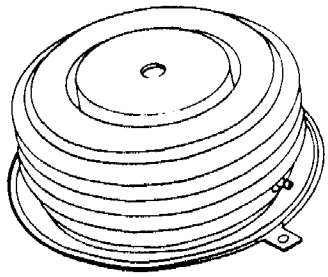
New Jersey Semi-Conductor Products, Inc.

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

TELEPHONE: (201) 376-2922
(212) 227-6005
FAX: (201) 376-8960

C390
SCR
850A RMS UP TO 1300 VOLTS



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	TRANSIENT PEAK REVERSE VOLTAGE, V_{RSM} (1) T_J = +125°C
C390E	500 Volts	500 Volts	600 Volts
C390M	600	600	700
C390S	700	700	800
C390N	800	800	900
C390T	900	900	1000
C390P	1000	1000	1150
C390PA	1100	1100	1250
C390PB	1200	1200	1400
C390PC	1300	1300	1500

(1) Half sine wave waveform, 10ms maximum duration.

Average Forward Current, On-State ..... Depends on conduction angle (See Charts 1 and 3)
Peak One-Cycle Surge ON-state Current, I_{TSM} ..... 8000 amperes
Maximum Rate of Rise of Anode Current Switching from 1000v ..... 800 A/μsec
JEDEC TEST

For repetitive DI/DT-See Fig. 11
I^2t (for fusing) (for times $\geqq$ 1.5 milliseconds) See Fig. 9 .....100,000 ampere^2 seconds
I^2t (for fusing) (at 8.3 milliseconds) ..... 265,000 ampere^{2}seconds
Peak Gate Power Dissipation, P_{GM} ..... 200 Watts @40 μsec pulse
Average Gate Power Dissipation, $P_{G(AV)}$ ..... 5 Watts
Peak Reverse Gate Voltage, V_{GRM} ..... 5 Volts
Storage and Operating Temperature, T_{STG} & T_J ..... —40°C to +125°C
Mounting Force Required ..... 2000 lbs. ± 10%
910 kg. ± 10%

Quality Semi-Conductors

CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Peak Reverse and Forward Blocking Current	I_{DRM} and I_{RRM}	—	10	20	mA	$T_J = +25°C$, $V = V_{DRM} = V_{RRM}$
Peak Reverse and Off-State Blocking Current	I_{DRM} and I_{RRM}	—	20	45	mA	$T_J = +125°C$, $V = V_{DRM} = V_{RRM}$
Effective Thermal Resistance (DC)	$R_{\theta J\text{-}C}$	—	—	.059	°C/watt	Junction to case—Double Side Cooling (D.C.)
		—	—	.118		Junction to case—Single Side Cooling (D.C.)
Critical Exponential Rate of Rise of Forward Blocking Voltage (Higher values may cause device switching)	dv/dt	200 **	—	—	V/μsec	$T_J = +125°C$, V_{DRM} = Rated, Gate open.
Holding Current	I_H	—	100	500	mAdc	$T_C = +25°C$, Anode supply = 24 Vdc. Initial forward current = 2.0 amps.
Latching Current	I_L	—	.25	—	Adc	$T_C = +25°C$, Anode voltage = 24 Vdc, Load resistance 12 ohms max.
Delay Time	t_d	—	.7	—	μsec	$T_C = +25°C$, I_T = 50 Adc Gate supply: 20V, 20Ω, 500mA, 0.1 μsec max. rise time.
Gate Trigger Current See Fig. 11 For Recommended Gate Drive Conditions.	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
		—	15	125		$T_C = +120°C$, $V_D = 6$ Vdc, R_L = 3 ohms
Gate Trigger Voltage	V_{GT}	—	—	5	Vdc	$T_C = -40°C$ to $+125°C$, $V_D = 6$ Vdc, $R_L = 3$ ohms
		.35	—	—		$T_C = +125°C$, V_D = Rated, R_L = 1000 ohms
Peak On-Voltage	V_{FM}	—	—	2.4	Volts	$T_C = +25°C$, $I_T = 3000$ A peak. Duty cycle ≦ 0.01%
Circuited Commutated Turn-Off Time	t_q*	—	125	—	μsec	(1) $T_C = +125°C$, (2) I_T = 500A, (3) V = 50 volts min., (4) V_{DRM} (reapplied), (5) Rate of rise of reapplied forward blocking voltage = 20 V/μsec (linear). (6) Commutation di/dt = 25 Amps/μsec. (7) Repetition rate = 1 pps. (8) Gate bias during turn-off interval = 0 volts, 100 ohms.

NOTE: T_C Case Temperature (measured on heatsink 1/8 inch from base of SCR.)