

# DIGITRON SEMICONDUCTORS

## MCR2080(A) SERIES

## SILICON CONTROLLED RECTIFIERS

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

Rating	Symbol	Value	Unit
<b>Repetitive peak off-state voltage<sup>(1)</sup></b> <b>Peak repetitive reverse voltage</b> MCR2080(A)-4 MCR2080(A)-5 MCR2080(A)-6 MCR2080(A)-7 MCR2080(A)-8 MCR2080(A)-9 MCR2080(A)-10	$V_{RRM}$ $V_{DRM}$	200 300 400 500 600 700 800	Volts
<b>Forward current RMS</b> (all conduction angles)	$I_{T(RMS)}$	8.0	Amps
<b>Peak forward surge current</b> (1/2 cycle, sine wave, 60 Hz)	$I_{TSM}$	90	Amps
<b>Circuit fusing considerations</b> (t = 8.3ms)	$I^2t$	34	A <sup>2</sup> s
<b>Forward peak gate power</b>	$P_{GM}$	5.0	Watts
<b>Forward average gate power</b>	$P_{G(AV)}$	0.5	Watts
<b>Operating junction temperature range</b>	$T_J$	-40 to +125	°C
<b>Storage temperature range</b>	$T_{stg}$	-40 to +150	°C

Note 1:  $V_{RRM}$  for all types can be applied on a continuous dc basis without incurring damage. Ratings apply for zero or negative gate voltage. Devices should not be tested for blocking capability in a manner such that the voltage supplied exceeds the rated blocking voltage.

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
<b>Thermal resistance, junction to case</b>	$R_{\theta JC}$	2.0	°C/W

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

Characteristic	Symbol	Min	Typ.	Max	Unit
<b>Peak forward blocking current</b> (Rated $V_{DRM}$ @ $T_J = 125^\circ\text{C}$ )	$I_{DRM}$	-	-	3.0	mA
<b>Peak reverse blocking current</b> (Rated $V_{RRM}$ @ $T_J = 125^\circ\text{C}$ )	$I_{RRM}$	-	-	3.0	mA
<b>Peak on-state voltage<sup>(2)</sup></b> ( $I_{TM} = 10\text{A}$ peak) ( $I_{TM} = 16\text{A}$ peak)	$V_{TM}$	-	-	3.0 4.0	Volts
<b>Gate trigger current</b> (continuous dc) ( $V_D = 7.0\text{V}$ , $R_L = 100\Omega$ )	$I_{GT}$	-	-	50	mA
<b>Gate trigger voltage</b> (continuous dc) ( $V_D = 7.0\text{V}$ , $R_L = 100\Omega$ )	$V_{GT}$	-	-	2.5	Volts
<b>Holding current</b> ( $V_D = 7.0\text{V}$ , $R_L = 100\Omega$ )	$I_H$	-	-	100	mA
<b>Turn-off time</b> ( $V_{DRM} = \text{rated voltage}$ ) ( $I_{TM} = 5.0\text{A}$ , $di/dt = 5.0\text{A}/\mu\text{s}$ , reapplied $dv/dt = 50\text{V}/\mu\text{s}$ ) MCR2080 MCR2080A	$t_q$	-	-	10 6.0	$\mu\text{s}$
<b>Forward voltage application rate</b>	$dv/dt$	100	150	-	$\text{V}/\mu\text{s}$

Note 2: Pulse test: pulse width = 1.0ms, duty cycle  $\leq 2\%$ .

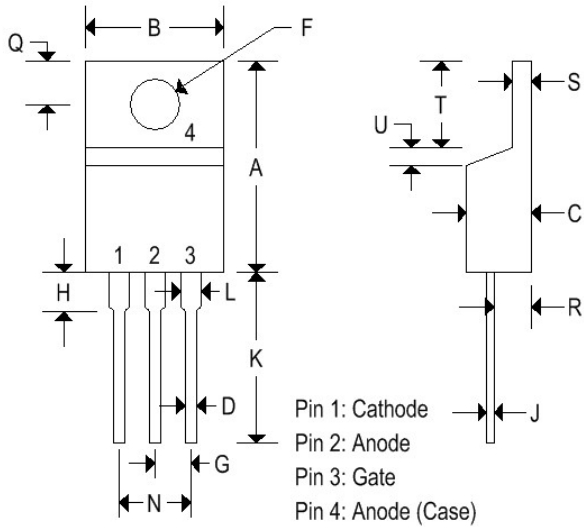
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### MECHANICAL CHARACTERISTICS

Case	TO-220AB
Marking	Alpha-numeric
Pin out	See below

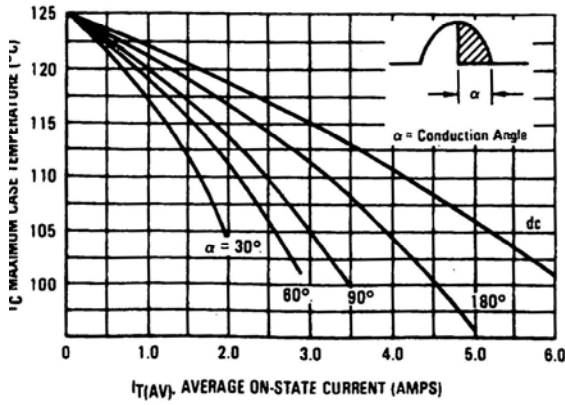


	TO-220AB			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.575	0.620	14.600	15.750
B	0.380	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.025	0.035	0.640	0.890
F	0.142	0.147	3.610	3.730
G	0.095	0.105	2.410	2.670
H	0.110	0.155	2.790	3.930
J	0.014	0.022	0.360	0.560
K	0.500	0.562	12.700	14.270
L	0.045	0.055	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

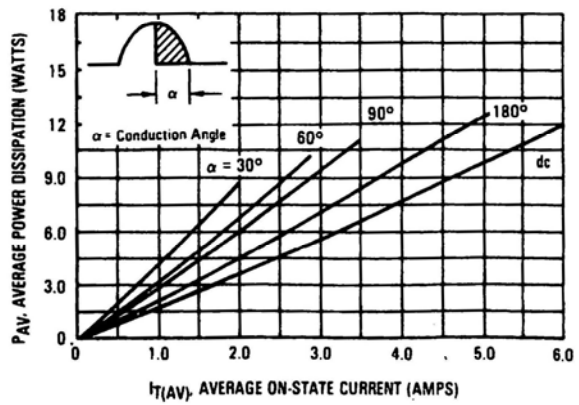
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## MCR2080(A) SERIES SILICON CONTROLLED RECTIFIERS

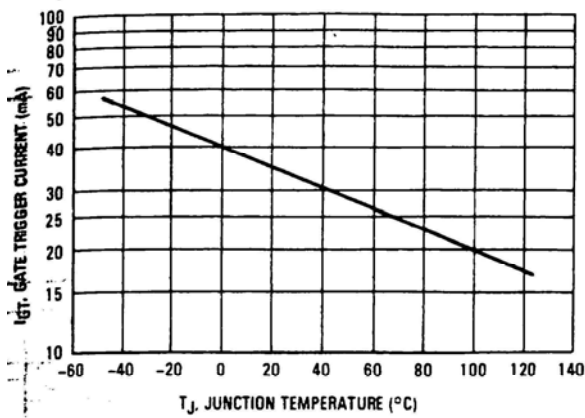
**FIGURE 1 — AVERAGE CURRENT DERATING**



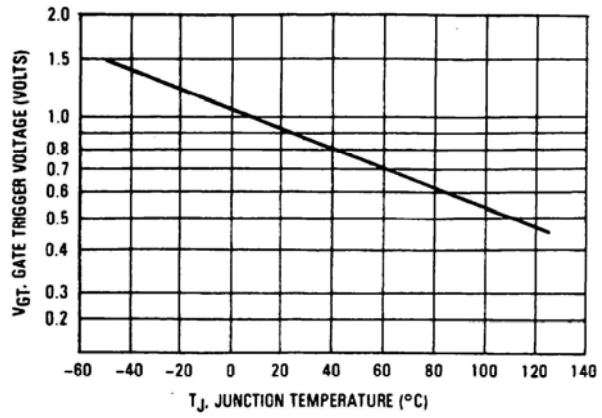
**FIGURE 2 — ON-STATE POWER DISSIPATION**



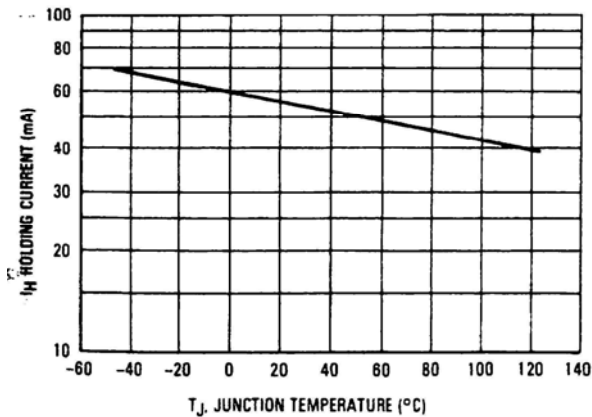
**FIGURE 3 — TYPICAL GATE TRIGGER CURRENT**



**FIGURE 4 — TYPICAL GATE TRIGGER VOLTAGE**



**FIGURE 5 — TYPICAL HOLDING CURRENT**



**FIGURE 6 — TYPICAL TURN-OFF TIME**

