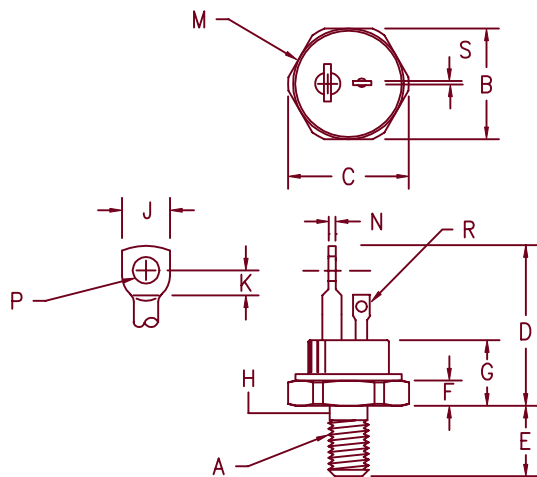


Silicon Controlled Rectifier/Inverter Series 039



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	---	.249	---	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

03902GRF
03904GRF
03906GRF

Forward & Reverse
Repetitive Blocking
VDRM, VRRM

200
400
600

Reverse Transient
Blocking

300
500
700

To specify dv/dt other than 200V/usec., enter appropriate letter in place of "G": K 300V/usec.
H 500V/usec.

- dv/dt-200 V/usec
- 1000 amperes surge current
- Low forward on-state voltage
- Blocking voltages up to 600 volts
- Primarily for forced commutated applications

Electrical Characteristics

Max. RMS on-state current

$I_T(\text{RMS})$ 63 Amps

$T_C = 105^\circ\text{C}$, half sine wave, $R_{\theta JC} = 0.35^\circ\text{C/W}$

Max. average on-state cur.

$I_T(\text{AV})$ 40 Amps

$T_C = 105^\circ\text{C}$, half sine wave, $R_{\theta JC} = 0.35^\circ\text{C/W}$

Max. peak on-state voltage

V_{TM} 1.8 Volts

$I_{TM} = 120 \text{ A(peak)}$

Max. holding current

I_H 500 mA

Max. peak one cycle surge current

I_{TSM} 1000 A

$T_C = 105^\circ\text{C}$, 60Hz

Max. I^2t capability for fusing

I^2t 4150A²S

$t = 8.3 \text{ ms}$

$T_C = 25^\circ\text{C}$ unless otherwise noted

Thermal and Mechanical Characteristics

Operating junction temp range

T_J

-65°C to 125°C

Storage temperature range

T_{STG}

-65°C to 150°C

Maximum thermal resistance

$R_{\theta JC}$

0.35°C/W Junction to case

Typical thermal resistance (greased)

$R_{\theta CS}$

0.20°C/W Case to sink

Mounting torque

25-30 inch pounds

Weight

0.56 ounces (16 grams) typical

8-31-00 Rev. 2

039

Switching

Critical rate of rise of on-state current (note 1)	di/dt	400A/usec.	$T_J = 125^\circ\text{C}$
Typical delay time (note 1)	t_d	2.0 usec.	
Maximum circuit commuted turn-off time (note 2)	$t_q (R)$	10 usec.	$T_J = 125^\circ\text{C}$
	$t_q (T)$	12 usec.	$T_J = 125^\circ\text{C}$
	$t_q (P)$	15 usec.	$T_J = 125^\circ\text{C}$
	$t_q (U)$	20 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} , $V_{GT} = 0\text{V}$

Note 3: To specify t_q other than 10 usec., enter appropriate letter in place of "R"
T-12 usec., P-15 usec., U-20 usec.

Triggering

Max. gate voltage to trigger	V_{GT}	3.0V	$T_J = 25^\circ\text{C}$
Max. nontriggering gate voltage	V_{GD}	0.15V	$T_J = 125^\circ\text{C}$
Max. gate current to trigger	I_{GT}	150mA	$T_J = 25^\circ\text{C}$
Max. peak gate power	P_{GM}	10W	
Average gate power	$P_{G(AV)}$	2.0W	$t_p = 10 \text{ usec.}$
Max. peak gate current	I_{GM}	3.0A	
Max. peak gate voltage (forward)	V_{GM}	20V	
Max. peak gate voltage (reverse)	V_{GM}	10V	

Blocking

Max. leakage current	I_{DRM}	12mA	$T_J = 125^\circ\text{C} \ \& \ V_{DRM}$
Max. reverse leakage	I_{RRM}	12mA	$T_J = 125^\circ\text{C} \ \& \ V_{RRM}$
Critical rate of rise of off-state voltage	dv/dt	200V/usec.	$T_J = 125^\circ\text{C}$

Figure 1
Typical Forward On-State Characteristics

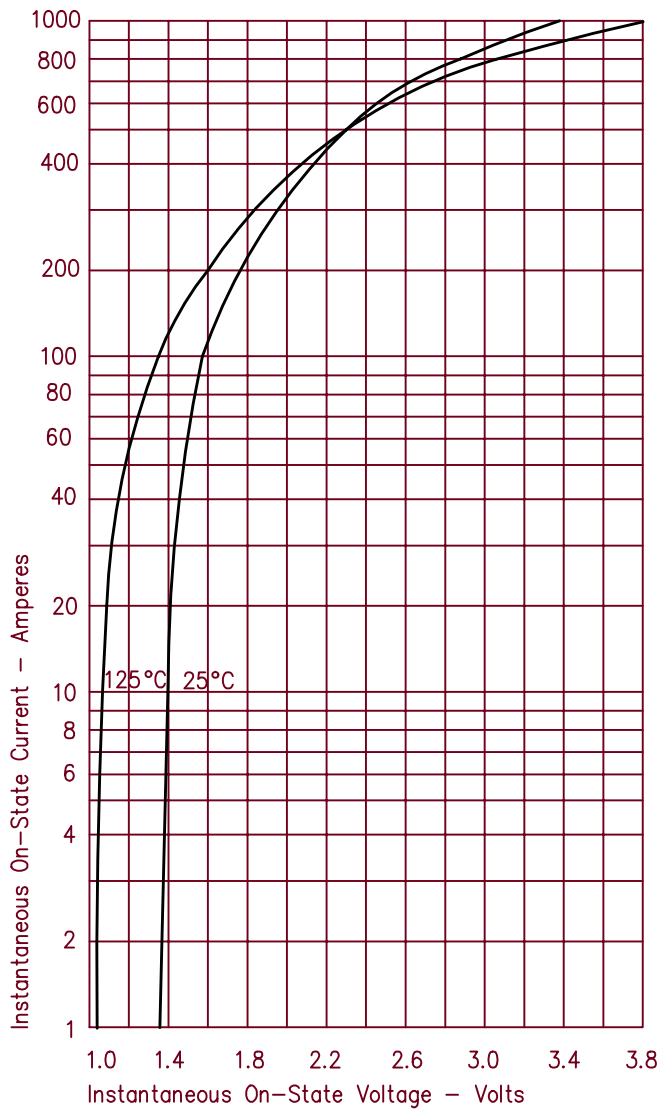


Figure 3
Maximum Power Dissipation

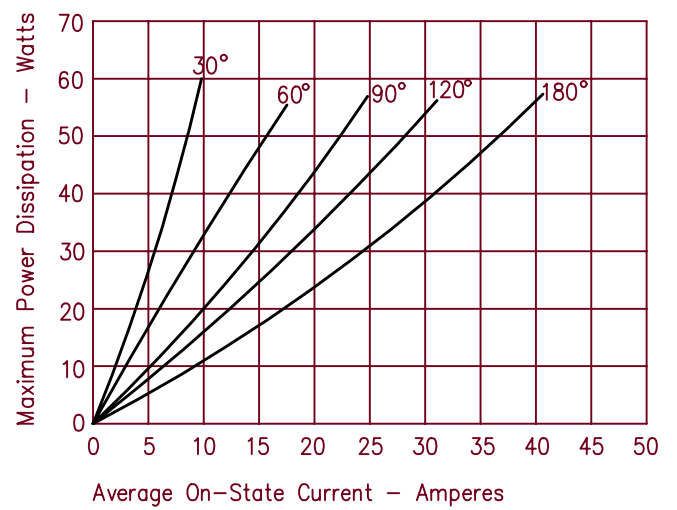


Figure 4
Transient Thermal Impedance

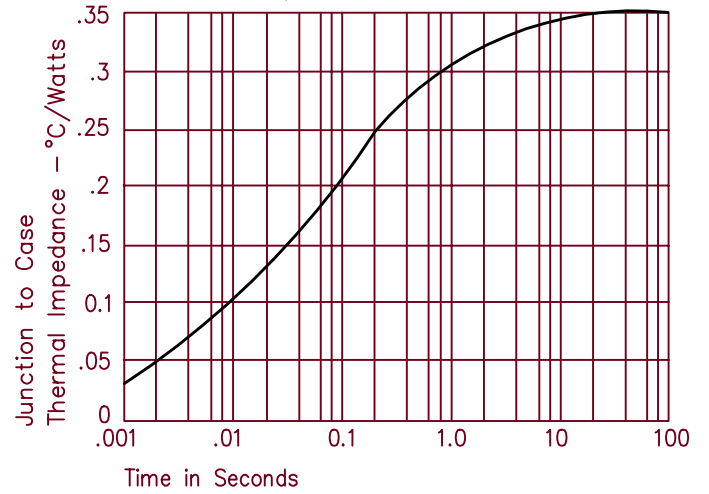


Figure 2
Forward Current Derating

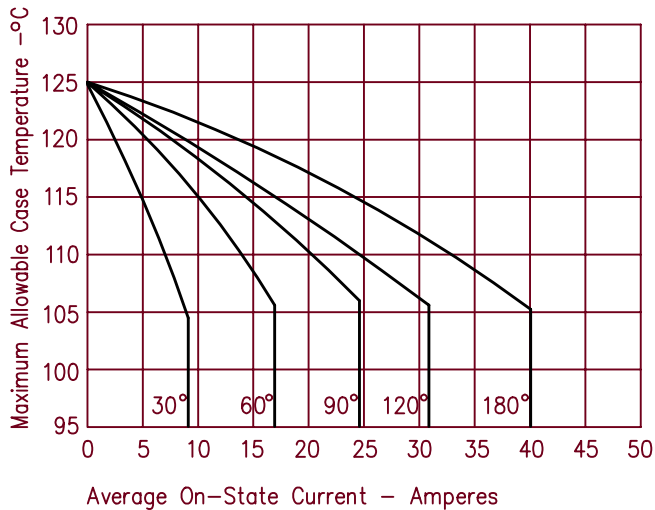


Figure 5
Maximum Nonrepetitive Surge Current

