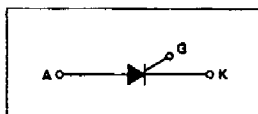


Silicon Controlled Rectifiers Reverse Blocking Triode Thyristors

... 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



MAXIMUM RATINGS

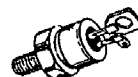
Rating	Suffix	Symbol	Value	Unit
Peak Repetitive Off-State Voltage, Note 1 ($T_C = -40$ to $+100^\circ\text{C}$) All Types	F A B D M	V_{DRM} and V_{RRM}	50 100 200 400 600	Volts
Non-Repetitive Reverse Voltage ($T_C = -40$ to 100°C) All Types	F A B D M	V_{RSM}	75 150 300 500 720	Volts
Forward Current RMS		$I_{T(RMS)}$	25	Amps
Peak Surge Current (One Cycle, 60 Hz, $T_C = -40$ to 100°C)		I_{TSM}	250	Amps
Circuit Fusing ($t = 8.3$ 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.

**MCR230, 231
MCR230()3,
231()3
C232, 233
Series**

**SCRs
25 AMPERES RMS
50 thru 600 VOLTS**



(TO-203AA)
STYLE 1
C232 and C233 Series



CASE 263-04
STYLE 1
MCR230 and 231 Series



CASE 311-02
STYLE 1
MCR230()3 and
MCR231()3 Series



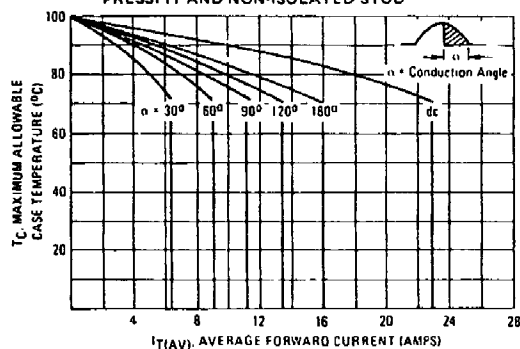
NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

MCR230, 231 • MCR230()3, 231()3 • C232, 233 Series

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

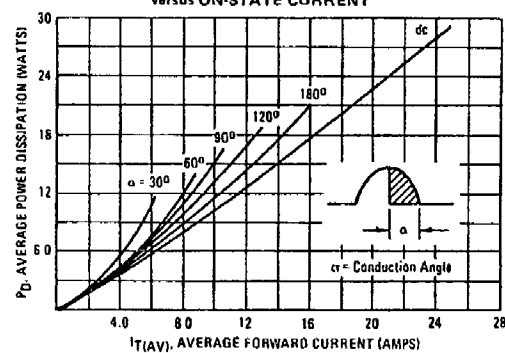
Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM} , gate open) $T_C = 25^\circ\text{C}$ $T_C = 100^\circ\text{C}$	I_{DRM}, I_{RRM}	—	—	10 1	μA mA
Forward "On" Voltage ($I_{TM} = 100\text{ A Peak}$, Pulse Width $\leq 1\text{ ms}$, Duty Cycle $\leq 2\%$)	V_{TM}	—	—	1.9	Volts
Gate Trigger Current, MCR230, MCR230()3, C232 series ($V_D = 12\text{ Vdc}$, $R_L = 120\text{ Ohms}$) ($V_D = 12\text{ Vdc}$, $R_L = 60\text{ Ohms}$) $T_C = -40^\circ\text{C}$	I_{GT}	—	—	25 40	mA
Gate Trigger Current, MCR231, MCR231()3, C233 (Continuous dc) ($V_D = 12\text{ Vdc}$, $R_L = 120\text{ Ohms}$) ($V_D = 12\text{ Vdc}$, $R_L = 60\text{ Ohms}$) $T_C = -40^\circ\text{C}$	I_{GT}	—	—	9 20	mA
Gate Trigger Voltage (Continuous dc) ($V_D = 12\text{ Vdc}$, $R_L = 120\text{ Ohms}$) ($V_D = 12\text{ Vdc}$, $R_L = 60\text{ Ohms}$) $T_C = -40^\circ\text{C}$ ($V_D = \text{Rated } V_{DRM}$, $R_L = 1000\text{ Ohms}$) $T_C = +100^\circ\text{C}$	V_{GT}	— 0.2	—	1.5 2	Volts
Holding Current ($V_D = 24\text{ V}$, gate open, $I_T = 0.5\text{ A}$) $T_C = -40^\circ\text{C}$	I_H	—	—	50 100	mA
Turn-On Time ($t_d + t_r$) ($I_{TM} = 25\text{ Adc}$, $I_{GT} = 40\text{ mAdc}$, $V_D = \text{Rated } V_{DRM}$)	t_{gt}	—	1	—	μs
Turn-Off Time ($I_{TM} = 10\text{ A}$, $I_R = 10\text{ A}$, Pulse Width = $50\text{ }\mu\text{s}$, $dv/dt = 20\text{ V}/\mu\text{s}$, $V_D = \text{Rated } V_{DRM}$) $T_C = 100^\circ\text{C}$	t_q	—	25 35	—	μs
Forward Voltage Application Rate ($V_D = \text{Rated } V_{DRM}$) $T_C = 100^\circ\text{C}$	dv/dt	—	100	—	$\text{V}/\mu\text{s}$

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



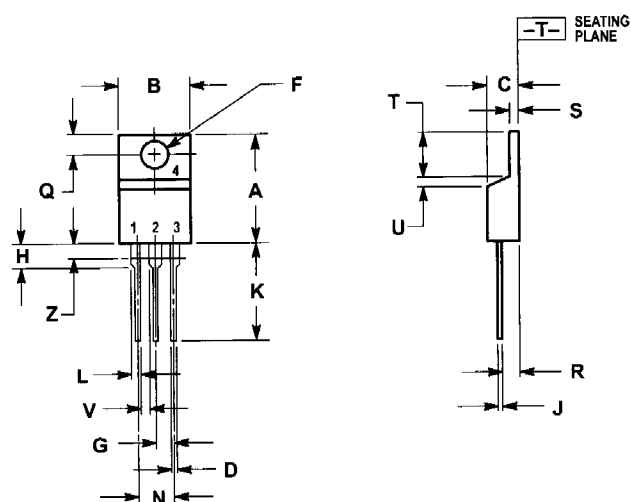
NOTE Derating is for Pressfit and Stud Devices. Isolated stud devices must be derated an additional 15%. For example, the max T_C @ 16 A (180° conduction angle) is 70°C , a derating of 30°C . Isolated stud devices must be derated 34.5°C , therefore the maximum T_C is 65.5°C .

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



MCR265-2 thru MCR265-10

PACKAGE DIMENSIONS



STYLE 3:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.014	0.022	0.36	0.55
K	0.500	0.562	12.70	14.27
L	0.045	0.055	1.15	1.39
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	—	1.15	—
Z	—	0.080	—	2.04

(TO-220AB)