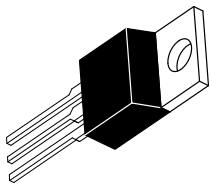
Silicon Controlled Rectifiers
Reverse Blocking Triode Thyristors

C122( )1 Series

. . . designed primarily for full-wave ac control applications, such as motor controls, heating controls and power supplies; or wherever half-wave silicon gate-controlled, solid-state devices are needed.

- Glass Passivated Junctions and Center Gate Fire for Greater Parameter Uniformity and Stability
- Small, Rugged, Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Blocking Voltage to 800 Volts
- Different Leadform Configurations, Suffix (2) thru (6) available, see Leadform Options (Section 4) for Information

SCRs
8 AMPERES RMS
50 thru 800 VOLTS



CASE 221A-04
(TO-220AB)
STYLE 3

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted.)

Rating		Symbol	Value	Unit
Repetitive Peak Off-State Voltage(1) (T_J = 25 to 100°C, Gate Open)		V_{DRM}		Volts
Repetitive Peak Reverse Voltage	C122F1	V_{RRM}	50	
	C122A1		100	
	C122B1		200	
	C122D1		400	
	C122M1		600	
	C122N1		800	
Peak Non-repetitive Reverse Voltage(1)		V_{RSM}		Volts
	C122F1		75	
	C122A1		200	
	C122B1		300	
	C122D1		500	
	C122M1		700	
	C122N1		800	
Forward Current RMS (All Conduction Angles)	$T_C \leq$ 75°C	$I_{T(RMS)}$	8	Amps
Peak Forward Surge Current (1/2 Cycle, Sine Wave, 60 Hz)		I_{TSM}	90	Amps
Circuit Fusing Considerations (t = 8.3 ms)		I^2t	34	A^2s

1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate 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. (cont.)

MAXIMUM RATINGS — continued

Rating	Symbol	Value	Unit
Forward Peak Gate Power (t = 10 μs)	P_{GM}	5	Watts
Forward Average Gate Power	$P_{G(AV)}$	0.5	Watt
Forward Peak Gate Current	I_{GM}	2	Amps
Operating Junction Temperature Range	T_J	–40 to +100	°C
Storage Temperature Range	T_{stg}	–40 to +125	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.8	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (V_{AK} = Rated V_{DRM} or V_{RRM}, Gate Open) T_C = 25°C	I_{DRM}, I_{RRM}	—	—	10	μA
T_C = 100°C		—	—	0.5	mA
Peak On-State Voltage(1) (I_{TM} = 16 A Peak, T_C = 25°C)	V_{TM}	—	—	1.83	Volts
Gate Trigger Current (Continuous dc)	I_{GT}				mA
(V_D = 6 V, R_L = 91 Ohms, T_C = 25°C)		—	—	25	
(V_D = 6 V, R_L = 45 Ohms, T_C = –40°C)		—	—	40	
Gate Trigger Voltage (Continuous dc)	V_{GT}				Volts
(V_D = 6 V, R_L = 91 Ohms, T_C = 25°C)		—	—	1.5	
(V_D = 6 V, R_L = 45 Ohms, T_C = –40°C)		—	—	2	
(V_D = Rated V_{DRM}, R_L = 1000 Ohms, T_C = 100°C)		0.2	—	—	
Holding Current	I_H				mA
(V_D = 24 Vdc, I_T = 0.5 A, 0.1 to 10 ms Pulse, Gate Trigger Source = 7 V, 20 Ohms) T_C = 25°C		—	—	30	
T_C = –40°C		—	—	60	
Turn-Off Time (V_D = Rated V_{DRM}) (I_{TM} = 8 A, I_R = 8 A)	t_q	—	50	—	μs
Critical Rate-of-Rise of Off-State Voltage (V_D = Rated V_{DRM}, Linear, T_C = 100°C)	dv/dt	—	50	—	V/μs

1. Pulse Test: Pulse Width = 1 ms, Duty Cycle ≤ 2%.

FIGURE 1 – CURRENT DERATING (HALF-WAVE)

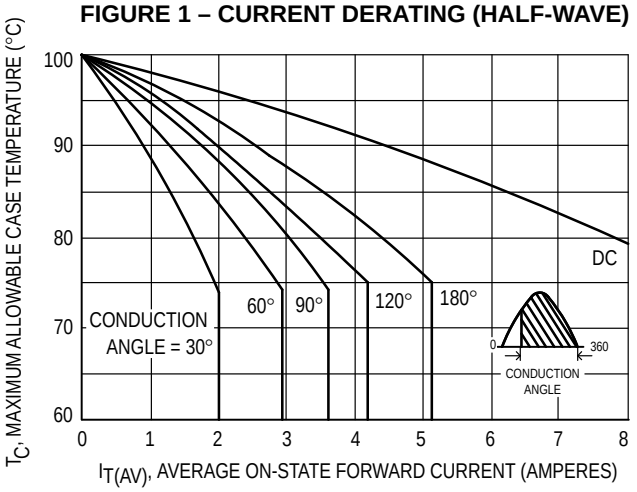


FIGURE 2 – CURRENT DERATING (FULL-WAVE)

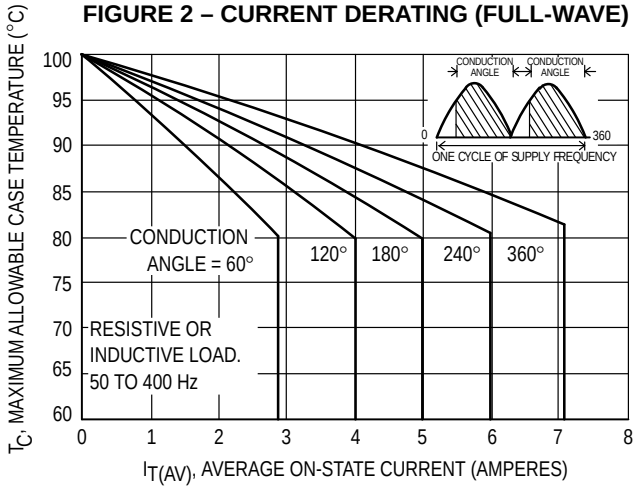


FIGURE 3 – MAXIMUM POWER DISSIPATION (HALF-WAVE)

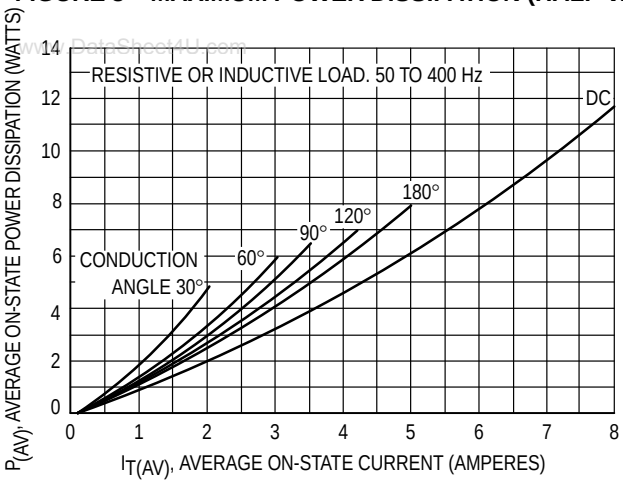


FIGURE 4 – MAXIMUM POWER DISSIPATION (FULL-WAVE)