

2N4184 (SILICON)

SILICON  
 CONTROLLED RECTIFIER

MAXIMUM RATINGS

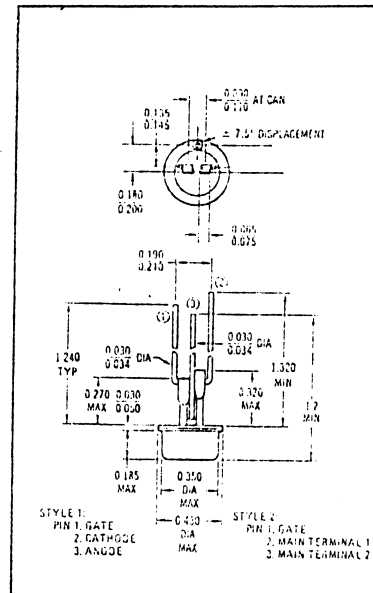
(Apply over operating temperature range and for all case types unless otherwise noted)

Rating	Symbol	Value	Unit
*Peak Reverse Blocking Voltage (1)	V <sub>RRM</sub>	50	Volts
Forward Current RMS	I <sub>T(RMS)</sub>	8.0	Amp
*Peak Forward Surge Current (One cycle, 60 Hz, T <sub>J</sub> = -40 to +100°C)	I <sub>TSM</sub>	100	Amp
Circuit Fusing Considerations (T <sub>J</sub> = -40 to +100°C; t ≤ 8.3 ms)	I <sup>2</sup> t	40	A <sup>2</sup> s
*Peak Gate Power	P <sub>GM</sub>	5.0	Watt
*Average Gate Power	P <sub>G(AV)</sub>	0.5	Watt
*Peak Gate Current	I <sub>GM</sub>	2.0	Amp
Peak Gate Voltage (2)	V <sub>GM</sub>	10	Volts
*Operating Temperature Range	T <sub>J</sub>	-40 to +100	°C
*Storage Temperature Range	T <sub>stg</sub>	-40 to +150	°C
Stud Torque 2N4167-2N4182		15	in. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	1.5	2.5*	°C/W
Thermal Resistance, Case to Ambient (See Fig. 11) 2N4151-66, 2N4183-98	R <sub>θCA</sub>	50	-	°C/W

- (1) Ratings apply for zero or negative gate voltage. Devices should not be tested for blocking capability in a manner such that the voltage applied exceeds the rated blocking voltage.  
 (2) Devices should not be operated with a positive bias applied to the gate concurrently with a negative potential applied to the anode.  
 \*Indicates JEDEC Registered Data



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

Characteristic	Symbol	Min	Typ	Max	Unit
*Peak Forward Blocking Voltage (1) ( $T_J = 100^\circ\text{C}$ )	$V_{DRM}$	50	—	—	Volts
*Peak Forward Blocking Current (Rated $V_{DRM}$ @ $T_J = 100^\circ\text{C}$ , gate open)	$I_{DRM}$	—	—	2.0	mA
*Peak Reverse Blocking Current (Rated $V_{DRM}$ @ $T_J = 100^\circ\text{C}$ , gate open)	$I_{RRM}$	—	—	2.0	mA
Gate Trigger Current (Continuous dc) (2) (Anode Voltage = 7.0 Vdc, $R_L = 100 \Omega$ ) *(Anode Voltage = 7.0 Vdc, $R_L = 100 \Omega$ , $T_C = -40^\circ\text{C}$ )	$I_{GT}$	—	—	30 60	mA
Gate Trigger Voltage (Continuous dc) (Anode Voltage = 7.0 Vdc, $R_L = 100 \Omega$ ) *(Anode Voltage = 7.0 Vdc, $R_L = 100 \Omega$ , $T_C = -40^\circ\text{C}$ ) *(Anode Voltage = 7.0 Vdc, $R_L = 100 \Omega$ , $T_J = 100^\circ\text{C}$ )	$V_{GT}$	—	—	1.5 2.5 —	Volts
*Forward "On" Voltage (pulsed, 1.0 ms max, duty cycle $\leq 1\%$ ) ( $I_F = 15.7 \text{ A}$ )	$V_T$	—	—	2.0	Volts
Holding Current (Anode Voltage = 7.0 Vdc, gate open) *(Anode Voltage = 7.0 Vdc, gate open, $T_C = -40^\circ\text{C}$ )	$I_H$	—	—	30 60	mA
Turn-On Time ( $t_d + t_r$ ) ( $I_G = 20 \text{ mAdc}$ , $I_F = 5.0 \text{ Adc}$ )	$t_{on}$	—	1.0	—	$\mu\text{s}$
Turn-Off Time ( $I_F = 5.0 \text{ Adc}$ , $I_R = 5.0 \text{ Adc}$ ) ( $I_F = 5.0 \text{ Adc}$ , $I_R = 5.0 \text{ Adc}$ , $T_J = 100^\circ\text{C}$ ) ( $V_{FXM} = \text{rated voltage}$ ) ( $dv/dt = 30 \text{ V}/\mu\text{s}$ )	$t_{off}$	—	15 25	—	$\mu\text{s}$
Forward Voltage Application Rate (Gate open, $T_J = 100^\circ\text{C}$ )	$dv/dt$	—	50	—	$\text{V}/\mu\text{s}$

- (1) Ratings apply for zero or negative gate voltage. These 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.
- (2) For optimum operation, i.e. faster turn-on, lower switching losses, best  $dv/dt$  capability, recommended  $I_{GT} = 200 \text{ mA}$  minimum.
- \*Indicates JEDEC Registered Data