

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 — $I_{TSM} = 300$ Amps
- Low Forward "On" Voltage — 1.2 V (Typ) @ $I_{TM} = 25$ Amps
- Practical Level Triggering and Holding Characteristics — 10 mA (Typ) @ $T_C = 25^\circ\text{C}$
- Rugged Construction in Either Pressfit, Stud, or Isolated Stud
- Glass Passivated Junctions for Maximum Reliability

C230, 231
C230()3,
231()3
C232, 233
Series

SCRs
25 AMPERES RMS
50 thru 600 VOLTS



MAXIMUM RATINGS

Rating	Suffix	Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 ($T_C = -40$ to $+100^\circ\text{C}$) All Types	F	V_{DRM}	50	Volts
	A	and	100	
	B	V_{RRM}	200	
	D		400	
	M		600	
Non-Repetitive Reverse Voltage ($T_C = -40$ to 100°C) All Types	F	V_{RSM}	75	Volts
	A		150	
	B		300	
	D		500	
	M		720	
Forward Current RMS		$I_T(\text{RMS})$	25	Amps
Peak Surge Current (One Cycle, 60 Hz, $T_C = -40$ to 100°C)		I_{TSM}	250	Amps
Circuit Fusing ($T_C = -40$ to 100°C , $t = 1$ to 8.3 ms)		I^2t	260	A^2s
Peak Gate Power		P_{GM}	5	Watts
Average Gate Power		$P_{G(AV)}$	0.5	Watt
Peak Forward Gate Current		I_{GM}	2	Amps
Operating Junction Temperature Range		T_J	-40 to +100	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-40 to +125	$^\circ\text{C}$
Stud Torque		—	30	in. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case Pressfit and Stud Isolated Stud	$R_{\theta JC}$	1 1.15	$^\circ\text{C/W}$

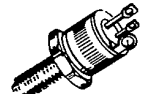
Note 1. V_{DRM} and V_{RRM} for all types can be applied on a continuous dc basis without incurring damage. Ratings apply for zero or negative gate voltage. Devices shall not have a positive bias applied to the gate concurrently with a negative potential on the anode.



CASE 174-04
(TO-203)
STYLE 1
C232 and C233 Series



CASE 175-03
STYLE 1
C230 and 231 Series

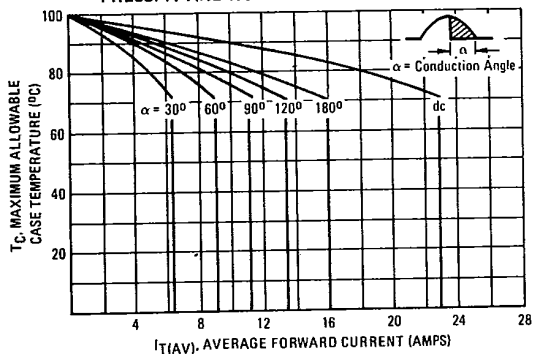


CASE 235-03
STYLE 1
C230()3 and C231()3 Series

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

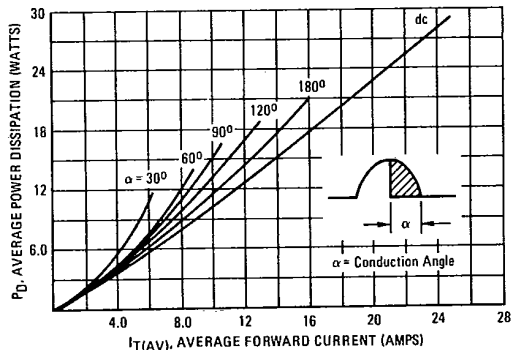
Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM} , gate open) $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	I_{DRM} , I_{RRM}	— —	— —	10 1	μA mA
Forward "On" Voltage ($I_{TM} = 100$ A Peak, Pulse Width ≤ 1 ms, Duty Cycle $\leq 2\%$)	V_{TM}	—	—	1.9	Volts
Gate Trigger Current, C230, C230()3, C232 series ($V_D = 12$ Vdc, $R_L = 120$ Ohms) ($V_D = 12$ Vdc, $R_L = 60$ Ohms) $T_C = -40^\circ\text{C}$	I_{GT}	— —	— —	25 40	mA
Gate Trigger Current, C231, C231()3, C233 (Continuous dc) ($V_D = 12$ Vdc, $R_L = 120$ Ohms) ($V_D = 12$ Vdc, $R_L = 60$ Ohms) $T_C = -40^\circ\text{C}$	I_{GT}	— —	— —	9 20	mA
Gate Trigger Voltage (Continuous dc) ($V_D = 12$ Vdc, $R_L = 120$ Ohms) ($V_D = 12$ Vdc, $R_L = 60$ Ohms) ($V_D = \text{Rated } V_{DRM}$, $R_L = 1000$ Ohms) $T_C = -40^\circ\text{C}$ $T_C = +100^\circ\text{C}$	V_{GT}	— — 0.2	— — —	1.5 2 —	Volts
Holding Current ($V_D = 24$ V, gate open, $I_T = 0.5$ A) $T_C = -40^\circ\text{C}$	I_H	— —	— —	50 100	mA
Turn-On Time ($t_d + t_r$) ($I_{TM} = 25$ Adc, $I_{GT} = 40$ mA, $V_D = \text{Rated } V_{DRM}$)	t_{gt}	—	1	—	μs
Turn-Off Time ($I_{TM} = 10$ A, $I_R = 10$ A, Pulse Width = $50 \mu\text{s}$, $dv/dt = 20$ V/ μs , $V_D = \text{Rated } V_{DRM}$) $T_C = 100^\circ\text{C}$	t_q	— —	25 35	— —	μs
Forward Voltage Application Rate ($V_D = \text{Rated } V_{DRM}$) $T_C = 100^\circ\text{C}$	dv/dt	—	100	—	V/ μs

FIGURE 1 — CURRENT DERATING FOR PRESSFIT AND NON-ISOLATED STUD



NOTE: Derating is for Pressfit and Stud Devices. Isolated stud devices must be derated an additional 15%. For example, the max $T_C @ 16$ A (180° conduction angle) is 70°C , a derating of 30°C . Isolated stud devices must be derated 34.5°C ; therefore, the maximum T_C is 65.5°C .

FIGURE 2 — ON-STATE POWER DISSIPATION versus ON-STATE CURRENT



C230, 231 • C230()3, 231()3 • C232, 233 Series

FIGURE 3 – GATE CURRENT VARIATION WITH TEMPERATURE

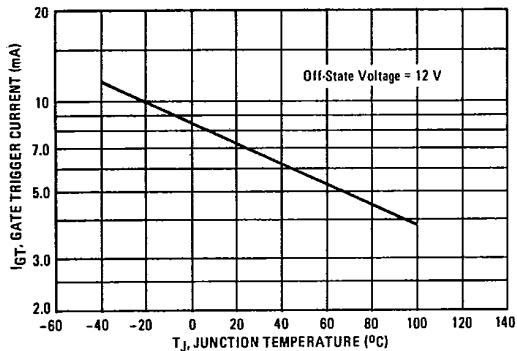


FIGURE 4 – GATE VOLTAGE VARIATION WITH TEMPERATURE

