New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
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HIGH SPEED
Silicon Controlled Rectifier

1200 VOLTS 63A RMS

C148 Silicon Controlled Rectifier is designed for power switching at high frequencies. This is an all-diffused device which is considerable smaller in size than comparably rated high power SCR's.

FEATURES:

- Fully characterized for operation inverter and chopper applications.
- High dv/dt with selections available.
- Excellent surge and I^2t ratings providing easy fusing.
- Compact hermetic package, ¼ – 28 stud.

MAXIMUM ALLOWABLE RATINGS

TYPES	REPETITIVE PEAK OFF-STATE VOLTAGE, V_{DRM}[1] T_J = -40°C to +125°C	REPETITIVE PEAK REVERSE VOLTAGE, V_{RRM}[1] T_J = -40°C to +125°C	NON-REPETITIVE PEAK REVERSE VOLTAGE, V_{RSM}[1] T_J = +125°C
C148M	600 Volts	600 Volts	720 Volts
C148S	700	700	840
C148N	800	800	960
C148T	900	900	1080
C148P	1000	1000	1200
C148PA	1100	1100	1320
C148PB	1200	1200	1440

[1] Half sinewave waveform, 10 ms max. pulse width.

RMS On-State Current, $I_{T(RMS)}$ . . . . . 63 Amperes
Peak One Cycle Surge (Non-Repetitive) On-State Current, I_{TSM} (60 Hz) . . . . . 700 Amperes
Peak One Cycle Surge (Non-Repetitive) On-State Current, I_{TSM} (50 Hz) . . . . . 670 Amperes
I^2t (for fusing) for times ≥ 1.5 milliseconds . . . . . 1360 (RMS Ampere)^2 Seconds
I^2t (for fusing) for times ≥ 8.3 milliseconds . . . . . 2000 (RMS Ampere)^2 Seconds
Critical Rate-of-Rise of On-State Current, Non-Repetitive. . . . . 100 A/μs †
Critical Rate-of-Rise of On-State Current, Repetitive . . . . . 75 A/μs †
Average Gate Power Dissipation, $P_{G(AV)}$ . . . . . 2 Watts
Storage Temperature, T_{stg} . . . . . -40°C to +150°C
Operating Temperature, T_J . . . . . -40°C to +125°C
Stud Torque . . . . . 30 Lb.-In.
3.4 N-m

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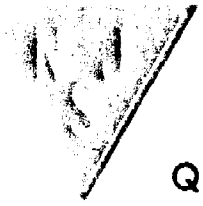
TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Repetitive Peak Reverse and Off-State Current	I_{RRM} and I_{DRM}	–	7	12	mA	T_J = -40°C to +125°C, $V = V_{DRM} = V_{RRM}$
Thermal Resistance	$R_{\theta JC}$	–	–	.35	°C/Watt	Junction-to-Case
Critical Rate-of-Rise of Off-State Voltage (Higher values may cause device switching)	dv/dt	200	–	–	V/μsec	T_J = +125°C, Gate Open. V_{DRM} = Rated using Linear or Exponential Rising Waveform. Exponential $dv/dt = \frac{V_{DRM}}{\tau}$ (.632)
Higher minimum dv/dt selections available – consult factory.						
DC Gate Trigger Current	I_{GT}	–	–	150	mAdc	T_C = +25°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	–	300		T_C = -40°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	–	125		T_C = +125°C, V_D = 6 Vdc, R_L = 3 Ohms
DC Gate Trigger Voltage	V_{GT}	–	–	3.0	Vdc	T_C = 25°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	–	3.5		T_C = -40°C, V_D = 6 Vdc, R_L = 3 Ohms
		0.25	–	–		T_C = +125°C, Rated V_{DRM}, R_L = 1000 Ohms
Peak On-State Voltage	V_{TM}	–	–	4.0	Volts	T_C = +25°C, I_{TM} = 500 Amps Peak, 1 millisecond wide pulse. Duty cycle ≤ 1%
Conventional Circuit Commutated Turn-Off Time	t_q				μsec	(1) T_C = +125°C (2) I_{TM} = 150 Amps. (3) V_R = 50 Volts Min. (4) V_{DRM} (Reapplied) (5) Rate-of-Rise of Reapplied Off-State Voltage = 20 V/μsec (linear). (6) Commutation di/dt = 5 Amps/μsec (7) Repetition Rate = 1 pps. (8) Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms
C148 – 30		–	–	30		
C148 – 40		–	–	40		
C148 – 30		–	38	†		(1) T_C = +125°C (2) I_{TM} = 150 Amps (3) V_R = 50 Volts Min. (4) V_{DRM} (Reapplied) (5) Rate-of-Rise of Reapplied Off-State Voltage = 200 V/μsec (linear). (6) Commutation di/dt = 5 Amps/μsec. (7) Repetition Rate = 1 pps. (8) Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms.
C148 – 40		–	48	†		
Conventional Circuit Commutated Turn-Off Time (with Feedback Diode)	t_q				μsec	(1) T_C = +125°C (2) I_{TM} = 150 Amps (3) V_R = 1 volt (4) V_{DRM} (Reapplied) (5) Rate-of-Rise of Off-State Voltage = 200 V/μsec (linear). (6) Commutation di/dt = 5 Amps/μsec. (7) Repetition Rate = 1 pps. (8) Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms.
C148 – 30		–	45	–		
C148 – 40		–	55	–		



Quality Semi-Conductors

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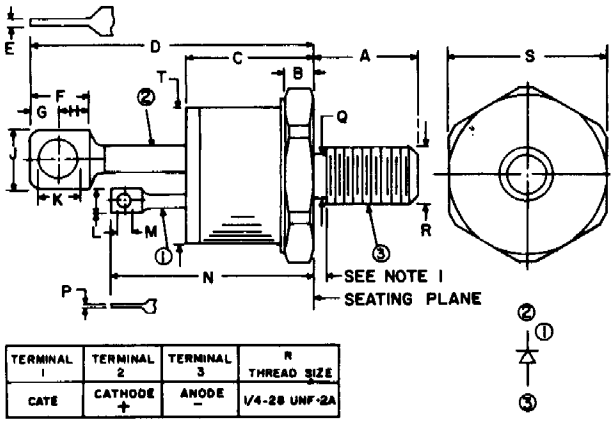

TERMINAL 1	TERMINAL 2	TERMINAL 3	R THREAD SIZE
CATE	CATHODE +	ANODE −	1/4-28 UNF-2A

NOTE: 1. COMPLETE THREADS TO WITHIN 2 1/2 THD. OF SEATING PLANE.

SYM.	INCHES MIN.	INCHES MAX.	METRIC MM MIN.	METRIC MM MAX.	SYM.	INCHES MIN.	INCHES MAX.	METRIC MM MIN.	METRIC MM MAX.
A	.422	.452	10.72	11.47	L	.090	.115	2.29	2.91
B	.120	.135	3.05	3.42	M	.055	.066	1.40	1.67
C	.534	.565	13.57	14.34	N	.831	.901	21.11	22.88
D	1.230	1.290	31.25	32.78	P	.012	—	.31	—
E	.029	.062	.74	1.56	Q	.220	—	5.59	—
F	.258	REF.	6.55	REF.	S	.676	.684	17.18	17.36
G	.138	REF.	3.50	REF.	T	—	.597	—	15.15
H	.115	—	2.83	—					
J	.240	.300	6.10	7.62					
K	.169	.182	4.30	4.62					

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