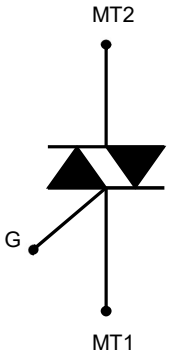
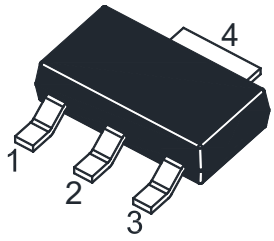
# BTA01-600Q-HAF

## Silicon Bidirectional Thyristors




1.Main Terminal 1
2.Main Terminal 2 3.Gate
SOT-223 Plastic Package

### Features

- Repetitive peak off-state voltage
- Triggering gate current
- Halogen and Antimony Free(HAF), RoHS compliant

### Applications

- AC switching
- Home appliances

**Absolute Maximum Ratings ($T_J$ = 25°C unless otherwise noted)**

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Repetitive Peak off-State Voltage | | $V_{DRM}$ | 600 | V |
| Repetitive Peak Reverse Voltage | | $V_{RRM}$ | 600 | V |
| RMS on-State Current<br>Full Sine Wave | $T_a$ = 90 ℃ | $I_{T(RMS)}$ | 1 | A |
| Peak Non-repetitive Surge Current<br>(Full Cycle, $T_j$ = 25°C) | f = 50 Hz, t = 20 ms<br>f = 60 Hz, t = 16.7 ms | $I_{TSM}$ | 8<br>8.5 | A |
| Circuit Fusing Considerations | $t_p$ = 10 ms | $I^2t$ | 0.35 | $A^2s$ |
| Critical Rate-of-Rise of on-Sate Current<br>at $I_G$ = 2 × $I_{GT}$, $t_r$ ≤ 100 ns | f = 120 Hz, $T_j$ = 125℃ | dI/dt | 20 | A/μs |
| Peak Gate Current | tp = 20 μs, $T_j$ = 125℃ | $I_{GM}$ | 1 | A |
| Average Gate Power Dissipation | $T_j$ = 125℃ | $P_{G(AV)}$ | 1 | W |
| Operating Junction Temperature Range | | $T_J$ | - 40 to + 125 | °C |
| Storage Temperature Range | | $T_{Stg}$ | - 40 to + 150 | °C |

**Thermal Characteristics**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Thermal Resistance from Junction to Ambient S = 5 $cm^2$ | $R_{\theta JA}$ | 60 | °C/W |



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**Characteristics at $T_j$ = 25℃ unless otherwise specified**

| Parameter | Symbol | Quadrant | Min. | Max. | Unit |
|---|---|---|---|---|---|
| Peak Forward or Reverse Blocking Current at $V_{DRM}$ / $V_{RRM}$ $T_j$ = 25°C<br>$T_j$ = 125°C | $I_{DRM}$, $I_{RRM}$ | -<br>- | -<br>- | 5<br>0.5 | µA<br>mA |
| Peak Forward on-State Voltage at $I_{TM}$ = 1.4 A, $t_p$ = 380 µs | $V_T$ | - | - | 1.6 | V |
| Threshold On-State Voltage at $T_j$ = 125°C | $V_{TO}$ | - | - | 0.95 | V |
| Gate Trigger Current at $V_D$ = 12 V, $R_L$ = 100 Ω | $I_{GT}$ | I-II<br>III<br>IV | -<br>-<br>- | 5<br>10<br>20 | mA |
| Holding Current at $I_T$ = 50 mA | $I_H$ | - | - | 7 | mA |
| Latching Current at $I_G$ = 1.2 $I_{GT}$ | $I_L$ | I<br>II -III-IV | -<br>- | 10<br>20 | mA |
| Gate Trigger Voltage at $V_D$ = 12 V, $R_L$ = 30 Ω | $V_{GT}$ | All | - | 1.3 | V |
| Gate Non−Trigger Voltage at $V_D$ = $V_{DRM}$, $R_L$ = 3.3 KΩ, $T_j$ = 125°C | $V_{GD}$ | All | 0.2 | - | V |

## Electrical Characteristics Curves

Fig.1 Maximum Power Dissipation vs. RMS on-State Current (full cycle)

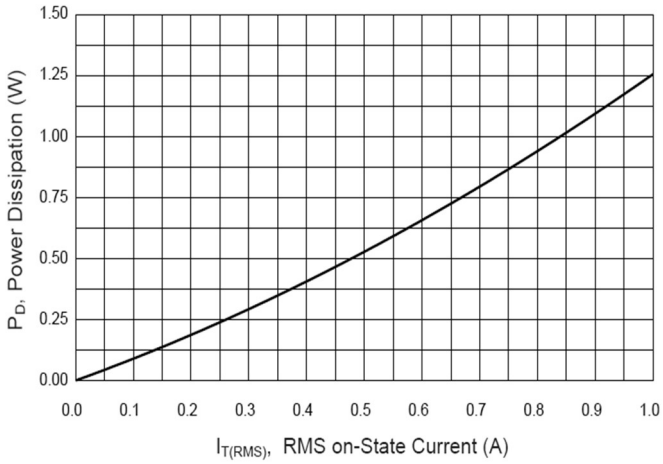



Fig.2 RMS on-State Current vs.$T_a$

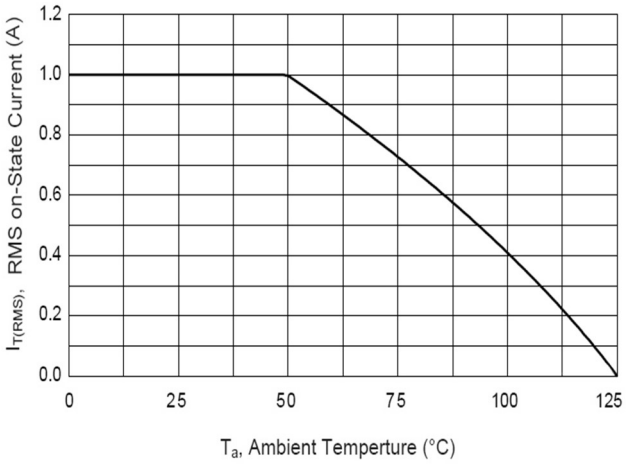



Fig.3 Thermal Resistance Junction to Ambient vs. Copper Surface

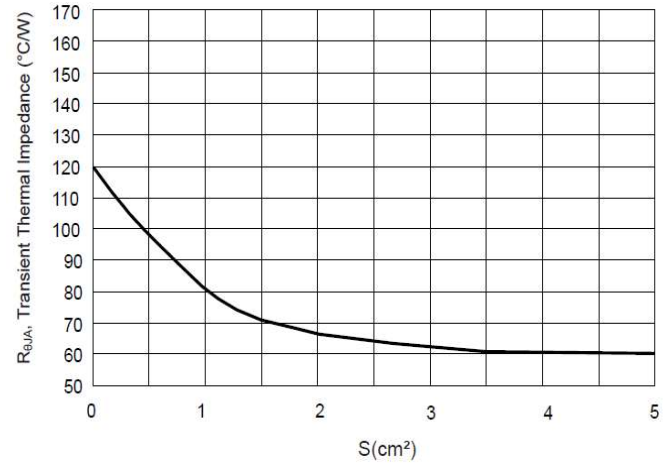



Fig.4 Relative Variation of Thermal Impedance vs. Pulse Duration

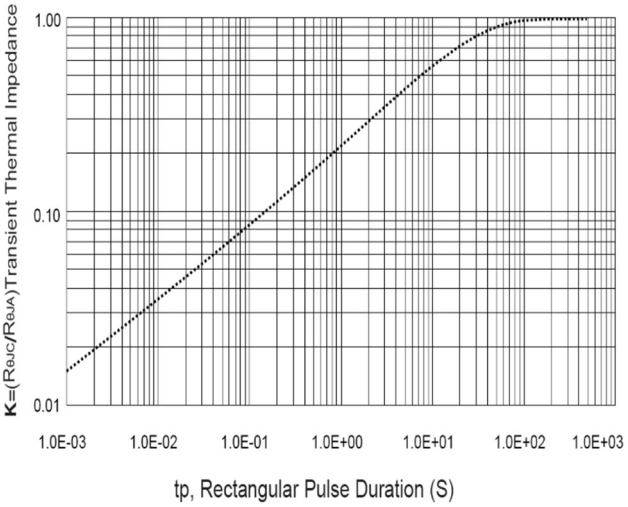



Fig.5 maximum on-State Characteristics

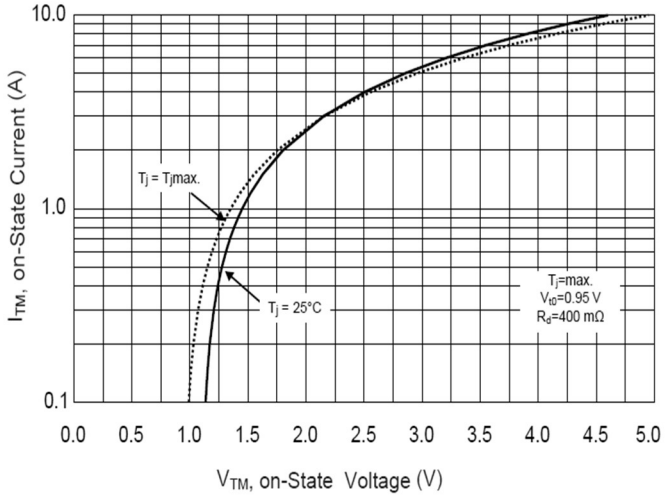
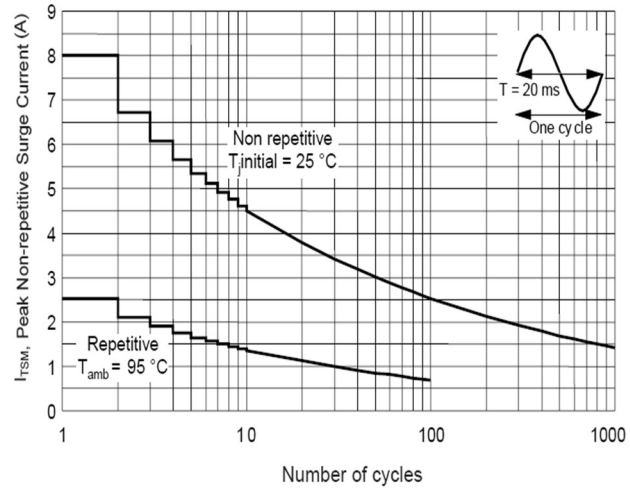
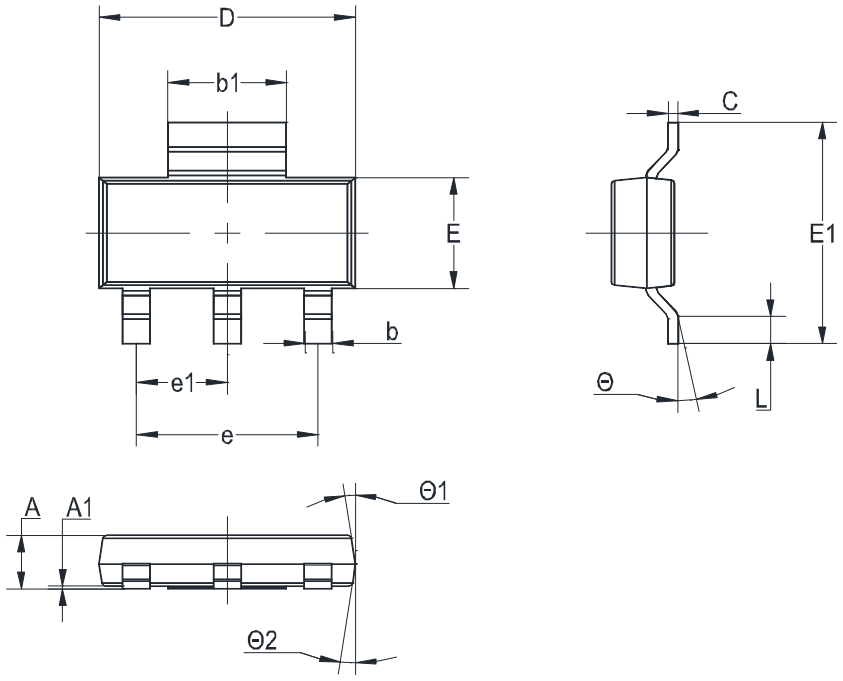



Fig.6 Surge Peak on-State Current vs. number of Cycles



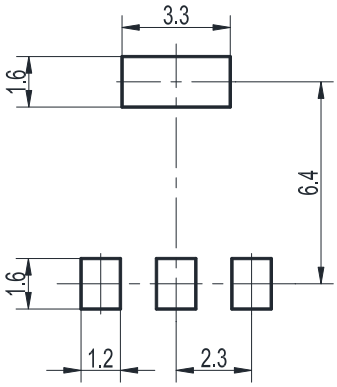
# BTA01-600Q-HAF

## Package Outline (Dimensions in mm) SOT-223




| Unit | A | A1 | b | b1 | C | D | E | E1 | e | e1 | L | Θ | Θ1 | Θ2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.8<br>1.5 | 0.1<br>MAX | 0.8<br>0.6 | 3.1<br>2.9 | 0.32<br>0.22 | 6.7<br>6.3 | 3.7<br>3.3 | 7.3<br>6.7 | 4.6<br>TYP | 2.3<br>TYP | 1.1<br>0.7 | 10°<br>0° | 7°<br>0° | 7°<br>0° |

## Recommended Soldering Footprint




### Packing information

| Package | Tape Width (mm) | Pitch | | Reel Size | | Per Reel Packing Quantity |
|---|---|---|---|---|---|---|
| | | mm | inch | mm | inch | |
| SOT-223 | 12 | 8 ± 0.1 | 0.315 ± 0.004 | 330 | 13 | 3,000 |

## Marking information

" BTA01-600Q " = Part No.

" ****** " = Date Code Marking

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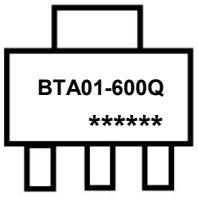




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