

TO-220AK Plastic-Encapsulate Thyristors

BTA24 3Q TRIACs

MAIN CHARACTERISTICS

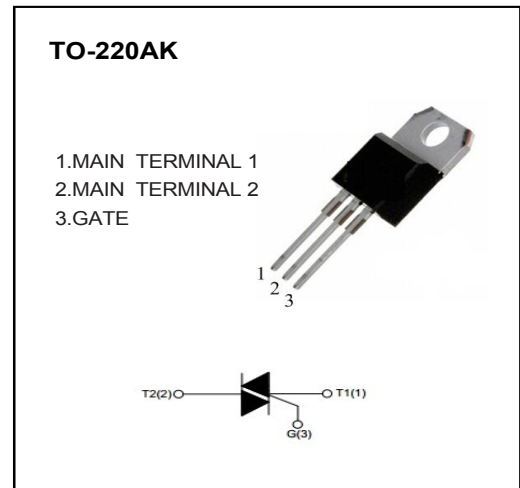
| | | |
|-------------------|-----------------|--------------|
| $I_{T(RMS)}$ | | 25A |
| V_{DRM}/V_{RRM} | BTA24-600(C/B)W | 600V |
| | BTA24-800(C/B)W | 800V |
| V_{TM} | | 1.55V |

FEATURES

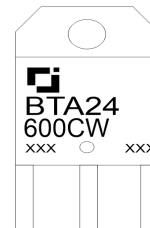
- NPNPN 5-layer Structure TRIACs
- Mesa Glass Passivated Technology
- Multi Layers Metal Electrodes
- High Junction Temperature
- Good Commutation Performance
- High dV/dt and dI/dt
- Insulating Voltage=2500V_(RMS)

APPLICATIONS

- Heater Control
- Motor Speed Controller
- Mixer



MARKING



BTA24:Series Code
 600CW:Depends on V_{DRM}
 and IGT
 XXX:Internal Code

ABSOLUTE RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | Test condition | Value | Unit | |
|-------------------|--|--|-----------------|------------------|------------------|
| V_{DRM}/V_{RRM} | Repetitive peak off-state voltage | $T_j=25^\circ\text{C}$ | BTA24-600(C/B)W | 600 | V |
| | | | BTA24-800(C/B)W | 800 | V |
| $I_{T(RMS)}$ | RMS on-state current | TO-220AK($T_c \leq 75^\circ\text{C}$), Fig. 1,2 | 25 | A | |
| I_{TSM} | Non repetitive surge peak on-state current | Full sine wave, $T_j(\text{init})=25^\circ\text{C}$, $t_p=20\text{ms}$; Fig. 3,5 | 250 | A | |
| I^2t | I^2t value | $t_p=10\text{ms}$ | 340 | A ² s | |
| dI_T/dt | Critical rate of rise of on-state current | $I_G=2 \cdot I_{GT}$, $t_r \leq 10\text{ns}$, $F=120\text{Hz}$, $T_j=125^\circ\text{C}$ | I - II - III | 50 | A/ μs |
| I_{GM} | Peak gate current | $t_p=20\mu\text{s}$, $T_j=125^\circ\text{C}$ | 4 | A | |
| $P_{G(AV)}$ | Average gate power | $T_j=125^\circ\text{C}$ | 1 | W | |
| T_{STG} | Storage temperature | | -40~+150 | °C | |
| T_j | Operating junction temperature | | -40~+125 | | |

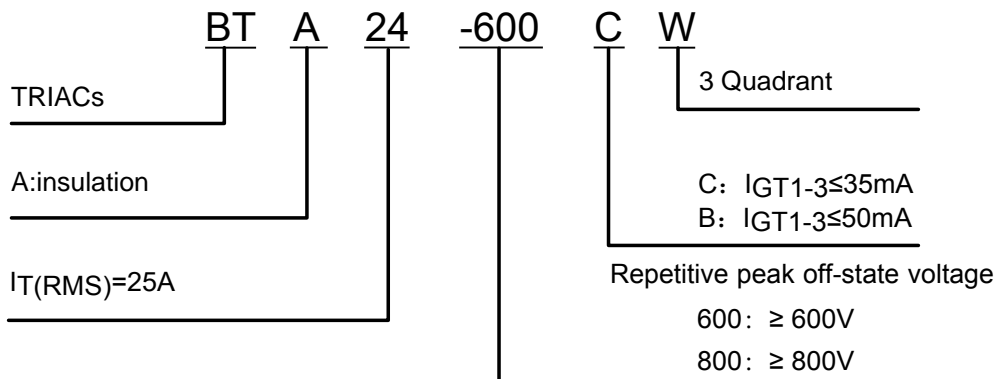
ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

| Symbol | Parameter | Test condition | Value | | Unit | |
|-------------------------------------|------------------------------------|---|--------------|-------|-------|------|
| | | | CW | BW | | |
| I _{GT} | Gate trigger current | V _D =12V, R _L =33Ω, T _j =25°C, Fig. 6 | I - II - III | ≤35 | ≤50 | mA |
| V _{GT} | Gate trigger voltage | T _j =25°C, Fig. 6 | I - II - III | ≤1.3 | | V |
| V _{GD} | Non-triggering gate voltage | V _D =V _{DRM} , T _j =125°C | | ≥0.2 | | V |
| I _H | Holding current | I _T =500mA, Fig. 6 | | ≤50 | ≤75 | mA |
| I _L | Latching current | I _G =1.2I _{GT} , Fig. 6 | I - III | ≤60 | ≤80 | mA |
| | | | II | ≤80 | ≤90 | mA |
| dV _D /dt | Critical rate of rise of off-state | V _D =67%V _{DRM} , Gate Open T _j =125°C | | ≥500 | ≥1000 | V/μs |
| V _{TM} | On-state Voltage | I _{TM} =35A, t _p =380μs, Fig. 4 | | ≤1.55 | | V |
| I _{DRM} / I _{RPM} | Repetitive peak off-state current | V _D =V _{DRM} /V _{RPM} , T _j =25°C | | ≤5 | ≤5 | μA |
| | | V _D =V _{DRM} /V _{RPM} , T _j =125°C | | ≤2.0 | ≤2.0 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|-----------------------|-----------------------|----------|----------|
| R _{th} (j-c) | Junction to case (AC) | TO-220AK | 1.7 °C/W |
| R _{th} (j-a) | Junction to ambient | TO-220AK | 60 °C/W |

PART NUMBER



CHARACTERISTICS CURVES

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

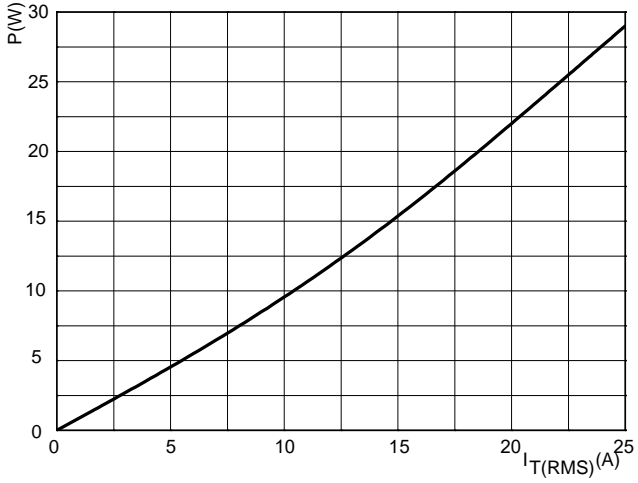


FIG.2: RMS on-state current versus case temperature (full cycle)

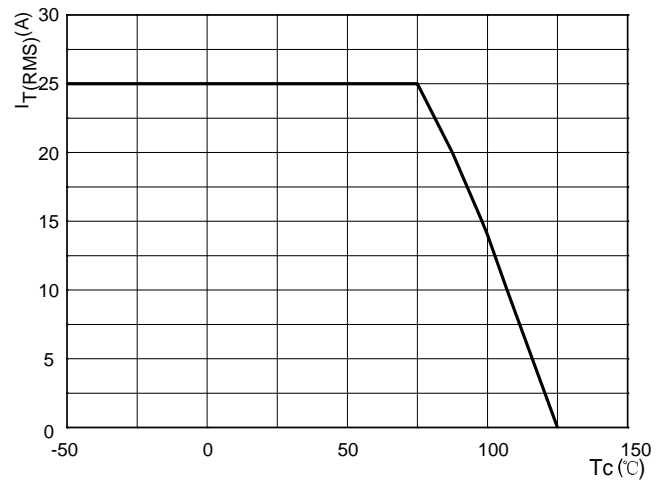


FIG.3: Surge peak on-state current versus number of cycles

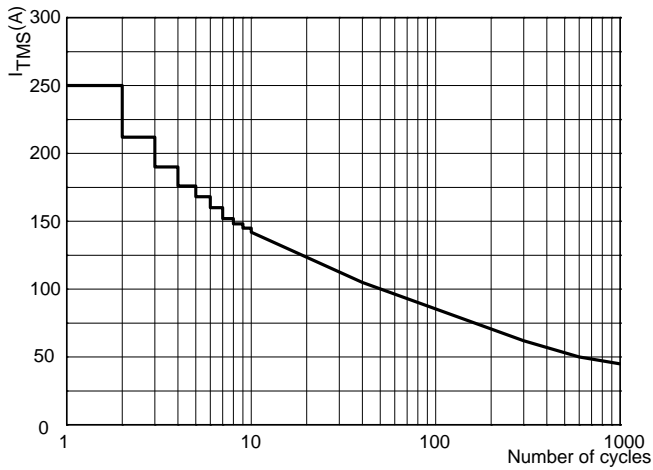


FIG.4: On-state characteristics (maximum values)

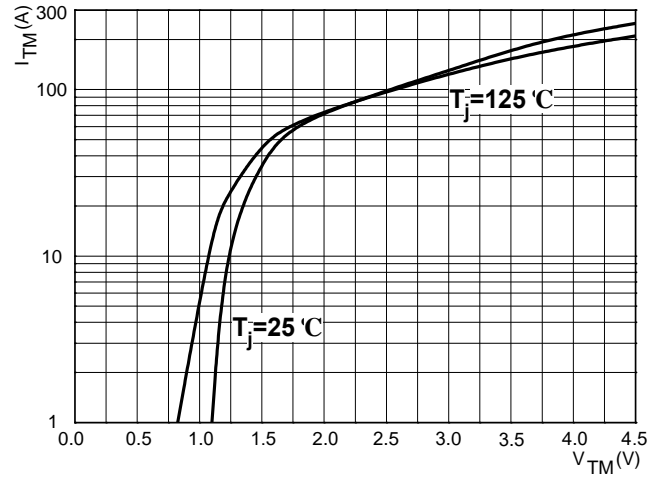


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$

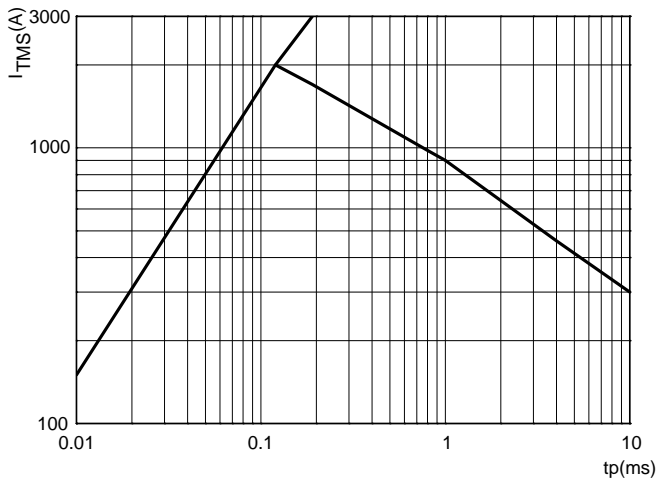
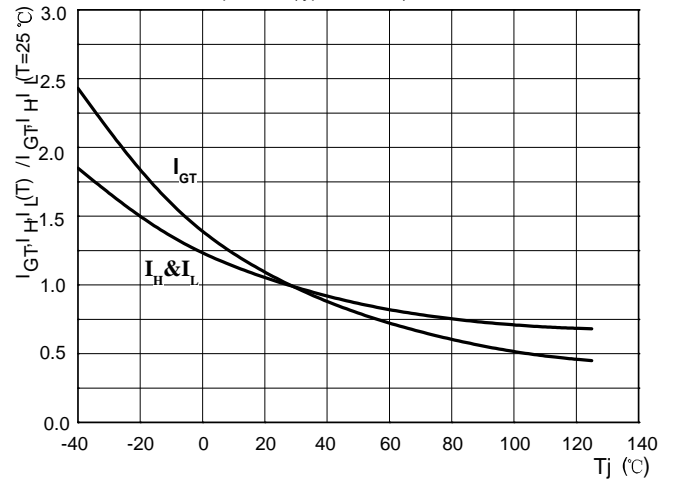
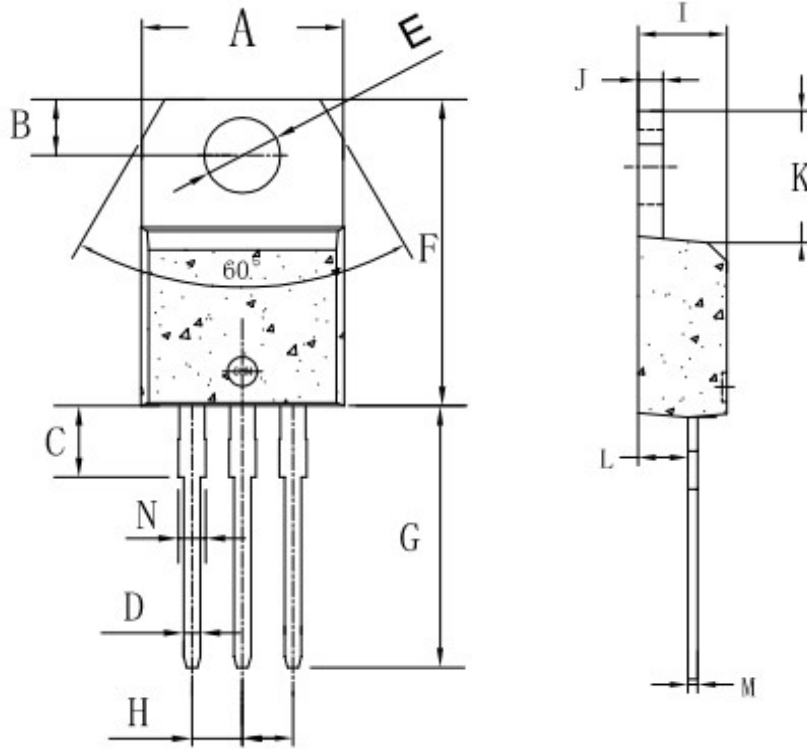


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



TO-220AK PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 9.8 | 10.4 | 0.385 | 0.409 |
| B | 2.65 | 3.1 | 0.104 | 0.122 |
| C | 2.8 | 4.2 | 0.110 | 0.165 |
| D | 0.7 | 0.92 | 0.027 | 0.036 |
| E | 3.75 | 3.95 | 0.147 | 0.155 |
| F | 14.8 | 16.1 | 0.582 | 0.633 |
| G | 13.05 | 13.6 | 0.513 | 0.535 |
| H | 2.4 | 2.7 | 0.094 | 0.106 |
| I | 4.38 | 4.61 | 0.172 | 0.181 |
| J | 1.15 | 1.36 | 0.045 | 0.053 |
| K | 5.85 | 6.82 | 0.230 | 0.268 |
| L | 2.35 | 2.75 | 0.092 | 0.108 |
| M | 0.35 | 0.65 | 0.013 | 0.025 |
| N | 1.18 | 1.42 | 0.046 | 0.055 |