

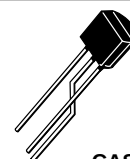
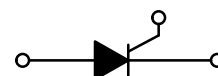
## Silicon Controlled Rectifiers

PNPN devices designed for high volume, line-powered consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing and detection circuits. Supplied in an inexpensive TO-226AA (TO-92) package which is readily adaptable for use in automatic insertion equipment.

- Sensitive Gate Trigger Current — 200  $\mu$ A Maximum
- Low Reverse and Forward Blocking Current — 100  $\mu$ A Maximum,  $T_C = 125^\circ\text{C}$
- Low Holding Current — 5 mA Maximum
- Glass-Passivated Surface for Reliability and Uniformity

**BRX44\***  
**thru**  
**BRX47\***  
**BRX49\***

**SCRs**  
**0.8 AMPERE RMS**  
**30 TO 400 VOLTS**



**CASE 29-04**  
**(TO-226AA)**  
**STYLE 3**  
**WITH TO-18 LEADFORM\***

### MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted.)

| Rating                                                                                                                 | Symbol                | Value                         | Unit                 |
|------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------|----------------------|
| Peak Repetitive Forward and Reverse Blocking Voltage<br>( $T_J = 25$ to $125^\circ\text{C}$ , $R_{GK} = 1000 \Omega$ ) | $V_{DRM}$ , $V_{RRM}$ | 30<br>60<br>100<br>200<br>400 | Volts                |
| Forward Current RMS<br>(All Conduction Angles)                                                                         | $I_T(\text{RMS})$     | 0.8                           | Amp                  |
| Peak Forward Surge Current, $T_A = 25^\circ\text{C}$<br>(1/2 Cycle, Sine Wave, 60 Hz)                                  | $I_{TSM}$             | 8                             | Amps                 |
| Circuit Fusing Considerations, $T_A = 25^\circ\text{C}$<br>( $t = 8.3$ ms)                                             | $I^2t$                | 0.15                          | $\text{A}^2\text{s}$ |
| Peak Gate Power — Forward, $T_A = 25^\circ\text{C}$                                                                    | $P_{GM}$              | 0.1                           | Watt                 |
| Peak Gate Current Forward, $T_A = 25^\circ\text{C}$<br>(300 $\mu\text{s}$ , 120 PPS)                                   | $I_{GFM}$             | 1                             | Amp                  |
| Peak Gate Voltage — Reverse                                                                                            | $V_{GRM}$             | 5                             | Volts                |
| Operating Junction Temperature Range @ Rated<br>$V_{RRM}$ and $V_{DRM}$                                                | $T_J$                 | $-40$ to $+125$               | $^\circ\text{C}$     |
| Storage Temperature Range                                                                                              | $T_{stg}$             | $-40$ to $+150$               | $^\circ\text{C}$     |
| Lead Solder Temperature<br>( $< 1.5$ mm from case, 10 s max.)                                                          |                       | $+230$                        | $^\circ\text{C}$     |

\*European part numbers only . Package is Case 29 with Leadform 18.

1.  $V_{DRM}$  and  $V_{RRM}$  for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

# BRX44 thru BRX47 BRX49

## THERMAL CHARACTERISTICS

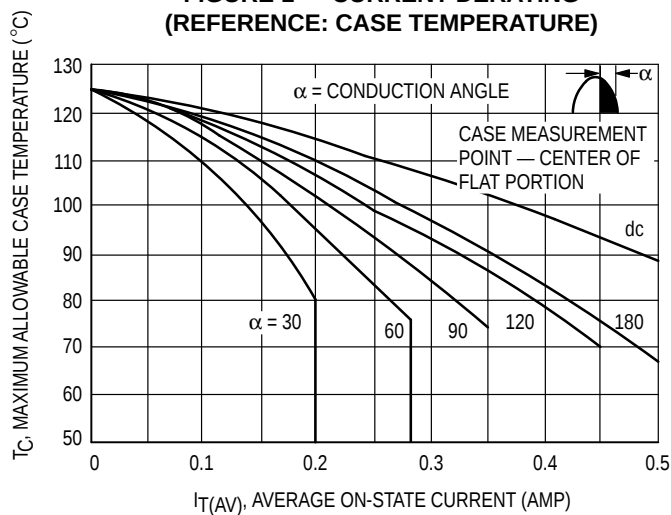
| Characteristic                          | Symbol          | Max | Unit                        |
|-----------------------------------------|-----------------|-----|-----------------------------|
| Thermal Resistance, Junction to Case    | $R_{\theta JC}$ | 75  | $^{\circ}\text{C}/\text{W}$ |
| Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 200 | $^{\circ}\text{C}/\text{W}$ |

## ELECTRICAL CHARACTERISTICS ( $T_C = 25^{\circ}\text{C}$ , $R_{GK} = 1000\ \Omega$ unless otherwise noted.)

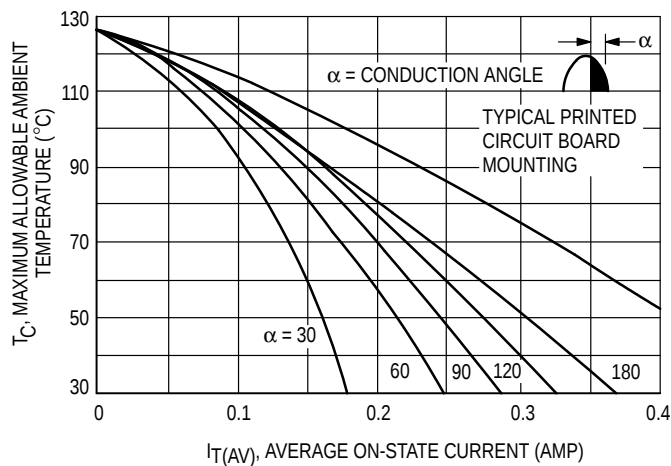
| Characteristic                                                                                                                                    | Symbol    | Min           | Max             | Unit          |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---------------|-----------------|---------------|
| Peak Forward Blocking Current<br>( $V_D = \text{Rated } V_{DRM}$ @ $T_C = 125^{\circ}\text{C}$ )                                                  | $I_{DRM}$ | —             | 100             | $\mu\text{A}$ |
| Peak Reverse Blocking Current<br>( $V_R = \text{Rated } V_{RRM}$ @ $T_C = 125^{\circ}\text{C}$ )                                                  | $I_{RRM}$ | —             | 100             | $\mu\text{A}$ |
| Forward "On" Voltage <sup>(1)</sup><br>( $I_{TM} = 1\ \text{A Peak}$ @ $T_A = 25^{\circ}\text{C}$ )                                               | $V_{TM}$  | —             | 1.7             | Volts         |
| Gate Trigger Current (Continuous dc) <sup>(2)</sup><br>(Anode Voltage = 7 Vdc, $R_L = 100\ \Omega$ )                                              | $I_{GT}$  | —             | 200             | $\mu\text{A}$ |
| Gate Trigger Voltage (Continuous dc)<br>(Anode Voltage = 7 Vdc, $R_L = 100\ \Omega$ )<br>(Anode Voltage = Rated $V_{DRM}$ , $R_L = 100\ \Omega$ ) | $V_{GT}$  | —<br>—<br>0.1 | 0.8<br>1.2<br>— | Volts         |
| Holding Current<br>(Anode Voltage = 7 Vdc, initiating current = 20 mA)                                                                            | $I_H$     | —<br>—        | 5<br>10         | mA            |

- Forward current applied for 1 ms maximum duration, duty cycle  $\leq 1\%$ .
- $R_{GK}$  current is not included in measurement.

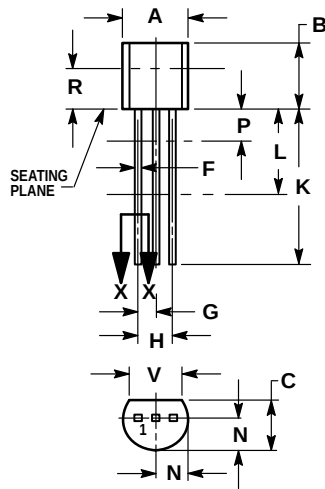
**FIGURE 1 — CURRENT DERATING  
(REFERENCE: CASE TEMPERATURE)**



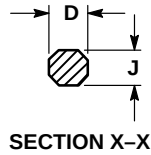
**FIGURE 2 — CURRENT DERATING  
(REFERENCE: AMBIENT TEMPERATURE)**



## PACKAGE DIMENSIONS



STYLE 3:  
 PIN 1. ANODE  
 2. ANODE  
 3. CATHODE



## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K. MINIMUM LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

| DIM | INCHES |       | MILLIMETERS |      |
|-----|--------|-------|-------------|------|
|     | MIN    | MAX   | MIN         | MAX  |
| A   | 0.175  | 0.205 | 4.45        | 5.20 |
| B   | 0.170  | 0.210 | 4.32        | 5.33 |
| C   | 0.125  | 0.165 | 3.18        | 4.19 |
| D   | 0.016  | 0.022 | 0.41        | 0.55 |
| F   | 0.016  | 0.019 | 0.41        | 0.48 |
| G   | 0.045  | 0.055 | 1.15        | 1.39 |
| H   | 0.095  | 0.105 | 2.42        | 2.66 |
| J   | 0.015  | 0.020 | 0.39        | 0.50 |
| K   | 0.500  | —     | 12.70       | —    |
| L   | 0.250  | —     | 6.35        | —    |
| N   | 0.080  | 0.105 | 2.04        | 2.66 |
| P   | —      | 0.100 | —           | 2.54 |
| R   | 0.115  | —     | 2.93        | —    |
| V   | 0.135  | —     | 3.43        | —    |

CASE 029-04  
 (TO-226AA)

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**MOTOROLA**



**BRX44/D**

