

MCR265-4 Series

Preferred Device

Silicon Controlled Rectifiers

Reverse Blocking Thyristors

Designed for inverse parallel SCR output devices for solid state relays, welders, battery chargers, motor controls or applications requiring high surge operation.

- Photo Glass Passivated Blocking Junctions for High Temperature Stability, Center Gate for Uniform Parameters
- 550 Amperes Surge Capability
- Blocking Voltage to 800 Volts
- Device Marking: Logo, Device Type, e.g., MCR265-4, Date Code

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Peak Repetitive Off-State Voltage ⁽¹⁾ ($T_J = 25$ to 125°C , Sine Wave, 50 to 60 Hz, Gate Open)	V_{DRM} , V_{RRM}		Volts
MCR265-4		200	
MCR265-6		400	
MCR265-8		600	
MCR265-10		800	
On-State RMS Current (180° Conduction Angles; $T_C = 70^\circ\text{C}$)	$I_{\text{T(RMS)}}$	55	Amps
Average On-State Current (180° Conduction Angles; $T_C = 70^\circ\text{C}$)	$I_{\text{T(AV)}}$	35	Amps
Peak Non-Repetitive Surge Current (1/2 Cycle, Sine Wave, 60 Hz, $T_J = 70^\circ\text{C}$)	I_{TSM}	550	Amps
Forward Peak Gate Power (Pulse Width $\leq 1.0 \mu\text{s}$, $T_C = 70^\circ\text{C}$)	P_{GM}	20	Watts
Forward Average Gate Power ($t = 8.3 \text{ ms}$, $T_C = 70^\circ\text{C}$)	$P_{\text{G(AV)}}$	0.5	Watt
Forward Peak Gate Current (Pulse Width $\leq 1.0 \mu\text{s}$, $T_C = 70^\circ\text{C}$)	I_{GM}	2.0	Amps
Operating Junction Temperature Range	T_J	-40 to +125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +150	$^\circ\text{C}$

(1) V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

These devices are rated for use in applications subject to high surge conditions. Care must be taken to insure proper heat sinking when the device is to be used at high sustained currents.

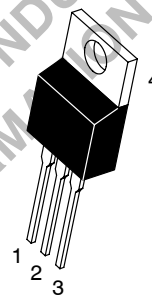


ON Semiconductor

<http://onsemi.com>

SCRs

55 AMPERES RMS
200 thru 800 VOLTS



TO-220AB
CASE 221A
STYLE 3

PIN ASSIGNMENT

	PIN ASSIGNMENT
1	Cathode
2	Anode
3	Gate
4	Anode

ORDERING INFORMATION

Device	Package	Shipping
MCR265-4	TO220AB	500/Box
MCR265-6	TO220AB	500/Box
MCR265-8	TO220AB	500/Box
MCR265-10	TO220AB	500/Box

Preferred devices are recommended choices for future use and best overall value.

MCR265-4 Series

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.9	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	°C/W
Maximum Lead Temperature for Soldering Purposes 1/8" from Case for 10 Seconds	T_L	260	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS

Peak Repetitive Forward or Reverse Blocking Current ($V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}$, Gate Open)	I_{DRM}, I_{RRM}	—	—	10	μA
$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$		—	—	2.0	mA

ON CHARACTERISTICS

Peak Forward On-State Voltage ⁽¹⁾ ($I_{TM} = 110 \text{ A}$)	V_{TM}	—	1.5	1.9	Volts
Gate Trigger Current (Continuous dc) ($V_{AK} = 12 \text{ Vdc}$, $R_L = 100 \text{ Ohms}$) ($T_C = -40^\circ\text{C}$)	I_{GT}	—	20 40	50 90	mA
Gate Trigger Voltage (Continuous dc) ($V_{AK} = 12 \text{ Vdc}$, $R_L = 100 \text{ Ohms}$)	V_{GT}	—	1.0	1.5	Volts
Gate Non-Trigger Voltage ($V_{AK} = 12 \text{ Vdc}$, $R_L = 100 \text{ Ohms}$, $T_J = 125^\circ\text{C}$)	V_{GD}	0.2	—	—	Volts
Holding Current ($V_{AK} = 12 \text{ Vdc}$, Initiating Current = 200 mA, Gate Open)	I_H	—	30	75	mA
Turn-On Time ($I_{TM} = 55 \text{ A}$, $I_{GT} = 200 \text{ mAdc}$)	t_{gt}	—	1.5	—	μs

DYNAMIC CHARACTERISTICS

Critical Rate-of-Rise of Off-State Voltage (Gate Open, $V_D = \text{Rated } V_{DRM}$, Exponential Waveform)	dv/dt	—	50	—	V/ μs
---	---------	---	----	---	------------------

(1) Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2\%$.

MCR265-4 Series

Voltage Current Characteristic of SCR

Symbol	Parameter
V_{DRM}	Peak Repetitive Off State Forward Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Off State Reverse Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Peak On State Voltage
I_H	Holding Current

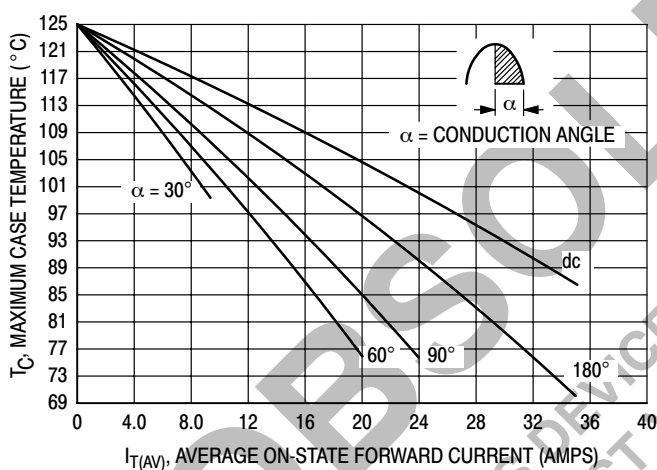
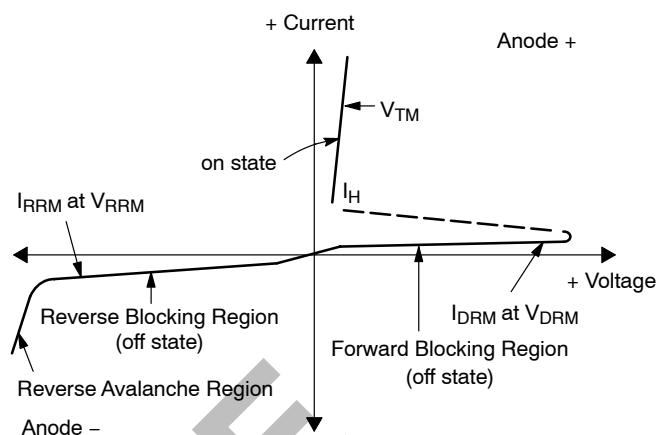


Figure 1. Average Current Derating

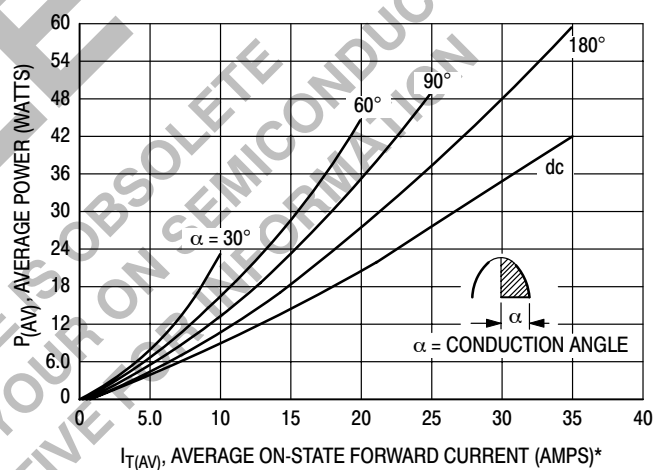


Figure 2. Maximum On-State Power Dissipation

MCR265-4 Series

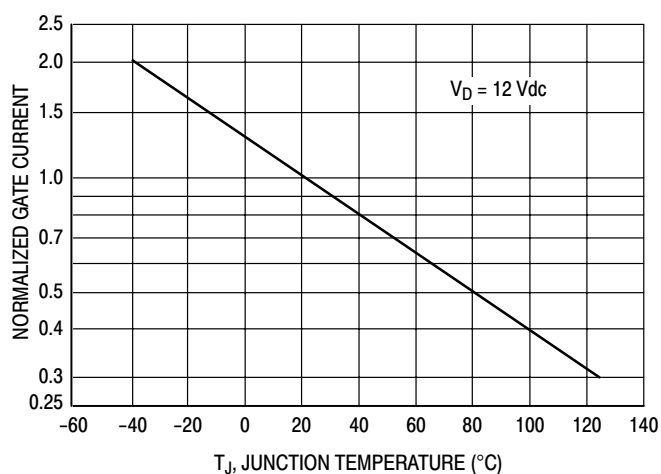


Figure 3. Typical Gate Trigger Current

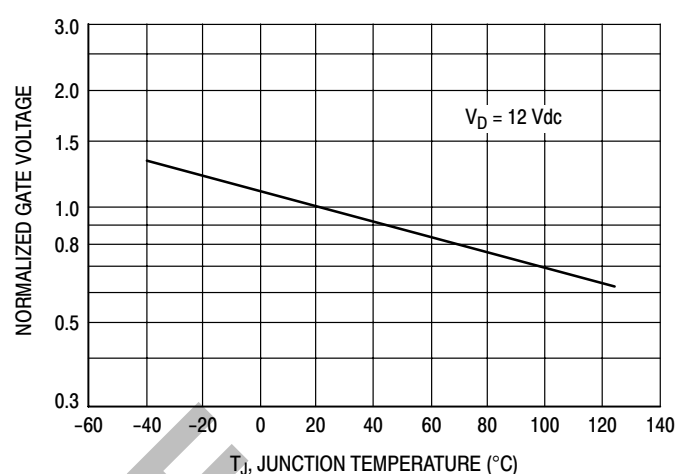


Figure 4. Typical Gate Trigger Voltage

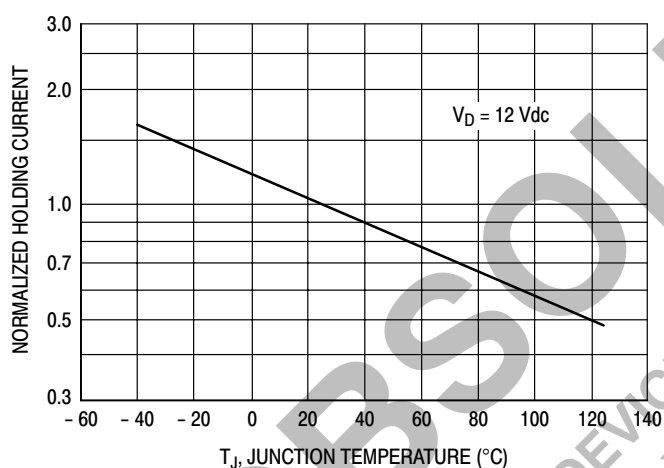


Figure 5. Typical Holding Current

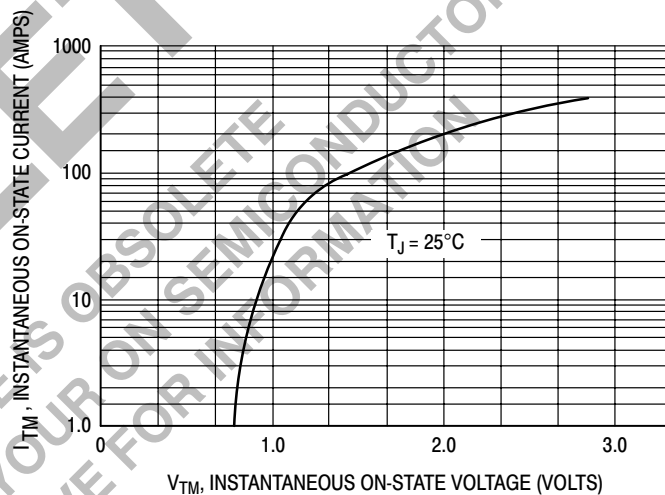


Figure 6. Typical On-State Characteristics

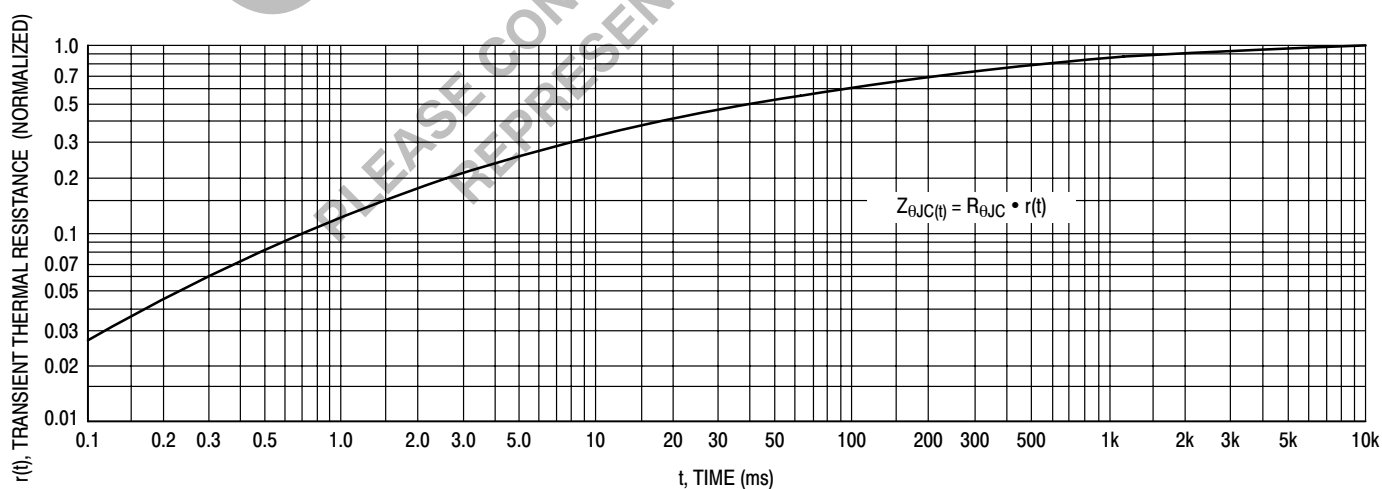
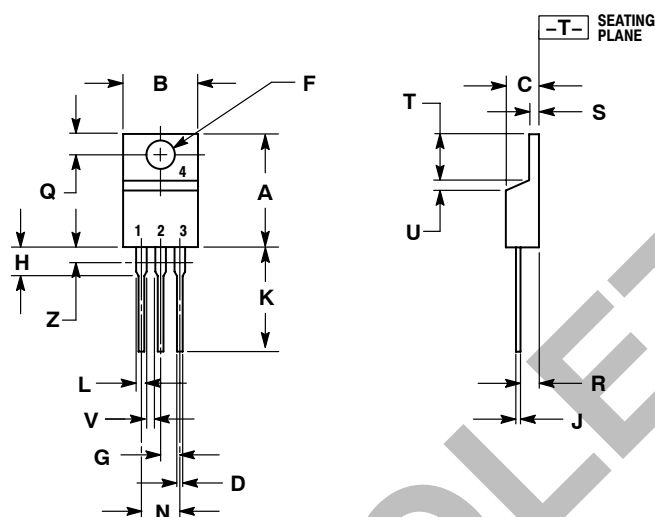


Figure 7. Thermal Response

MCR265-4 Series

PACKAGE DIMENSIONS


TO-220AB
CASE 221A-07
ISSUE Z



- 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	0.060	1.15	1.52
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

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

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada

Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local
Sales Representative

MCR265/D