New Jersey Semi-Conductor Products, Inc.

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

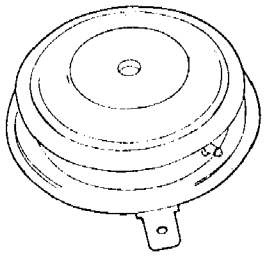
TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

HIGH SPEED
Silicon Controlled Rectifier

C384/C385

800 Volts 400A RMS

C384 and C385 Silicon Controlled Rectifiers are designed for power switching at high frequencies. These are all-diffused Press-Pak devices, employing the field-proven amplifying gate.



FEATURES:

- Fully Characterized for Operation in Inverter and Chopper Applications.
- High di/dt Ratings.
- High dv/dt Capability with Selections Available.
- Rugged Hermetic Glazed Ceramic Package.

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_{RRM}[1] T_J = +125°C
C384/C385A	100 Volts	100 Volts	200 Volts
C384/C385B	200	200	300
C384/C385C	300	300	400
C384/C385D	400	400	500
C384/C385E	500	500	600
C384/C385M	600	600	720
C385S	700	700	940
C385N	800	800	960

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

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
I^2t (for fusing) for times ≥ 1.5 milliseconds . . . . . 35,000 (RMS Ampere)^2 Seconds
I^2t (for fusing) for times ≥ 8.3 milliseconds . . . . . 50,000 (RMS Ampere)^2 Seconds
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
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
Mounting Force Required . . . . . .800 Lbs. ± 10%
3.56 KN ± 10%

CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Repetitive Peak Reverse and Off-State Current	I_{RRM} and I_{DRM}	–	3	10	mA	T_J = +25°C V = V_{DRM} = V_{RRM}
Repetitive Peak Reverse and Off-State Current	I_{RRM} and I_{DRM}	–	15	20	mA	T_J = 125°C V = V_{DRM} = V_{RRM}
Thermal Resistance	$R_{\theta JC}$	–	–	0.19	°C/Watt	Junction-to-Case – One-Side Cooled
		–	–	0.095		Junction-to-Case – Double-Side Cooled
Critical Rate-of-Rise of Off-State Voltage (Higher values may cause device switching)	dv/dt	200	500	–	V/μsec	T_J = +125°C, Gate Open. V_{DRM} = Rated linear or exponential rising waveform. Exponential dv/dt = $\frac{V_{DRM}}{\tau}$ (.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.
DC Gate Trigger Current	I_{GT}	–	125	300	mAdc	T_C = +25°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	175	500		T_C = -40°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	100	250		T_C = +125°C, V_D = 6 Vdc, R_L = 3 Ohms
DC Gate Trigger Voltage	V_{GT}	–	–	5.0	Vdc	T_C = -40°C to 0°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	–	3.0		T_C = 0°C to +125°C, V_D = 6 Vdc, R_L = 3 Ohms
		0.15	–	–		T_C = +125°C, V_{DRM}, 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 ≤ .01%
Turn-On Delay Time	t_d	–	1	–	μsec	T_C = +25°C, I_T = 50 Adc, V_{DRM}, Gate Supply: 20 Volt-Open Circuit, 20 Ohm, 0.1 μsec. max. rise time.
Conventional Circuit Commutated Turn-Off Time (with Reverse Voltage)	t_q				μsec	(1) T_C = +125°C (2) I_{TM} = 250 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 = 12.5 Amps/μsec. (7) Duty Cycle ≤ .01% (8) Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms.
	C385	–	15	20		
	C384	–	8	10		
Conventional Circuit Commutated Turn-Off Time (with Feedback Diode)	$t_{q(diode)}$				μsec	(1) T_C = +125°C (2) I_{TM} = 250 Amps. (3) V_R = 1 Volt (4) V_{DRM} (Reapplied) (5) Rate-of-Rise of Reapplied Off-State Voltage = 200 V/μsec (linear) (6) Commutation di/dt = 12.5 Amps/μsec (7) Duty Cycle ≤ .01% (8) Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms
	C385	–	20	†		
	C384	–	10	†		

†Consult factory for maximum turn-off time.