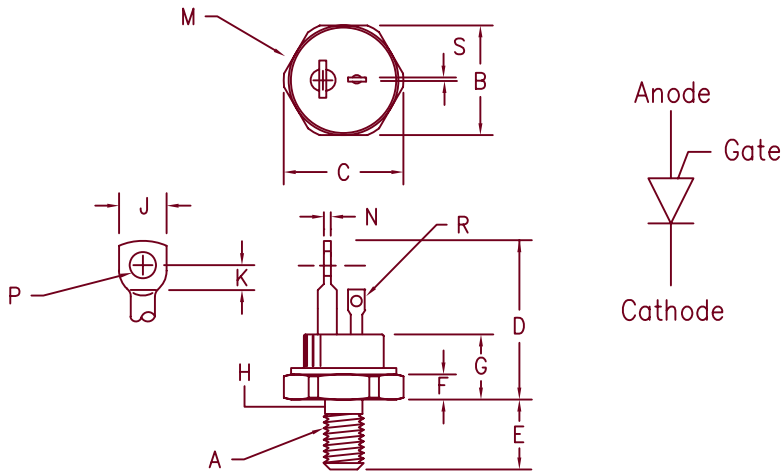


# Anode Gate Silicon Controlled Rectifier Series 050R



Note 1: 1/4-28 UNF-3A

Note 2: Full thread within 2 1/2 threads

Dim.	Inches		Millimeter		Notes
	Minimum	Maximum	Minimum	Maximum	
A	---	---	---	---	1
B	.677	.685	17.20	17.40	
C	---	.770	---	19.56	
D	1.200	1.250	30.48	31.75	
E	.427	.447	10.84	11.35	
F	.115	.155	2.92	3.94	
G	---	.515	---	13.08	
H	.220	.249	5.58	6.32	2
J	.200	.300	5.08	7.62	
K	.120	---	3.05	---	
M	---	.667	---	16.94	Dia.
N	.065	.085	1.65	2.15	
P	.145	.155	3.68	3.93	Dia.
R	.055	.065	1.40	1.65	Dia.
S	.025	.030	.64	.76	

TO-208AC (TO-65)

Microsemi  
Catalog Number

050R02GOF  
050R04GOF  
050R06GOF  
050R08GOF  
050R10GOF  
050R12GOF

Forward & Reverse  
Repetitive Blocking  
VDRM, VRRM

200  
400  
600  
800  
1000  
1200

To specify dv/dt other than 200V/usec., contact factory.

- dv/dt-200 V/usec
- 1200 Amperes surge current
- Economical for medium power applications
- Compact TO-208AC package

## Electrical Characteristics

Max. RMS on-state current  
Max. average on-state cur.  
Max. peak on-state voltage  
Max. holding current  
Max. peak one cycle  
surge current  
Max.  $I^2t$  capability for fusing

$I_{T(RMS)}$  80 Amps  
 $I_{T(AV)}$  50 Amps  
 $V_{TM}$  1.5 Volts  
 $I_H$  200 mA  
 $I_{TSM}$  1200 Amps  
 $I^2t$  6000A<sup>2</sup>S

$T_C = 94^\circ\text{C}$   
 $T_C = 94^\circ\text{C}$   
 $I_{TM} = 200 \text{ A(peak)}$   
 $T_C = 94^\circ\text{C } 60\text{Hz}$   
 $t = 8.3 \text{ ms}$

## Thermal and Mechanical Characteristics

Operating junction temp range  
Storage temperature range  
Maximum thermal resistance  
Typical thermal resistance (greased)  
Mounting torque  
Weight

$T_J$   
 $T_{STG}$   
 $R_{\theta JC}$   
 $R_{\theta CS}$

$-65^\circ\text{C}$  to  $125^\circ\text{C}$   
 $-65^\circ\text{C}$  to  $150^\circ\text{C}$   
0.35°C/W Junction to case  
0.20°C/W Case to sink  
25-30 inch pounds  
0.56 ounces (16 grams) typical



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04-24-07 Rev. 3

# 050R

$T_J = 25^\circ\text{C}$  unless otherwise indicated

## Switching

Critical rate of rise of on-state current (note 1)	$di/dt$	200A/usec.	$T_J = 125^\circ\text{C}$
Typical delay time (note 1)	$t_d$	3.0 usec.	
Typical circuit commuted turn-off time (note 2)	$t_q$	100 usec.	$T_J = 125^\circ\text{C}$

Note 1:  $I_{TM} = 50\text{A}$ ,  $V_D = V_{DRM}$ .  $V_{GT} = 12\text{V}$  open circuit, 20 ohm-0.1 usec. rise time

Note 2:  $I_{TM} = 50\text{A}$ ,  $di/dt = 5\text{A/usec.}$ ,  $V_R$  during turn-off interval = 50V min.,  
reapplied  $dv/dt = 20\text{V/usec.}$ , linear to rated  $V_{DRM}$ ,  $V_{GT} = 0\text{V}$

## Triggering – Third Quadrant

Max. gate voltage to trigger	$V_{GT}$	-3.0V	$T_J = 125^\circ\text{C}$
Max. nontriggering gate voltage	$V_{GD}$	-0.25V	
Max. gate current to trigger	$I_{GT}$	-100mA	
Max. peak gate power	$P_{GM}$	10W	
Average gate power	$P_{G(AV)}$	1.0W	$t_p = 10\text{ usec.}$

NOTE: Triggering in the third quadrant requires a series gate current limiting resistor for 200mA and diode protection.

## Blocking

Max. leakage current	$I_{DRM}$	6mA	$T_J = 125^\circ\text{C}$ & $V_{DRM}$
Max. reverse leakage	$I_{RRM}$	6mA	$T_J = 125^\circ\text{C}$ & $V_{RRM}$
Critical rate of rise of off-state voltage	$dv/dt$	200V/usec.	$T_J = 125^\circ\text{C}$

# 050R

Figure 1  
Typical Forward On-State Characteristics

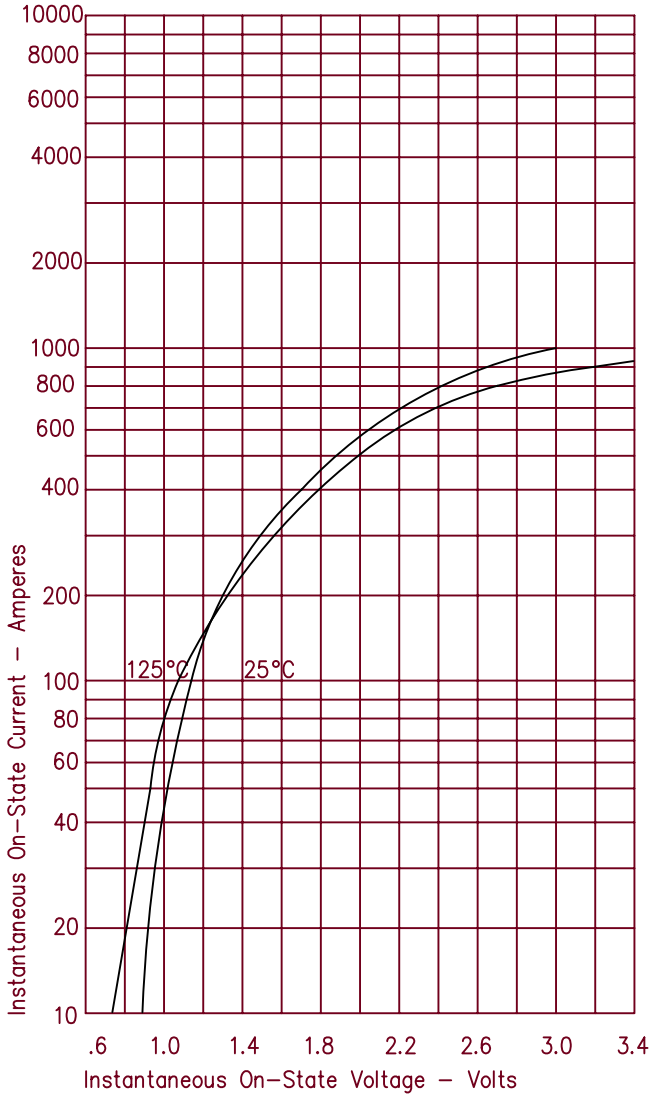


Figure 3  
Maximum Power Dissipation

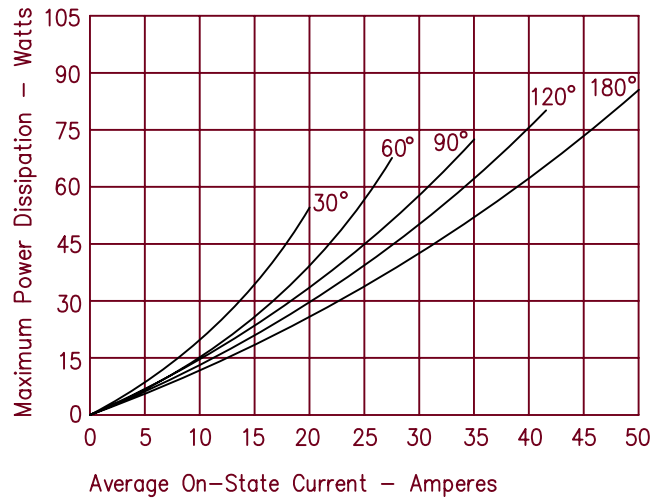


Figure 4  
Transient Thermal Impedance

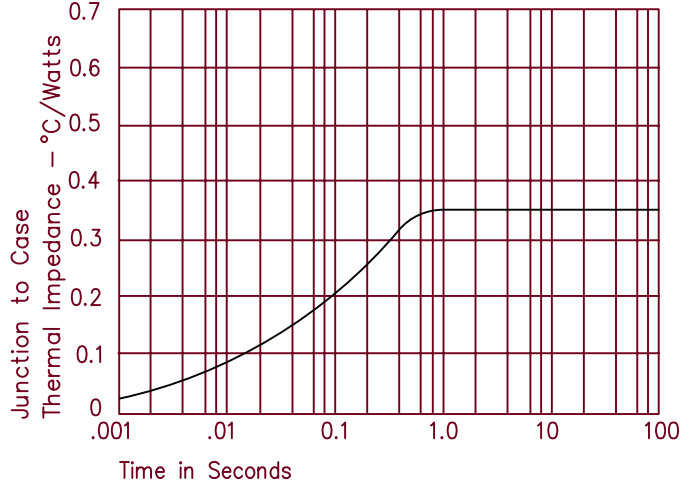


Figure 2  
Forward Current Derating

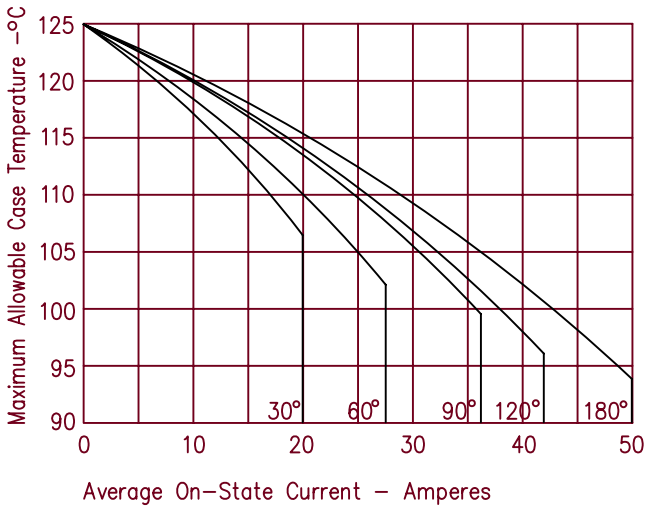


Figure 5  
Maximum Nonrepetitive Surge Current

