

**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) ( $T_J = -40^\circ\text{C}$ to $+100^\circ\text{C}$ )	$V_{DRM}$ or $V_{RRM}$	100 200 400 600	Volts
*Non-Repetitive Peak Reverse Blocking Voltage ( $t \leq 5$ ms)	$V_{RSM}$	150 250 450 650	Volts
*Average Forward Current ( $T_C = -40$ to $+65^\circ\text{C}$ ) ( $+85^\circ\text{C}$ )	$I_{T(AV)}$	13 6.5	Amps
*Peak Surge Current (One cycle, 60 Hz) ( $T_C = +65^\circ\text{C}$ ) (1.5 ms pulse @ $T_J = 100^\circ\text{C}$ ) Preceded and followed by no current or Voltage	$I_{TSM}$	240 560	Amps
Circuit Fusing ( $T_J = -40$ 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.

# **MAXIMUM RATINGS — continued**

Rating	Symbol	Value	Unit
*Peak Forward Gate Current	$I_{GFM}$	2	Amps
*Operating Junction Temperature Range	$T_J$	-40 to +100	°C
*Storage Temperature Range	$T_{stg}$	-40 to +150	°C
*Stud Torque	—	30	in. lb.

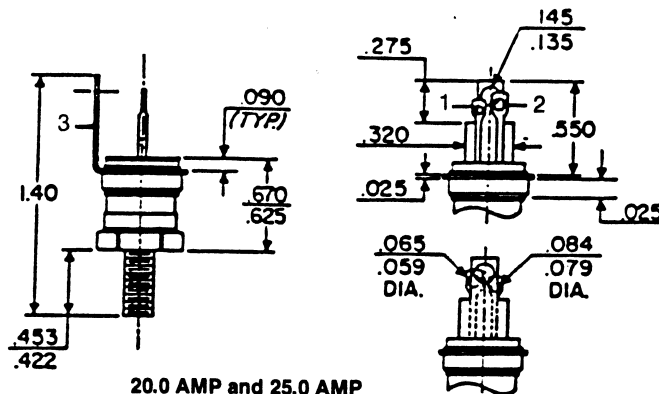
## **\*THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	°C/W

## **ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted.)**

Characteristic	Symbol	Min	Typ	Max	Unit
*Peak Forward or Reverse Blocking Current (Rated $V_{DRM}$ or $V_{RRM}$ , gate open, $T_C = 100^\circ\text{C}$ )	$I_{DRM}$ , $I_{RRM}$	—	1	2	mA
2N6167	—	—	1	2.5	
2N6168	—	—	1	3	
2N6169	—	—	1	4	
2N6170	—	—	—	10	$\mu\text{A}$
(Rated $V_{DRM}$ or $V_{RRM}$ , gate open, $T_C = 25^\circ\text{C}$ )	—	—	—	—	
All Devices	—	—	—	—	
*Peak Forward "On" Voltage ( $I_{TM} = 41\text{ A Peak}$ )	$V_{TM}$	—	1.5	1.7	Volts
Gate Trigger Current, Continuous dc ( $V_D = 12\text{ V}$ , $R_L = 24\ \Omega$ )	$I_{GT}$	—	—	75	mA
* $T_C = -40^\circ\text{C}$	—	—	2.1	40	
$T_C = 25^\circ\text{C}$	—	—	—	—	
Gate Trigger Voltage, Continuous dc ( $V_D = 12\text{ V}$ , $R_L = 24\ \Omega$ )	$V_{GT}$	—	0.8	2.5	Volts
* $T_C = -40^\circ\text{C}$	—	—	0.63	1.6	
$T_C = 25^\circ\text{C}$	—	—	—	—	
Holding Current ( $V_D = 12\text{ V}$ , gate open, $I_T = 200\text{ mA}$ )	$I_H$	—	—	90	mA
* $T_C = -40^\circ\text{C}$	—	—	3.5	50	
$T_C = 25^\circ\text{C}$	—	—	—	—	
*Turn-On Time ( $t_d + t_r$ ) ( $I_{TM} = 41\text{ Adc}$ , $V_D = \text{Rated } V_{DRM}$ , $I_{GT} = 200\text{ mAdc}$ , Rise Time $\leq 0.05\ \mu\text{s}$ , Pulse Width = $10\ \mu\text{s}$ )	$t_{on}$	—	—	1	$\mu\text{s}$
Turn-Off Time ( $I_{TM} = 10\text{ A}$ , $I_R = 10\text{ A}$ ) ( $I_{TM} = 10\text{ A}$ , $I_R = 10\text{ A}$ , $T_J = 100^\circ\text{C}$ )	$t_{off}$	—	25	—	$\mu\text{s}$
Forward Voltage Application Rate ( $T_J = 100^\circ\text{C}$ , $V_D = \text{Rated } V_{DRM}$ )	$dv/dt$	—	50	—	$\text{V}/\mu\text{s}$

\*Indicates JEDEC Registered Data.



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