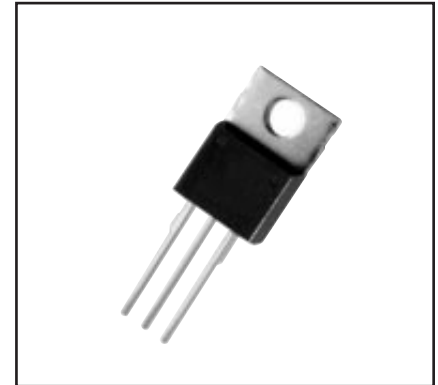


Outline Drawing (Conforms to TO-220)

| 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                       | -8   | L                  |
|        | 600                       | -12  |                    |

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

| Ratings   | Symbol       | BCR6AM-8   | BCR6AM-12  | Units                  |
|---|--------------|------------|------------|------------------------|
| Repetitive Peak Off-state Voltage               | $V_{DRM}$    | 400        | 600        | Volts                  |
| Non-repetitive Peak Off-state Voltage           | $V_{DSM}$    | 500        | 720        | Volts                  |
| On-state Current, $T_c = 103^\circ\text{C}$     | $I_{T(RMS)}$ | 6          | 6          | Amperes                |
| Non-repetitive Peak Surge, One Cycle (60 Hz)    | $I_{TSM}$    | 60         | 60         | Amperes                |
| $I^2t$ for Fusing, $t = 8.3\text{ msec}$        | $I^2t$       | 15         | 15         | $\text{A}^2\text{sec}$ |
| Peak Gate Power Dissipation, 20 $\mu\text{sec}$ | $P_{GM}$     | 5          | 5          | Watts                  |
| Average Gate Power Dissipation                  | $P_{G(avg)}$ | 0.5        | 0.5        | Watts                  |
| Peak Gate Current                               | $I_{GM}$     | 2          | 2          | Amperes                |
| Peak Gate Voltage                               | $V_{GM}$     | 10         | 10         | Volts                  |
| Storage Temperature                             | $T_{stg}$    | -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,  $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified**

| Characteristics             | Symbol   | Test Conditions (Trigger Mode) |            |              |                      | BCR6AM |      |      | Units |
|-----------------------------|----------|--------------------------------|------------|--------------|----------------------|--------|------|------|-------|
|                             |          | $V_D$                          | $R_L$      | $R_G$        | $T_j$                | Min.   | Typ. | Max. |       |
| Gate Parameters             |          |                                |            |              |                      |        |      |      |       |
| DC Gate Trigger Current     |          |                                |            |              |                      |        |      |      |       |
| MT2+ Gate+                  | $I_{GT}$ | 6V                             | 6 $\Omega$ | 330 $\Omega$ | 25 $^\circ\text{C}$  | –      | –    | 30   | mA    |
| MT2+ Gate–                  |          | 6V                             | 6 $\Omega$ | 330 $\Omega$ | 25 $^\circ\text{C}$  | –      | –    | 30   | mA    |
| MT2– Gate–                  |          | 6V                             | 6 $\Omega$ | 330 $\Omega$ | 25 $^\circ\text{C}$  | –      | –    | 30   | mA    |
| DC Gate Trigger Voltage     |          |                                |            |              |                      |        |      |      |       |
| MT2+ Gate+                  | $V_{GT}$ | 6V                             | 6 $\Omega$ | 330 $\Omega$ | 25 $^\circ\text{C}$  | –      | –    | 1.5  | Volts |
| MT2+ Gate–                  |          | 6V                             | 6 $\Omega$ | 330 $\Omega$ | 25 $^\circ\text{C}$  | –      | –    | 1.5  | Volts |
| MT2– Gate–                  |          | 6V                             | 6 $\Omega$ | 330 $\Omega$ | 25 $^\circ\text{C}$  | –      | –    | 1.5  | Volts |
| DC Gate Non-trigger Voltage |          |                                |            |              |                      |        |      |      |       |
| All                         | $V_{GD}$ | 1/2 $V_{DRM}$                  | –          | –            | 125 $^\circ\text{C}$ | 0.2    | –    | –    | Volts |

**BCR6AM**

**Triac**

6 Amperes/400-600 Volts

**Electrical and Thermal Characteristics,  $T_j = 25\text{ }^\circ\text{C}$  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 $dv/dt$ ) | $(dv/dt)_C$   | –   | –    | –    | –    | $\text{V}/\mu\text{s}$ |

▲ for inductive load (L)  
(Switching)

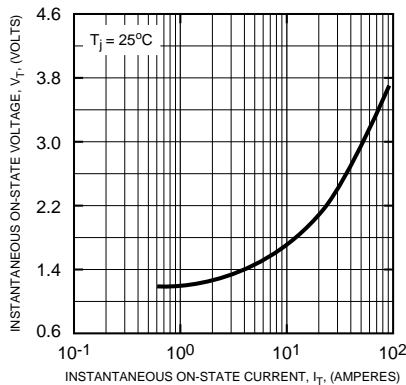
| $\Delta$ Part<br>Number | $V_{DRM}$<br>(Volts) | Commutating<br>$dv/dt$ , $(dv/dt)_C$ |   | Test Condition              | Commutating Voltage &<br>Current Waveform<br>(Inductive Load) |
|-------------------------|----------------------|--------------------------------------|---|-----------------------------|---|
|                         |                      | $(V/\mu\text{sec})$<br>Minimum       |   |                             |   |
| 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

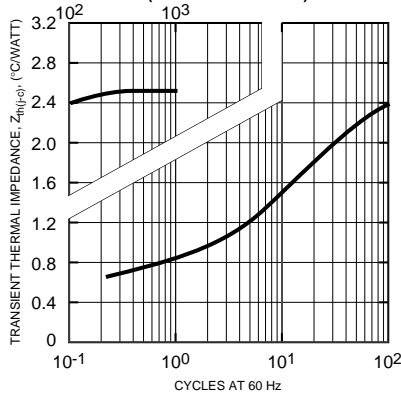
### Triac

6 Amperes/400-600 Volts

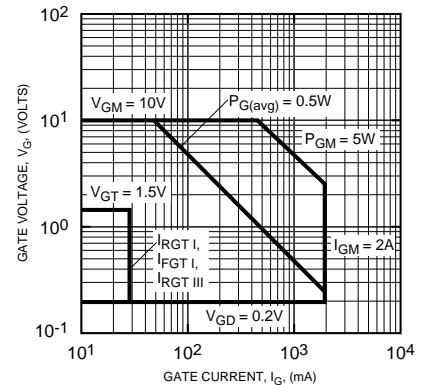
**MAXIMUM ON-STATE CHARACTERISTICS**



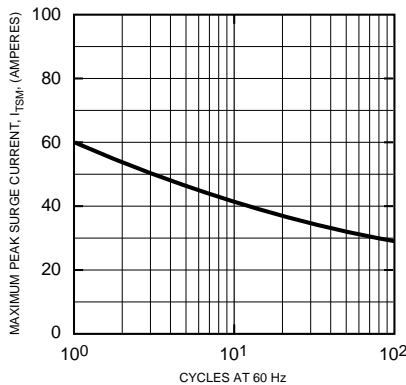
**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION-TO-CASE)**



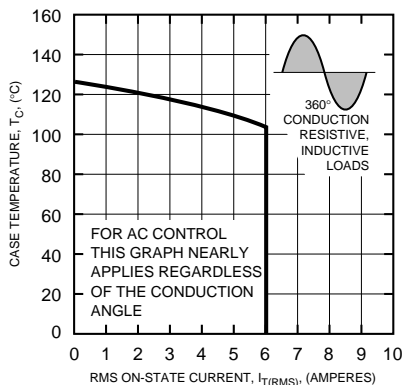
**GATE CHARACTERISTICS (I, II, III)**



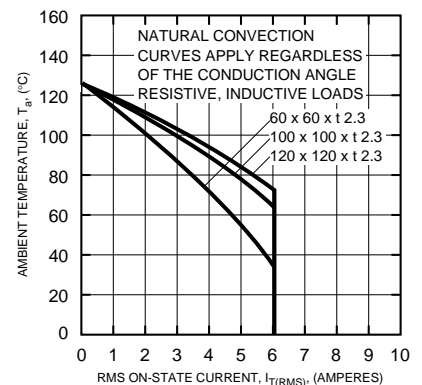
**MAXIMUM SURGE CURRENT FOLLOWING RATED LOAD CONDITIONS**



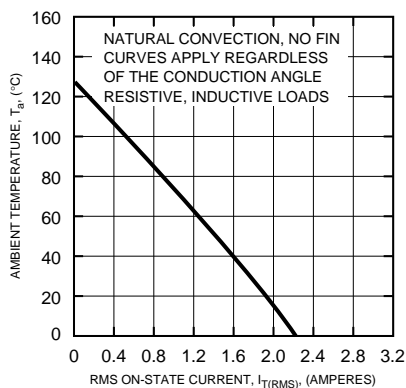
**ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT**



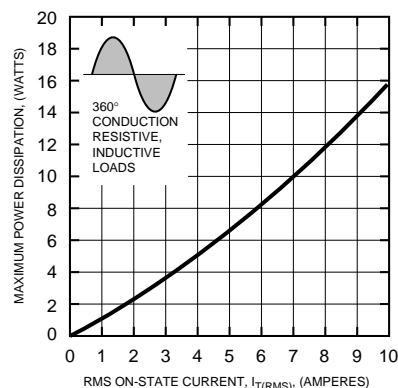
**ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT**



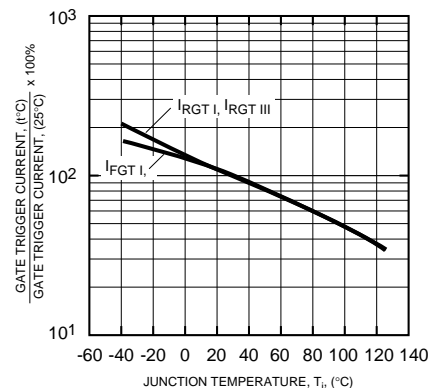
**ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT**



**MAXIMUM ON-STATE POWER DISSIPATION**



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

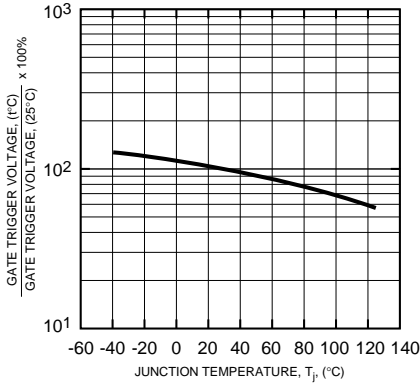


## BCR6AM

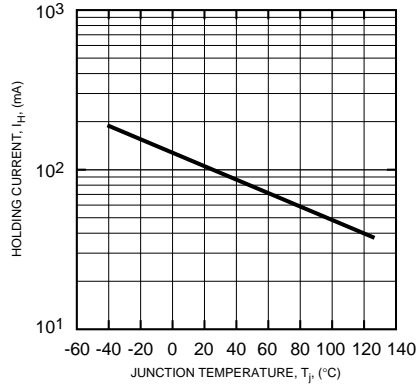
### Triac

6 Amperes/400-600 Volts

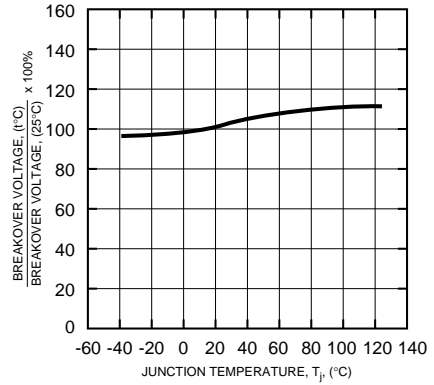
**GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)**



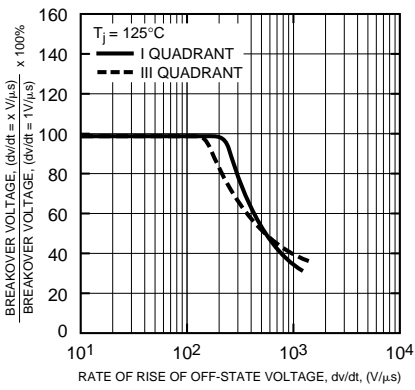
**HOLDING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



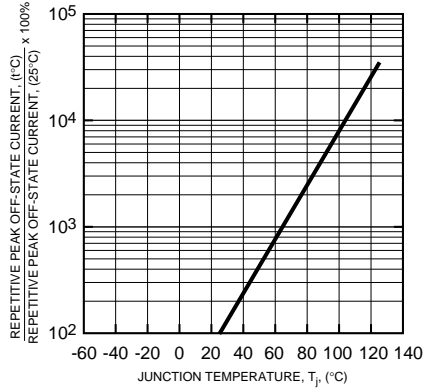
**BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)**



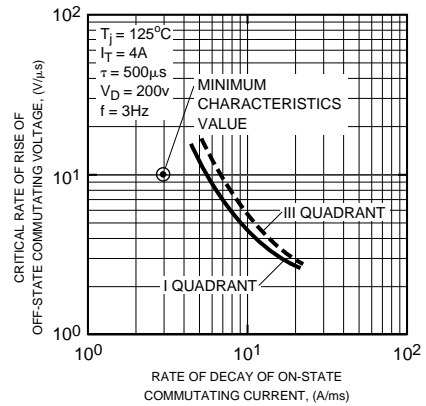
**BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE (TYPICAL)**



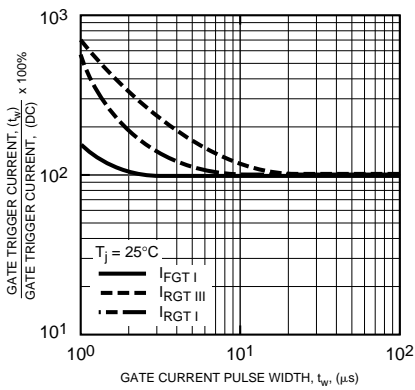
**REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



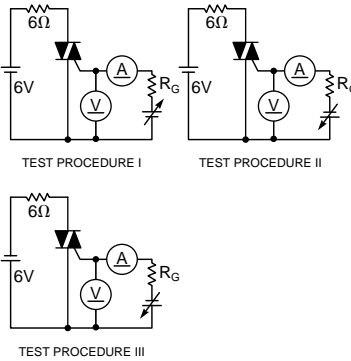
**COMMUTATION CHARACTERISTICS (TYPICAL)**



**GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH (TYPICAL)**



**GATE TRIGGER CHARACTERISTICS TEST CIRCUITS**



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