New Jersey Semi-Conductor Products, Inc.

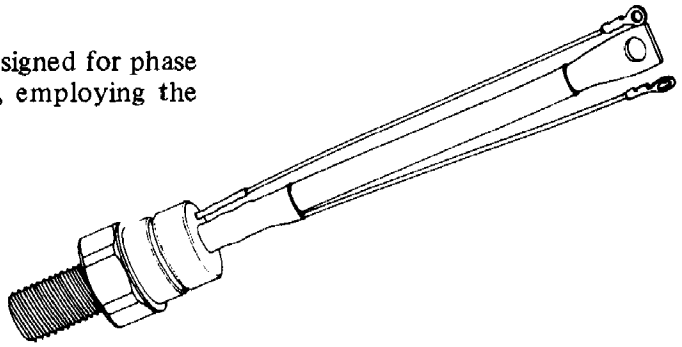
20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

High Power Silicon Controlled Rectifier

1300 Volts 235 A RMS

C180



C180 Silicon Controlled Rectifier is designed for phase control applications. This is an all-diffused Pic-Pac device, employing the field-proven amplifying gate.

FEATURES:

- High di/dt Ratings
- High dv/dt Capability with Selections Available
- Excellent Surge and I^2t Ratings Providing Easy Fusing
- Rugged Hermetic Package with Long Creepage Path

MAXIMUM ALLOWABLE RATINGS

TYPE	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
C180A	100 Volts	100 Volts	200 Volts
C180B	200	200	300
C180C	300	300	400
C180D	400	400	500
C180E	500	500	600
C180M	600	600	720
C180S	700	700	840
C180N	800	800	950
C180T	900	900	1075
C180P	1000	1000	1200
C180PA	1100	1100	1325
C180PB	1200	1200	1450
C180PC	1300	1300	1550

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

RMS On-State Current, $I_{T(RMS)}$ . . . . . 235 Amperes (All Conduction Angles)
Average On-State Current, $I_{T(AV)}$ . . . . . Depends on Conduction Angle (See Charts)
Peak One-Cycle Surge (Non-Repetitive) On-State Current, I_{TSM} (60 Hz) . . . . . 3500 Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current, I_{TSM} (50 Hz) . . . . . 3200 Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)* . . . . . 800 A/μs
Critical Rate-of-Rise of On-State Current (Repetitive)* . . . . . 500 A/μs
I^2t (for fusing), for times ≥ 1.5 milliseconds . . . . . 32,000 (RMS Ampere)^2 Seconds
Peak Gate Power Dissipation, P_{GM} . . . . . 10 Watts
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 . . . . . 250 Lb.-In. (Min.) – 300 Lb.-In. (Max.)
28 N-m (Min.) – 34 N-m (Max.)

CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Repetitive Peak Reverse and Off-State Current	I_{DRM} and I_{RRM}				mA	T_J = +25°C V_{DRM} = V_{RRM} =
C180A		–	3	10		100 Volts Peak
C180B		–	3	10		200
C180C		–	3	10		300
C180D		–	3	10		400
C180E		–	3	10		500
C180M		–	3	10		600
C180S		–	3	10		700
C180N		–	3	10		800
C180T		–	3	9		900
C180P		–	3	7		1000
C180PA		–	3	7		1100
C180PB		–	3	6		1200
C180PC		–	3	5		1300
Repetitive Peak Reverse and Off-State Current	I_{DRM} and I_{RRM}				mA	T_J = +125°C V_{DRM} = V_{RRM} =
C180A		–	15	20		100 Volts Peak
C180B		–	15	20		200
C180C		–	15	20		300
C180D		–	15	20		400
C180E		–	15	20		500
C180M		–	15	20		600
C180S		–	15	20		700
C180N		–	15	20		800
C180T		–	15	18		900
C180P		–	12	15		1000
C180PA		–	11	14		1100
C180PB		–	10	13		1200
C180PC		–	8	11		1300
Thermal Resistance	$R_{\theta JC}$	–	.12	.14	°C/Watt	Junction-to-Case
Critical Rate-of-Rise of Off-State Voltage. (Higher values may cause device switching.)	dv/dt	200	500	–	V/μsec	T_J = +125°C, V_{DRM} = Rated Using Linear or Exponential Rising Waveform, Gate Open Circuited. Exponential dv/dt = (.632)
Higher minimum dv/dt selections available – consult factory.						
Holding Current	I_H	–	75	500	mAdc	T_C = +25°C, Anode Supply = 24 Vdc. Initial On-State Current - 2.5 Amps.
Turn-On Delay Time	t_d	–	1	–	μsec	T_C = +25°C, I_T = 100 Adc, V_{DRM} = Rated Gate Supply: 10 Volt Open Circuit, 25 Ohm, 0.1 μsec max. rise time.
Gate Pulse Width Necessary to Trigger		–	8	10	μsec	T_C = 25°C, Gate Supply: 20 Volt Open Circuit, 40 Ohm, .5 μsec rise time. I_T = 1 Amp. For High di/dt Capability, See Chart 7.
DC Gate Trigger Current	I_{GT}	–	100	150	mAdc	T_C = +25°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	–	200		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}	–	1.25	3.0	Vdc	T_C = -40°C to +125°C, V_D = 6 Vdc, R_L = 3 Ohms
		0.15	–	–		T_C = +125°C, V_D = Rated, R_L = 1000 Ohms
Peak On-State Voltage	V_{TM}	–	2.3	2.85	Volts	T_C = +25°C, I_{TM} = 1500 Amps. Peak Duty Cycle ≤ 0.01%