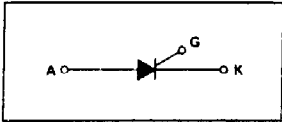


20 STERN AVE.  
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 U.S.A.

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 (212) 227-6005  
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**2N6167  
 thru  
 2N6170**

**SCRs  
 20 AMPERES RMS  
 100 thru 600 VOLTS**



## Silicon Controlled Rectifier Reverse Blocking Triode Thyristor

... designed for industrial and consumer applications such as power supplies; battery chargers; temperature, motor, light and welder controls.

- Economical for a Wide Range of Uses
- High Surge Current —  $I_{TSM} = 240$  Amps
- Rugged Construction in Isolated Stud Package

### MAXIMUM RATINGS

| Rating   | Symbol                       | Value                    | Unit                 |
|--|------------------------------|--------------------------|----------------------|
| *Peak Repetitive Forward and Reverse Blocking Voltage (1)<br>( $T_J = -40^\circ\text{C}$ to $+100^\circ\text{C}$ )   | $V_{DRM}$<br>or<br>$V_{RRM}$ | 100<br>200<br>400<br>600 | Volts                |
| *Non-Repetitive Peak Reverse Blocking Voltage<br>( $t \leq 5$ ms)  | $V_{RSM}$                    | 150<br>250<br>450<br>650 | Volts                |
| *Average Forward Current<br>( $T_C = -40$ to $+65^\circ\text{C}$ )<br>( $+85^\circ\text{C}$ )  | $I_{T(AV)}$                  | 13<br>6.5                | Amps                 |
| *Peak Surge Current<br>(One cycle, 60 Hz) ( $T_C = +65^\circ\text{C}$ )<br>(1.5 ms pulse @ $T_J = 100^\circ\text{C}$ )<br>Preceded and followed by no current or Voltage | $I_{TSM}$                    | 240<br>560               | Amps                 |
| Circuit Fusing<br>( $T_J = -40$ to $+100^\circ\text{C}$ ) ( $t = 1$ to 8.3 ms)   | $I^2t$                       | 235                      | $\text{A}^2\text{s}$ |
| *Peak Gate Power   | $P_{GM}$                     | 5                        | Watts                |
| *Average Gate Power  | $P_{G(AV)}$                  | 0.5                      | Watt                 |

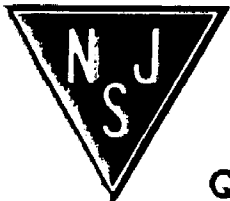
\*Indicates JEDEC Registered Data.

(cont.)

(1) Ratings apply for zero or negative gate voltage. Devices shall not have a positive bias applied to the gate concurrently with a negative potential on the anode. Devices should not be tested with a constant current source for forward or reverse blocking capability such that the voltage applied exceeds the rated blocking voltage.

NJ Semi-Conductors reserves the right to change test conditions, parameters limits and package dimensions without notice information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

**Quality Semi-Conductors**



**MAXIMUM RATINGS — continued**

| Rating                                | Symbol           | Value       | Unit    |
|---------------------------------------|------------------|-------------|---------|
| *Peak Forward Gate Current            | I <sub>GFM</sub> | 2           | Amps    |
| *Operating Junction Temperature Range | T <sub>J</sub>   | -40 to +100 | °C      |
| *Storage Temperature Range            | T <sub>stg</sub> | -40 to +150 | °C      |
| *Stud Torque                          | —                | 30          | in. lb. |

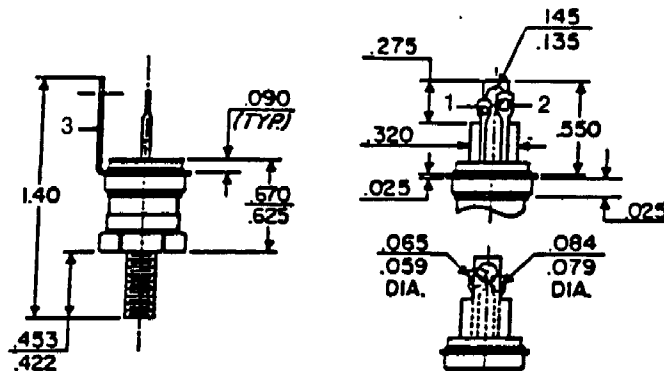
**\*THERMAL CHARACTERISTICS**

| Characteristic                       | Symbol           | Max | Unit |
|--------------------------------------|------------------|-----|------|
| Thermal Resistance, Junction to Case | R <sub>θJC</sub> | 1.5 | °C/W |

**ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted.)**

| Characteristic  | Symbol                              | Min | Typ.             | Max                | Unit                 |
|---|-------------------------------------|-----|------------------|--------------------|----------------------|
| *Peak Forward or Reverse Blocking Current<br>(Rated V <sub>DRM</sub> or V <sub>RRM</sub> , gate open, T <sub>C</sub> = 100°C)<br>2N6167<br>2N6168<br>2N6169<br>2N6170<br>(Rated V <sub>DRM</sub> or V <sub>RRM</sub> , gate open, T <sub>C</sub> = 25°C)<br>All Devices | I <sub>DRM</sub> , I <sub>RRM</sub> | —   | 1<br>1<br>1<br>1 | 2<br>2.5<br>3<br>4 | mA<br><br><br><br>μA |
| *Peak Forward "On" Voltage<br>(I <sub>TM</sub> = 41 A Peak)   | V <sub>TM</sub>                     | —   | 1.5              | 1.7                | Volts                |
| Gate Trigger Current, Continuous dc<br>(V <sub>D</sub> = 12 V, R <sub>L</sub> = 24 Ω)<br>*T <sub>C</sub> = -40°C<br>T <sub>C</sub> = 25°C   | I <sub>GT</sub>                     | —   | —<br>2.1         | 75<br>40           | mA                   |
| Gate Trigger Voltage, Continuous dc<br>(V <sub>D</sub> = 12 V, R <sub>L</sub> = 24 Ω)<br>*T <sub>C</sub> = -40°C<br>T <sub>C</sub> = 25°C   | V <sub>GT</sub>                     | —   | 0.8<br>0.63      | 2.5<br>1.6         | Volts                |
| Holding Current<br>(V <sub>D</sub> = 12 V, gate open, I <sub>T</sub> = 200 mA)<br>*T <sub>C</sub> = -40°C<br>T <sub>C</sub> = 25°C  | I <sub>H</sub>                      | —   | —<br>3.5         | 90<br>50           | mA                   |
| *Turn-On Time (t <sub>d</sub> + t <sub>r</sub> )<br>(I <sub>TM</sub> = 41 Adc, V <sub>D</sub> = Rated V <sub>DRM</sub> ,<br>I <sub>GT</sub> = 200 mAdc, Rise Time ≤ 0.05 μs, Pulse Width = 10 μs)   | t <sub>on</sub>                     | —   | —                | 1                  | μs                   |
| Turn-Off Time<br>(I <sub>TM</sub> = 10 A, I <sub>R</sub> = 10 A)<br>(I <sub>TM</sub> = 10 A, I <sub>R</sub> = 10 A, T <sub>J</sub> = 100°C)   | t <sub>off</sub>                    | —   | 25<br>40         | —<br>—             | μs                   |
| Forward Voltage Application Rate<br>(T <sub>J</sub> = 100°C, V <sub>D</sub> = Rated V <sub>DRM</sub> )  | dv/dt                               | —   | 50               | —                  | V/μs                 |

\*Indicates JEDEC Registered Data.



**20.0 AMP and 25.0 AMP  
1/2" ISOLATED STUD MOUNT  
ALL DIMENSIONS IN INCHES**