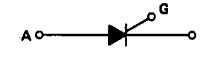
Silicon Controlled Rectifier
Reverse Blocking Triode Thyristor

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

SCRs
25 AMPERES RMS
50 thru 600 VOLTS

. . . 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°C
- Rugged Construction in Either Pressfit, Stud, or Isolated Stud
- Glass Passivated Junctions for Maximum Reliability



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

MAXIMUM RATINGS

Rating	Suffix	Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 (T_C = −40 to +100°C) All Types	F A B D M	V_{DRM} and V_{RRM}	50 100 200 400 600	Volts
Non-Repetitive Reverse Voltage (T_C = −40 to 100°C) All Types	F A B D M	V_{RSM}	75 150 300 500 720	Volts
Forward Current RMS		$I_{T(RMS)}$	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	°C
Storage Temperature Range		T_{stg}	−40 to +125	°C
Stud Torque		—	30	in. lb.

THERMAL CHARACTERISTICS

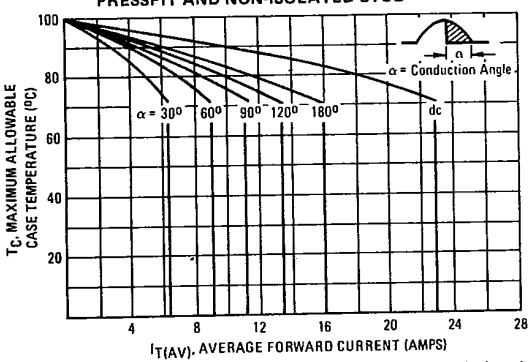
Characteristic		Symbol	Max	Unit
Thermal Resistance, Junction to Case Pressfit and Stud Isolated Stud		$R_{\theta JC}$	 1 1.15	°C/W

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.

ELECTRICAL CHARACTERISTICS (T_C = 25°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°C T_C = 100°C	I_{DRM}, I_{RRM}	— —	— —	10 1	μA mA
Forward "On" Voltage (I_{TM} = 100 A Peak, Pulse Width ≤ 1 ms, Duty Cycle ≤ 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°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°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) T_C = −40°C (V_D = Rated V_{DRM}, R_L = 1000 Ohms) T_C = +100°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°C	I_H	— —	— —	50 100	mA
Turn-On Time (t_d + t_r) (I_{TM} = 25 Adc, I_{GT} = 40 mAdc, V_D = Rated V_{DRM})	t_{gt}	—	1	—	μs
Turn-Off Time (I_{TM} = 10 A, I_R = 10 A, Pulse Width = 50 μs, dv/dt = 20 V/μs, V_D = Rated V_{DRM}) T_C = 100°C	t_q	— —	25 35	— —	μs
Forward Voltage Application Rate (V_D = Rated V_{DRM}) T_C = 100°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

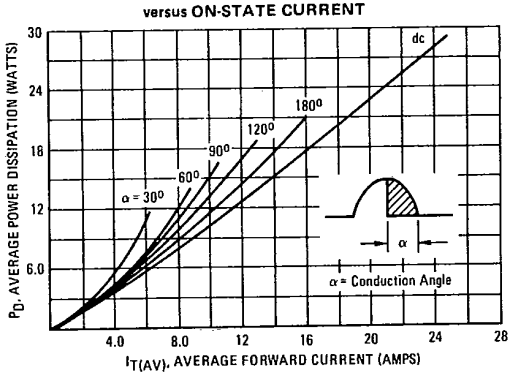


FIGURE 3 – GATE CURRENT VARIATION WITH TEMPERATURE

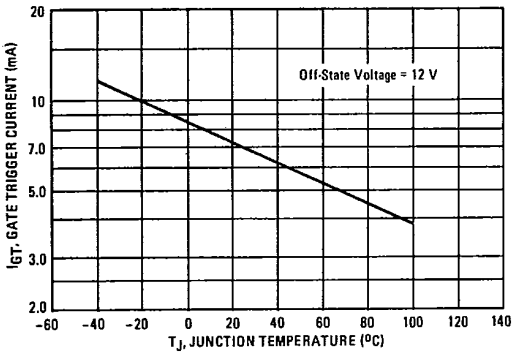


FIGURE 4 – GATE VOLTAGE VARIATION WITH TEMPERATURE