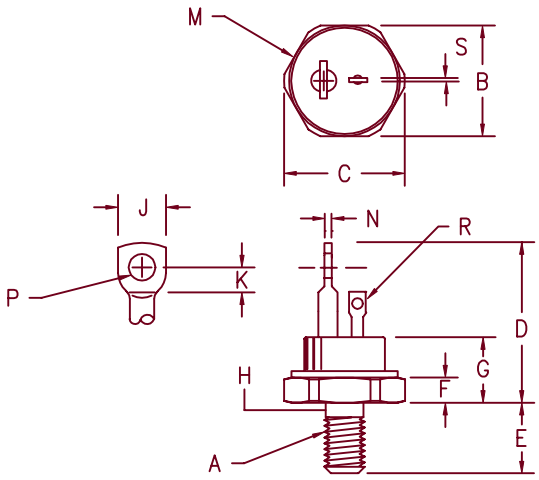
Silicon Controlled Rectifier/Inverter
Series 039



Dim.	Inches		Millimeter		
	Minimum	Maximum	Minimum	Maximum	Notes
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	

Note 1: 1/4-28 UNF-3A
Note 2: Full thread within 2 1/2 threads

TO-208AC (TO-65)

Microsemi Catalog Number	Forward & Reverse Repetitive Blocking VDRM, VRRM	Reverse Transient Blocking
03902GRF	200	300
03904GRF	400	500
03906GRF	600	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	$I_{T(RMS)}$	63 Amps	T_C = 105°C, half sine wave, $R_{\theta JC}$ = 0.35°C/W
Max. average on-state cur.	$I_{T(AV)}$	40 Amps	T_C = 105°C, half sine wave, $R_{\theta JC}$ = 0.35°C/W
Max. peak on-state voltage	V_{TM}	1.8 Volts	I_{TM} = 120 A(peak)
Max. holding current	I_H	500 mA	
Max. peak one cycle surge current	I_{TSM}	1000 A	T_C = 105°C, 60Hz
Max. I^2t capability for fusing	I^2t	4150A^2S	t = 8.3 ms

T_C = 25°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

COLORADO Microsemi
800 Hoyt Street
Broomfield, CO. 80020
PH: (303) 469-2161
FAX: (303) 466-3775
www.microsemi.com

039

Switching

Critical rate of rise of on-state current (note 1)	di/dt	400A/usec.	T_J = 125°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°C
	t_q (T)	12 usec.	T_J = 125°C
	t_q (P)	15 usec.	T_J = 125°C
	t_q (U)	20 usec.	T_J = 125°C

Note 1: I_{TM} = 50A, V_D = V_{DRM}. V_{GT} = 12V open circuit, 20 ohm-0.1 usec. rise time
Note 2: I_{TM} = 50A, di/dt = -5A/usec., V_R during turn-off interval = 50V min., reapplied dv/dt = 20V/usec., linear to rated V_{DRM}, V_{GT} = 0V
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°C
Max. nontriggering gate voltage	V_{GD}	0.15V	T_J = 125°C
Max. gate current to trigger	I_{GT}	150mA	T_J = 25°C
Max. peak gate power	P_{GM}	10W	
Average gate power	$P_{G(AV)}$	2.0W	t_p = 10 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°C & V_{DRM}
Max. reverse leakage	I_{RRM}	12mA	T_J = 125°C & V_{RRM}
Critical rate of rise of off-state voltage	dv/dt	200V/usec.	T_J = 125°C

Figure 1
Typical Forward On-State Characteristics

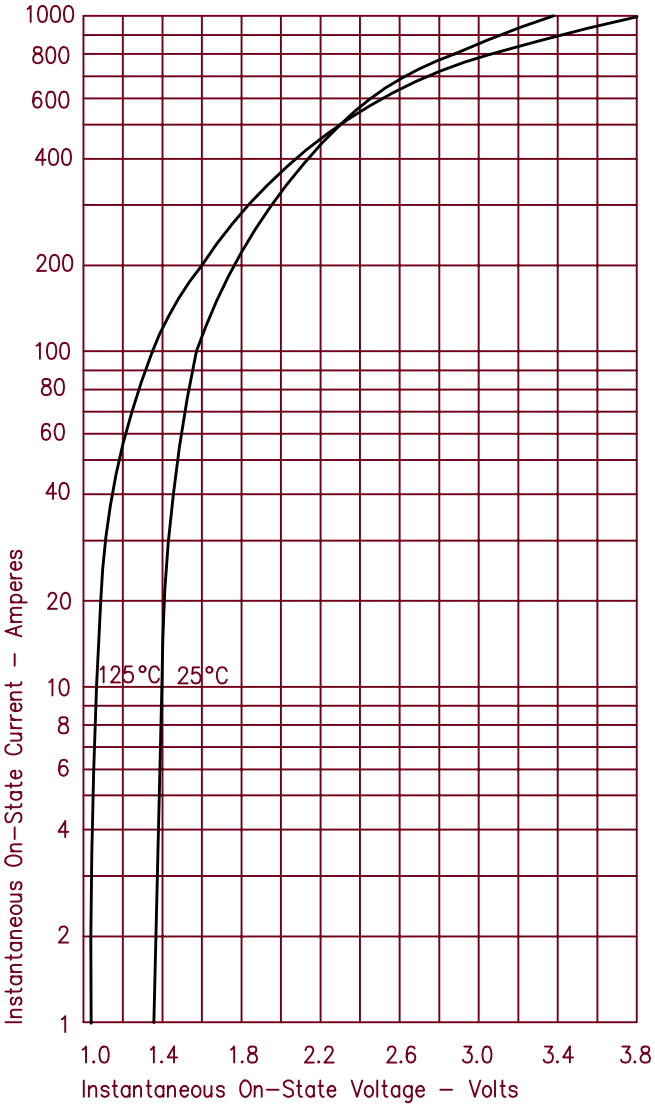


Figure 2
Forward Current Derating

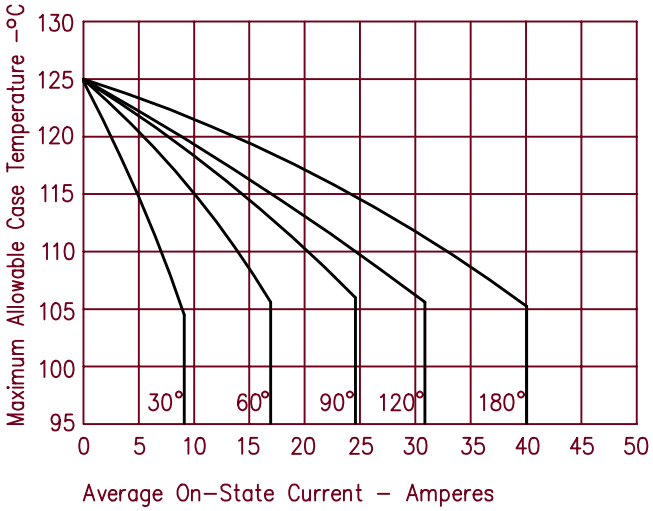


Figure 3
Maximum Power Dissipation

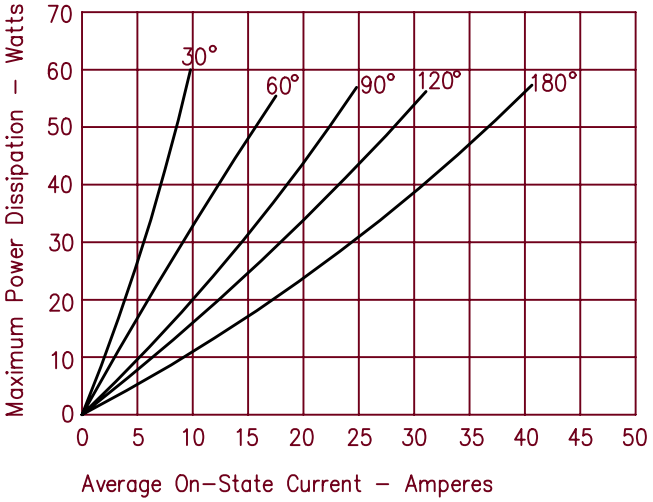


Figure 4
Transient Thermal Impedance

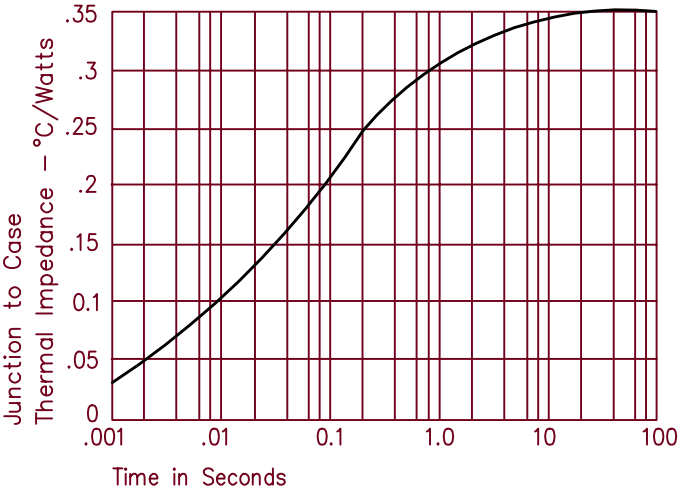


Figure 5
Maximum Nonrepetitive Surge Current

