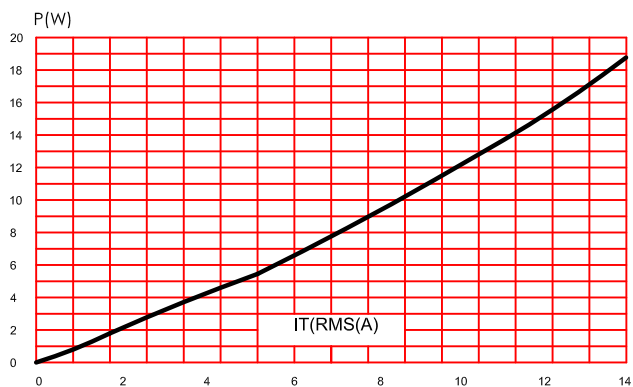


FIG.2: RMS on-state current versus case temperature (full cycle)

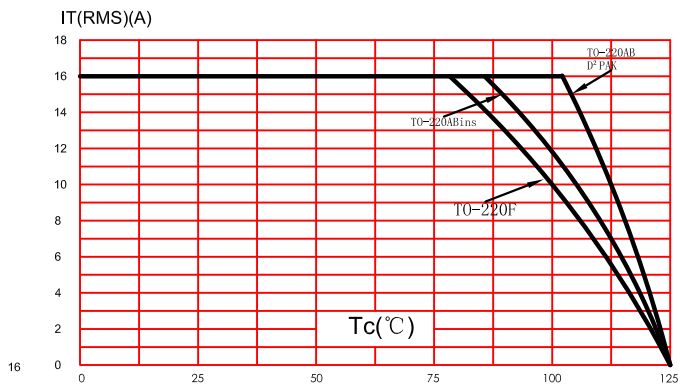


FIG.3: On-state characteristics (maximum values)

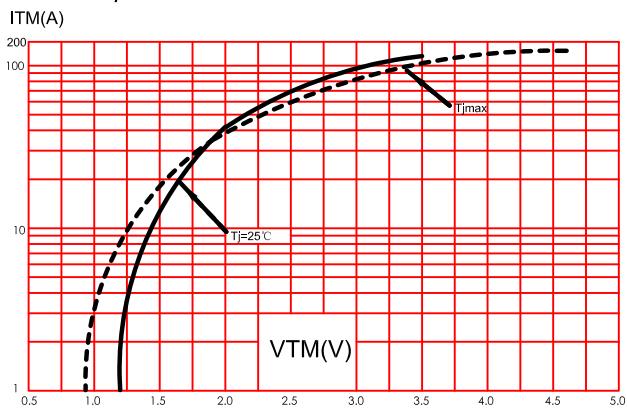


FIG.4: Surge peak on-state current versus number of cycles.

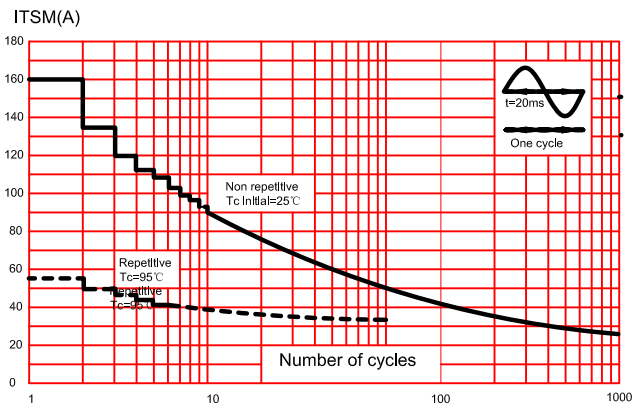


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t

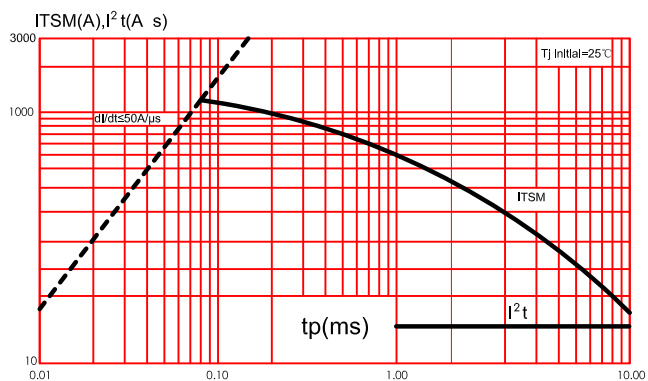


FIG.6: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

