

# DIGITRON SEMICONDUCTORS

## MCR265 SERIES

## THYRISTORS SCRs/55 Amps/50-800 Volts

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).

Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

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

RATING	SYMBOL	VALUE	UNIT	
Peak Reverse Blocking Voltage <sup>(1)</sup>	$V_{RRM}$	50	Volts	
		MCR265-2		200
		MCR265-4		400
		MCR265-6		600
		MCR265-8		800
Forward Current ( $T_C=70^\circ\text{C}$ ) (All Conduction Angles)	$I_{T(RMS)}$	55	Amps	
	$I_{T(AV)}$	35		
Peak Non-repetitive Surge Current – 8.3 ms (1/2 Cycle, Sine Wave)	$I_{TSM}$	550	Amps	
Forward Peak Gate Power	$P_{GM}$	20	Watts	
Forward Average Gate Power	$P_{G(AV)}$	0.5	Watt	
Forward Peak Gate Current (300 $\mu\text{s}$ , 120 PPS)	$I_{GM}$	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.  $V_{RRM}$  for all types can be applied on a continuous basis. Ratings apply for zero or negative 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 ensure proper heat sinking when the device is to be used at high sustained currents.

### THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX	UNIT
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.9	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	$^\circ\text{C}/\text{W}$

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

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT	
Peak Forward Blocking Voltage ( $T_J = 125^\circ\text{C}$ )	$V_{DRM}$	50	-	-	Volts	
		MCR265-2	200	-		-
		MCR265-4	400	-		-
		MCR265-6	600	-		-
		MCR265-8	800	-		-
Peak forward blocking current (rated $V_{DRM}$ @ $T_J = 125^\circ\text{C}$ )	$I_{DRM}$	-	-	2.0	mA	
Peak reverse blocking current (rated $V_{RRM}$ @ $T_J = 125^\circ\text{C}$ )	$I_{RRM}$	-	-	2.0	mA	
Forward "on" voltage <sup>(1)</sup> ( $I_{TM} = 110\text{A}$ )	$V_{TM}$	-	1.5	1.9	Volts	
Gate trigger current (continuous dc) (Anode voltage = 12Vdc, $R_L = 100\text{ohms}$ ) ( $T_C = -40^\circ\text{C}$ )	$I_{GT}$	-	20 40	50 90	mA	
Gate trigger voltage (continuous dc) (Anode voltage = 12Vdc, $R_L = 100\text{ohms}$ )	$V_{GT}$	-	1.0	1.5	Volts	
Gate non-trigger voltage (Anode voltage = rated $V_{DRM}$ , $R_L = 100\text{ohms}$ , $T_J = 125^\circ\text{C}$ )	$V_{GD}$	0.2	-	-	Volts	

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1. Pulse Width ≤ 300µs, Duty Cycle ≤ 2%

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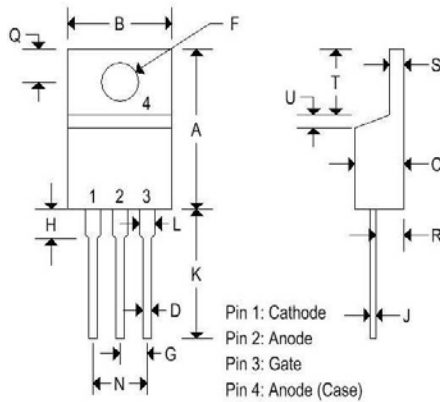
**THYRISTORS**  
SCRs/55 Amps/50-800 Volts

### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
<b>Holding current</b> (anode voltage = 12Vdc)	I <sub>H</sub>	-	30	75	mA
<b>Turn-on time</b> (I <sub>TM</sub> = 55A, I <sub>GT</sub> = 200mAdc)	t <sub>gt</sub>	-	1.5	-	µs
<b>Critical rate of rise of off-state voltage</b> (gate open, rated V <sub>DRM</sub> , exponential waveform)	dv/dt	-	50	-	V/µs

### MECHANICAL CHARACTERISTICS

<b>Case</b>	TO-220AB
<b>Marking</b>	Alpha-numeric
<b>Pin out</b>	See below



	TO-220AB			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.575	0.620	14.600	15.750
B	0.380	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.025	0.035	0.640	0.890
F	0.142	0.147	3.610	3.730
G	0.085	0.105	2.410	2.670
H	0.110	0.155	2.790	3.930
J	0.014	0.022	0.360	0.560
K	0.500	0.562	12.700	14.270
L	0.045	0.055	1.140	1.390
N	0.190	0.210	4.830	5.330
Q	0.100	0.120	2.540	3.040
R	0.080	0.110	2.040	2.790
S	0.045	0.055	1.140	1.390
T	0.235	0.255	5.970	6.480
U	-	0.050	-	1.270
V	0.045	-	1.140	-
Z	-	0.080	-	2.030

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FIGURE 1 — AVERAGE CURRENT DERATING

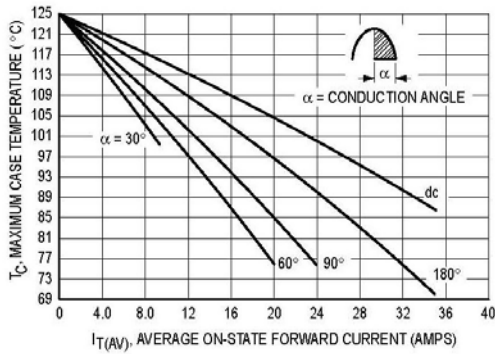


FIGURE 2 — MAXIMUM ON-STATE POWER DISSIPATION

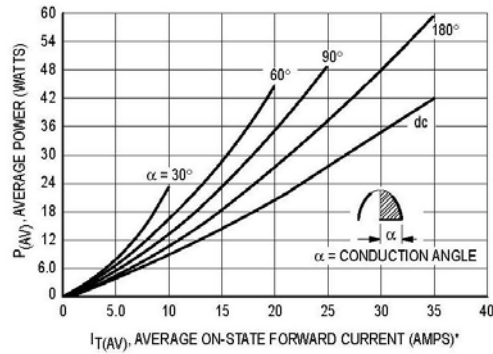


FIGURE 3 — GATE TRIGGER CURRENT

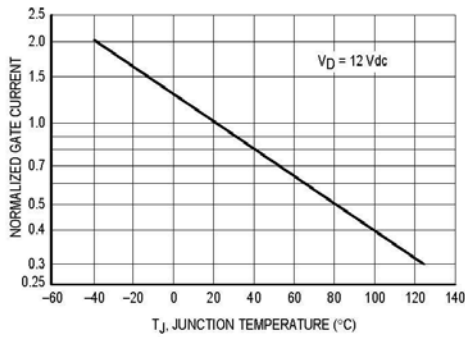


FIGURE 4 — GATE TRIGGER VOLTAGE

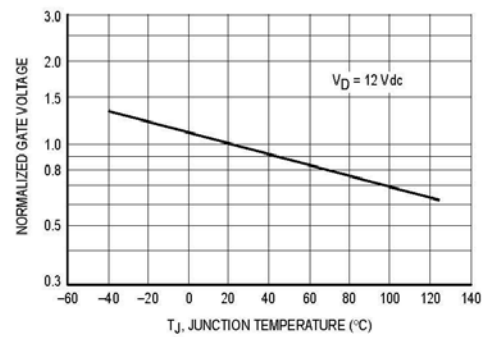


FIGURE 5 — HOLDING CURRENT

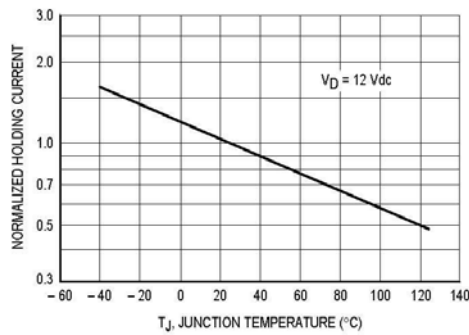


FIGURE 6 — TYPICAL ON-STATE CHARACTERISTICS

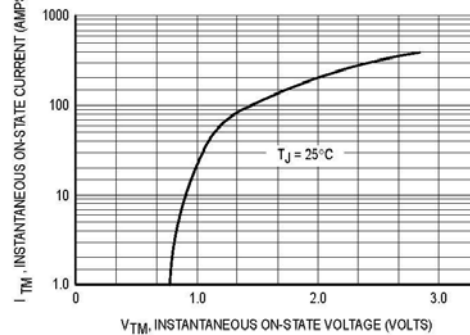


FIGURE 7 — THERMAL RESPONSE

