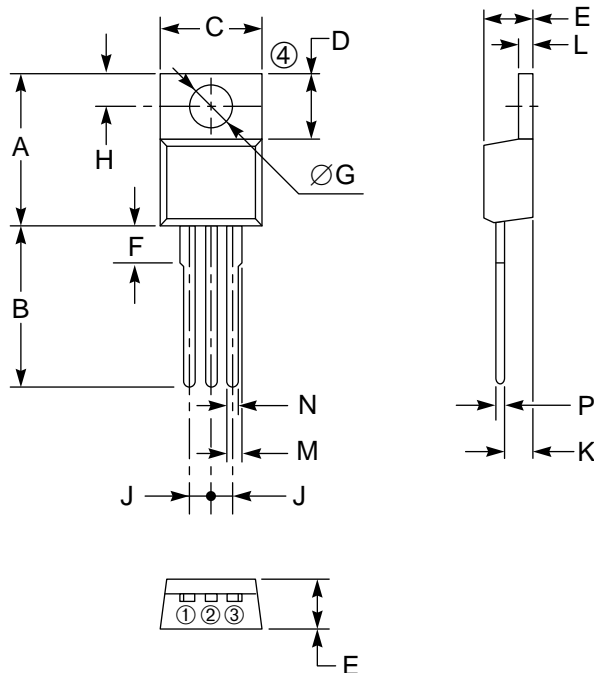


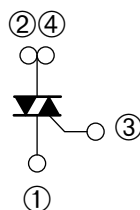
### Triac 6 Amperes/400-600 Volts

#### OUTLINE DRAWING



#### CONNECTION DIAGRAM

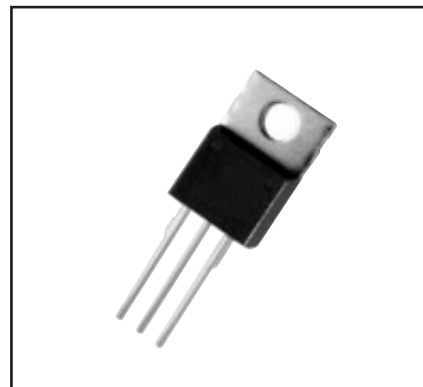
- ① T1 TERMINAL
- ② T2 TERMINAL
- ③ GATE
- ④ T2 TERMINAL



Outline Drawing (Conforms to TO-220)

| Dimensions | Inches             | Millimeters    |
|------------|--------------------|----------------|
| A          | 0.63 Max.          | 16.0 Max.      |
| B          | 0.49 Max.          | 12.5 Max.      |
| C          | 0.41 Max.          | 10.5 Max.      |
| D          | 0.28               | 7.0            |
| E          | 0.18               | 4.5            |
| F          | 0.15 Max.          | 3.8 Max.       |
| G          | 0.142 ± 0.008 Dia. | 3.6 ± 0.2 Dia. |
| H          | 0.125 ± 0.008      | 3.2            |

| Dimensions | Inches     | Millimeters |
|------------|------------|-------------|
| J          | 0.99       | 2.54        |
| K          | 0.10       | 2.6         |
| L          | 0.051 Min. | 1.3         |
| M          | 0.051      | 1.3         |
| N          | 0.039      | 1.0         |
| P          | 0.031      | 0.8         |
| Q          | 0.020      | 0.5         |



#### Description:

A triac is a solid state silicon AC switch which may be gate triggered from an off-state to an on-state for either polarity of applied voltage.

#### Features:

- ☐ Glass Passivation
- ☐ Selected for Inductive Loads

#### Applications:

- ☐ AC Switch
- ☐ Heating
- ☐ Motor Controls
- ☐ Lighting
- ☐ Solid State Relay
- ☐ Copying Machine
- ☐ Switch Mode Power Supply

#### Ordering Information:

Example: Select the complete seven, eight or nine digit part number you desire from the table - i.e. BCR6AM-8 is a 400 Volt, 6 Ampere Triac

| Type   | V <sub>DRM</sub><br>Volts | Code      | Inductive<br>Load* |
|--------|---------------------------|-----------|--------------------|
| BCR6AM | 400<br>600                | -8<br>-12 | L                  |

\*For inductive load, add L.



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

**BCR6AM**

**Triac**

6 Amperes/400-600 Volts

**Absolute Maximum Ratings,  $T_a = 25^\circ\text{C}$  unless otherwise specified**

| Ratings   | Symbol              | BCR6AM-8   | BCR6AM-12  | Units                  |
|---|---------------------|------------|------------|------------------------|
| Repetitive Peak Off-state Voltage               | $V_{\text{DRM}}$    | 400        | 600        | Volts                  |
| Non-repetitive Peak Off-state Voltage           | $V_{\text{DSM}}$    | 500        | 720        | Volts                  |
| On-state Current, $T_c = 103^\circ\text{C}$     | $I_{\text{T(RMS)}}$ | 6          | 6          | Amperes                |
| Non-repetitive Peak Surge, One Cycle (60 Hz)    | $I_{\text{TSM}}$    | 60         | 60         | Amperes                |
| $I^2t$ for Fusing, $t = 8.3$ msec               | $I^2t$              | 15         | 15         | $\text{A}^2\text{sec}$ |
| Peak Gate Power Dissipation, 20 $\mu\text{sec}$ | $P_{\text{GM}}$     | 5          | 5          | Watts                  |
| Average Gate Power Dissipation                  | $P_{\text{G(avg)}}$ | 0.5        | 0.5        | Watts                  |
| Peak Gate Current                               | $I_{\text{GM}}$     | 2          | 2          | Amperes                |
| Peak Gate Voltage                               | $V_{\text{GM}}$     | 10         | 10         | Volts                  |
| Storage Temperature                             | $T_{\text{stg}}$    | -40 to 125 | -40 to 125 | $^\circ\text{C}$       |
| Operating Temperature                           | $T_j$               | -40 to 125 | -40 to 125 | $^\circ\text{C}$       |
| Weight  | —                   | 2.3        | 2.3        | Grams                  |



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**BCR6AM**

**Triac**

6 Amperes/400-600 Volts

**Electrical and Thermal Characteristics,  $T_j = 25^\circ\text{C}$  unless otherwise specified**

| Characteristics             | Symbol          | Test Conditions (Trigger Mode) |                |                |                | BCR6AM |      |      | Units |
|-----------------------------|-----------------|--------------------------------|----------------|----------------|----------------|--------|------|------|-------|
|                             |                 | V <sub>D</sub>                 | R <sub>L</sub> | R <sub>G</sub> | T <sub>j</sub> | Min.   | Typ. | Max. |       |
| Gate Parameters             |                 |                                |                |                |                |        |      |      |       |
| DC Gate Trigger Current     |                 |                                |                |                |                |        |      |      |       |
| MT2+ Gate+                  | I <sub>GT</sub> | 6V                             | 6Ω             | 330Ω           | 25°C           | –      | –    | 30   | mA    |
| MT2+ Gate–                  |                 | 6V                             | 6Ω             | 330Ω           | 25°C           | –      | –    | 30   | mA    |
| MT2– Gate–                  |                 | 6V                             | 6Ω             | 330Ω           | 25°C           | –      | –    | 30   | mA    |
| DC Gate Trigger Voltage     |                 |                                |                |                |                |        |      |      |       |
| MT2+ Gate+                  | V <sub>GT</sub> | 6V                             | 6Ω             | 330Ω           | 25°C           | –      | –    | 1.5  | Volts |
| MT2+ Gate–                  |                 | 6V                             | 6Ω             | 330Ω           | 25°C           | –      | –    | 1.5  | Volts |
| MT2– Gate–                  |                 | 6V                             | 6Ω             | 330Ω           | 25°C           | –      | –    | 1.5  | Volts |
| DC Gate Non-trigger Voltage |                 |                                |                |                |                |        |      |      |       |
| All                         | V <sub>GD</sub> | 1/2 V <sub>DRM</sub>           | –              | –              | 125°C          | 0.2    | –    | –    | Volts |

## BCR6AM

### Triac

6 Amperes/400-600 Volts

## Electrical and Thermal Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

| Characteristics   | Symbol        | Test Conditions   | Min. | Typ. | Max. | Units                  |
|---|---------------|---|------|------|------|------------------------|
| Thermal Resistance, Junction-to-case  | $R_{th(j-c)}$ | —   | —    | —    | 2.5  | $^\circ\text{C/W}$     |
| Voltage – Blocking State<br>Repetitive Off-state Current  | $I_{DRM}$     | Gate Open Circuited,<br>$V_D = V_{DRM}$ , $T_j = 125^\circ\text{C}$ | —    | —    | 2    | mA                     |
| Current – Conducting State<br>Peak On-state Voltage   | $V_{TM}$      | $T_c = 25^\circ\text{C}$ ,<br>$I_{TM} = 9\text{A Peak}$             | —    | —    | 1.7  | Volts                  |
| Critical Rate-of-rise of Commutating<br>Off-state Voltage (Commutating $dv/dt$ )<br>▲ for inductive load (L)<br>(Switching) | $(dv/dt)_C$   | —   | —    | —    | —    | $\text{V}/\mu\text{s}$ |

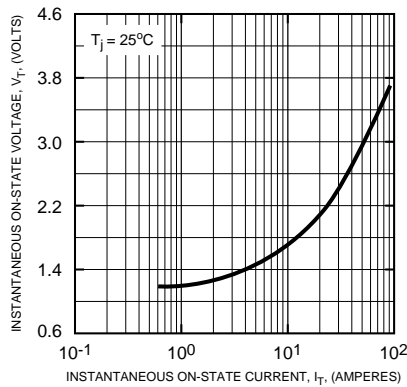
| $\Delta$ Part<br>Number | $V_{DRM}$<br>(Volts) | Commutating<br>$dv/dt$ , $(dv/dt)_C$<br>( $\text{V}/\mu\text{sec}$ )<br>Minimum | Test Condition  | Commutating Voltage &<br>Current Waveform<br>(Inductive Load) |
|-------------------------|----------------------|---|---|---|
| BCR6AM-8L               | 400                  | 10  | $T_j = 125^\circ\text{C}$ ,   |   |
| BCR6AM-12L              | 400                  | 10  | Rate of Decay<br>On-state<br>Commutating Current<br>$(di/dt)_C = -3\text{A/msec}$ :<br>Peak Off-state<br>Voltage<br>$V_D = 400\text{V}$ |   |

## BCR6AM

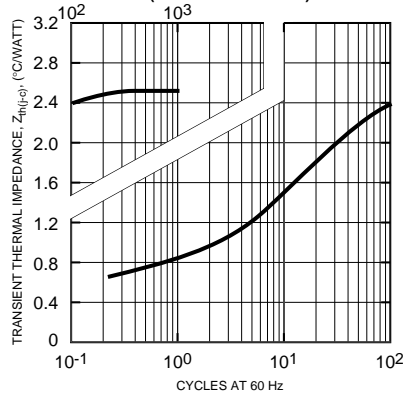
### Triac

6 Amperes/400-600 Volts

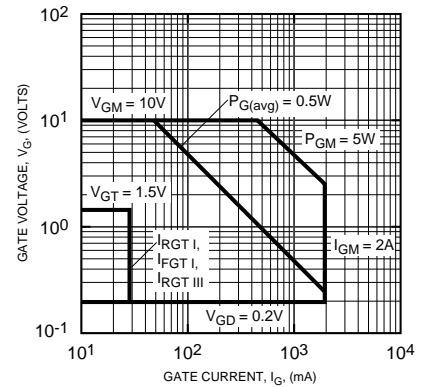
**MAXIMUM ON-STATE CHARACTERISTICS**



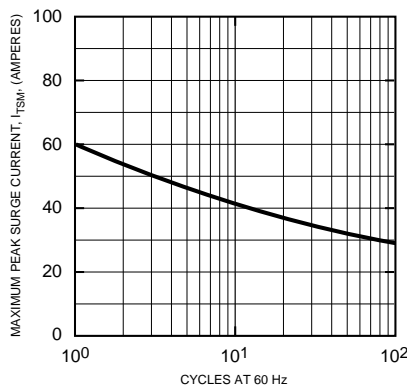
**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION-TO-CASE)**



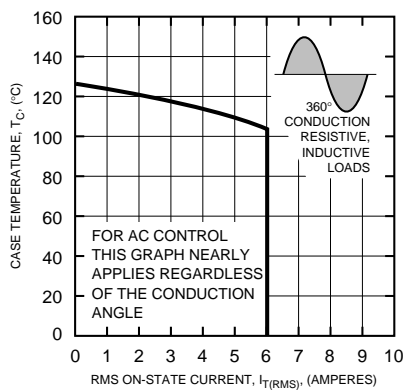
**GATE CHARACTERISTICS (I, II, III)**



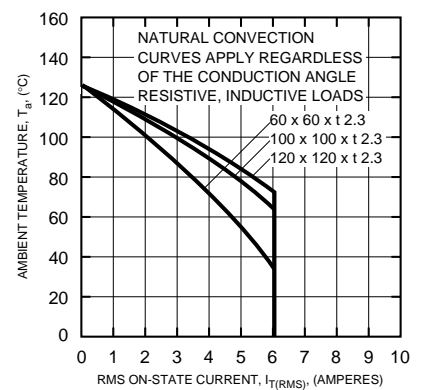
**MAXIMUM SURGE CURRENT FOLLOWING RATED LOAD CONDITIONS**



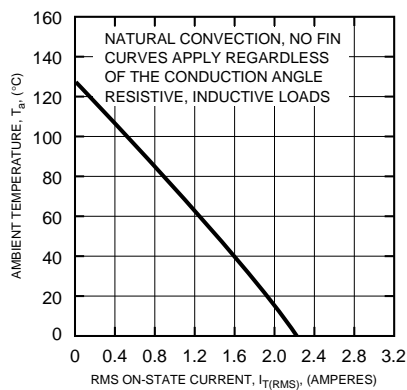
**ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT**



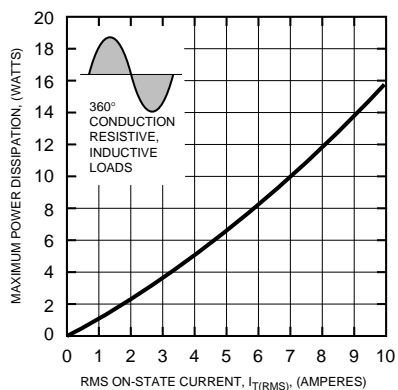
**ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT**



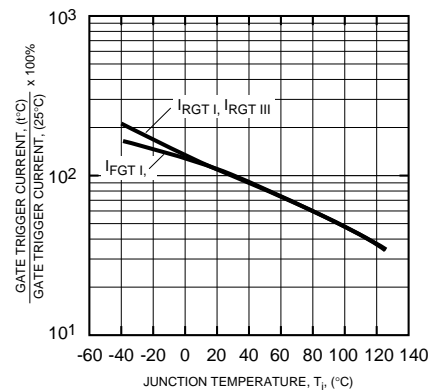
**ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT**



**MAXIMUM ON-STATE POWER DISSIPATION**



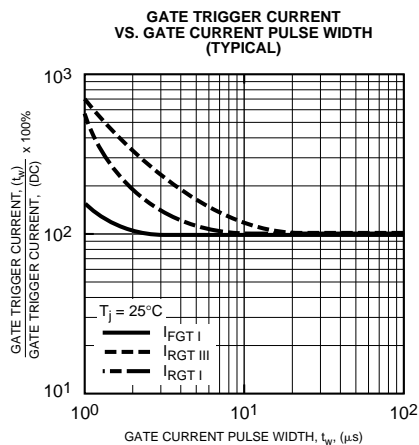
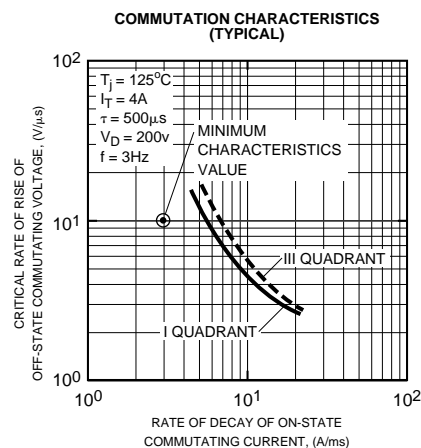
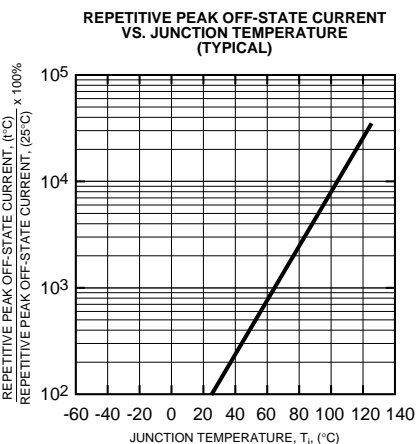
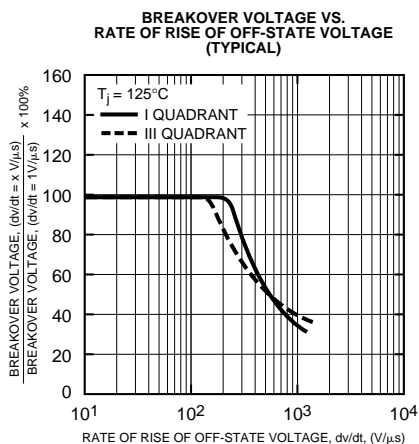
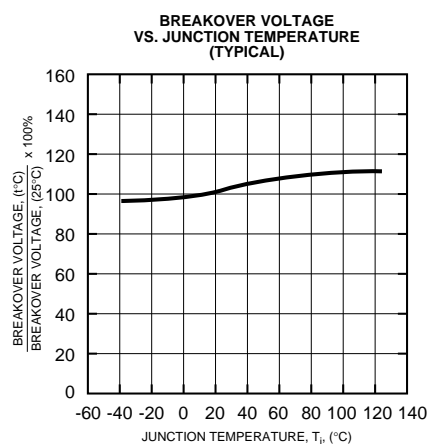
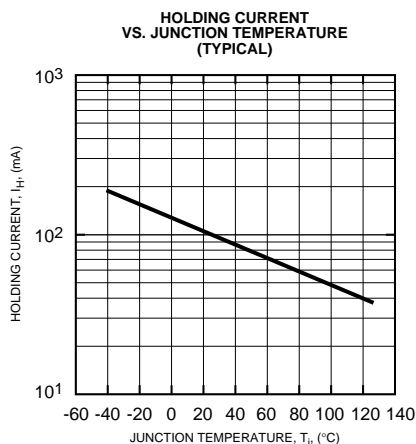
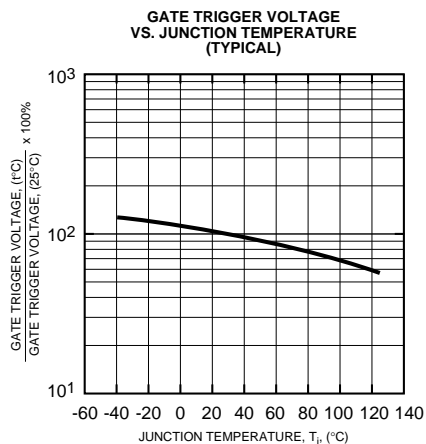
**GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



## BCR6AM

### Triac

6 Amperes/400-600 Volts



### GATE TRIGGER CHARACTERISTICS TEST CIRCUITS

