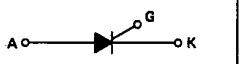
C230, 231 C230( )3, 231( )3 C232, 233 Series

Silicon Controlled Rectifier
Reverse Blocking Triode Thyristor

SCRs
25 AMPERES RMS
50 thru 600 VOLTS

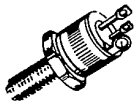
... designed for industrial and consumer applications such as power supplies, battery chargers, temperature, motor, light and welder controls.

- 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

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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.

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

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	I_{DRM}, I_{RRM}	—	—	10	μA
T_C = 100°C		—	—	1	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)	I_{GT}	—	—	25	mA
(V_D = 12 Vdc, R_L = 60 Ohms) T_C = −40°C		—	—	40	
Gate Trigger Current, C231, C231( )3, C233 (Continuous dc) (V_D = 12 Vdc, R_L = 120 Ohms)	I_{GT}	—	—	9	mA
(V_D = 12 Vdc, R_L = 60 Ohms) T_C = −40°C		—	—	20	
Gate Trigger Voltage (Continuous dc) (V_D = 12 Vdc, R_L = 120 Ohms)	V_{GT}	—	—	1.5	Volts
(V_D = 12 Vdc, R_L = 60 Ohms) T_C = −40°C		—	—	2	
(V_D = Rated V_{DRM}, R_L = 1000 Ohms) T_C = +100°C		0.2	—	—	
Holding Current (V_D = 24 V, gate open, I_T = 0.5 A) T_C = −40°C	I_H	—	—	50	mA
		—	—	100	
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	—	μs
		—	35	—	
Forward Voltage Application Rate (V_D = Rated V_{DRM}) T_C = 100°C	dv/dt	—	100	—	V/μs

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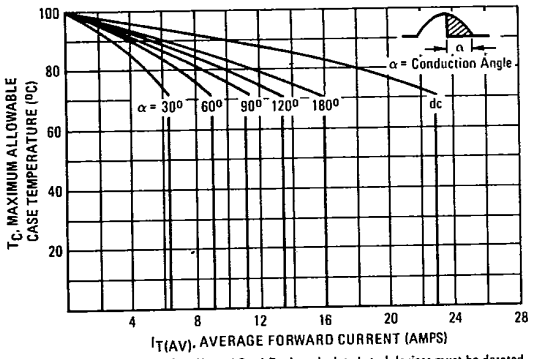
FIGURE 1 – CURRENT DERATING FOR PRESSFIT AND NON-ISOLATED STUD



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

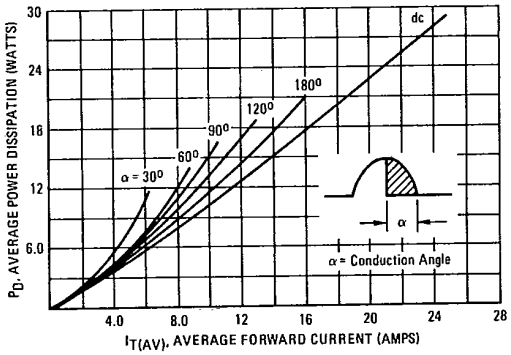


FIGURE 3 – GATE CURRENT VARIATION WITH TEMPERATURE

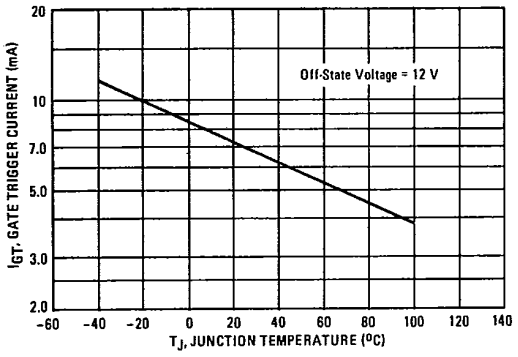
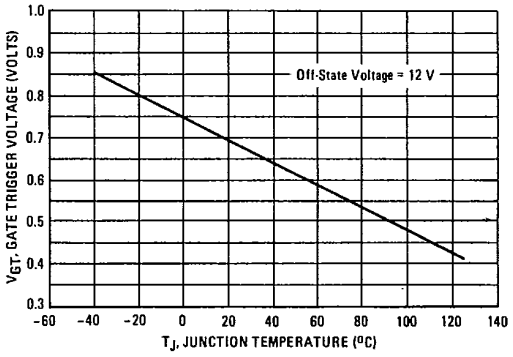


FIGURE 4 – GATE VOLTAGE VARIATION WITH TEMPERATURE



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