

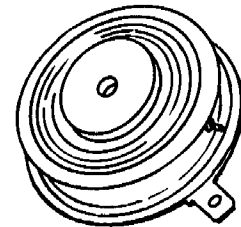
New Jersey Semi-Conductor Products, Inc.

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

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

SCR

C380 SERIES



The C380 Series of high power devices feature the proven, all-diffused construction used in the C180 Series

Special characteristics of these new devices are:

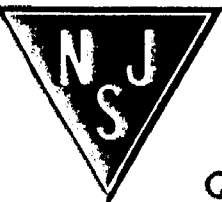
- Pressure contacts
- Increased current capability when double-sided cooling is used
- Smaller size and lighter weight
- Reversibility eliminates need for special reverse polarity units
- Hermetically sealed

MAXIMUM ALLOWABLE RATINGS

TYPE	PEAK FORWARD BLOCKING VOLTAGE, V_{FOM}^* $T_C = -40^\circ\text{C to } +120^\circ\text{C}$	REPETITIVE PEAK REVERSE VOLTAGE, $V_{ROM}(\text{rep})^*$ $T_C = -40^\circ\text{C to } +120^\circ\text{C}$	TRANSIENT PEAK REVERSE VOLTAGE (Non-recurrent < 5 Millisec.), $V_{ROM}(\text{non-rep})$ $T_C = -40^\circ\text{C to } +120^\circ\text{C}$
C380A	100 Volts	100 Volts	200 Volts
C380B	200	200	300
C380C	300	300	400
C380D	400	400	500
C380E	500	500	600
C380M	600	600	720
C380S	700	700	840
C380N	800	800	950
C380T	900	900	1075
C380P	1000	1000	1200
C380PA	1100	1100	1325
C380PB	1200	1200	1450
C380PC	1300	1300	1550

Average Forward Current, On-State. Depends on conduction angle. (See Charts 1 and 3)
 Peak One-Cycle Surge Forward Current, $I_{FM}(\text{surge})$ 3500 amperes
 Maximum Rate of Rise of Anode Current During Turn-on Interval
 (High Gate Drive Required, Chart 11) (Switching Rates ≤ 400 Hz.)
 Switch From $< 500\text{V}$ 100A/ μsec
 Switch From $< 1000\text{V}$ 75A/ μsec
 Switch From $< 1200\text{V}$ 50A/ μsec
 Switch From $< 1300\text{V}$ 25A/ μsec
 I^2t (for fusing) (for times ≥ 1.5 milliseconds) 32,000 ampere² seconds
 I^2t (for fusing) (at 8.3 milliseconds) 50,000 ampere² seconds
 Peak Gate Power Dissipation, P_{GM} 10 watts
 Average Gate Power Dissipation, $P_{G(AV)}$ 2 watts
 Peak Reverse Gate Voltage, V_{GRM} 5 volts
 Storage and Operating Temperature, T_C $-40^\circ\text{C to } +120^\circ\text{C}$
 External Force Required. 800 lbs. $\pm 10\%$

*Ratings apply for zero or negative gate voltage. Maximum heatsink thermal resistance for which maximum PRV ratings apply equal 1.5°C/watt.



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

C380 SERIES

CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Peak Reverse and Forward Blocking Current	I_{ROM} and I_{FOM}				mA	$T_C = 25^\circ C$ $V_{FOM} = V_{ROM} = 100V$ peak 200V peak 300V peak 400V peak 500V peak 600V peak 700V peak 800V peak 900V peak 1000V peak 1100V peak 1200V peak 1300V peak
Peak Reverse and Forward Blocking Current	I_{ROM} and I_{FOM}				mA	$T_C = 120^\circ C$ $V_{FOM} = V_{ROM} = 100V$ peak 200V peak 300V peak 400V peak 500V peak 600V peak 700V peak 800V peak 900V peak 1000V peak 1100V peak 1200V peak 1300V peak
Effective Thermal Resistance (DC)	θ_{J-C}	—	—	0.15	$^\circ C/watt$	Junction to Case - One side cooled
		—	—	0.095		Junction to Case - Two sides cooled
Exponential Rate of Rise of Forward Blocking Voltage that will not turn-on SCR	dv/dt	200	500	—	V/ μsec	$T_C = +120^\circ C$, Gate open circuited, $V_{FOM} =$ Rated.
Holding Current	I_{HO}	—	75	500	mAdc	$T_C = +25^\circ C$, Anode supply = 24Vdc, Initial Forward Current = 2.5A
Latching Current	I_{LX}	—	—	2	Adc	$T_C = +25^\circ C$, Anode voltage = 24Vdc, Load resistance 12 ohm max.
Turn-On Time (Delay Time + Rise Time)	$t_d + t_r$	—	8	—	μsec	$T_C = +25^\circ C$, $I_F = 100Adc$, V_{FXM} = rated. Gate supply: 10 volt open circuit, 25 ohm, 0.1 μsec max. rise time.
Gate Pulse Width Necessary to Trigger		—	8	10	μsec	Gate supply: 5 volt open circuit, 5 ohm, 0.1 μsec rise time. $I_F = 1$ amp. For high di/dt capability see Chart 11.
Gate Trigger Current	I_{GT}	—	10	150	mAdc	$T_C = +25^\circ C$, $V_{FX} = 6Vdc$, $R_L = 3$ ohms
		—	20	200		$T_C = -40^\circ C$, $V_{FX} = 6Vdc$, $R_L = 3$ ohms
		—	4	125		$T_C = +125^\circ C$, $V_{FX} = 6Vdc$, $R_L = 3$ ohms
Gate Trigger Voltage	V_{GT}	—	1.25	3.0	Vdc	$T_C = -40^\circ C$ to $+125^\circ C$, $V_{FX} = 6Vdc$, $R_L = 3$ ohms
		0.15	—	—		$T_C = +125^\circ C$, $V_{FX} = 6Vdc$, $R_L = 3$ ohms
Peak On-Voltage	V_{FM}	—	2.3	2.85	V	$T_C = +25^\circ C$, $I_{FM} = 1500A$ Peak Duty Cycle = 0.01%
Circuit Commutated Turn-Off Time	t_{off}	—	125	—	μsec	$T_C = +120^\circ C$, $I_{FM} = 250A$, $V_{RX} = 50V$ min. V_{FXM} (reapplied) Rated Rate of rise of reapplied Forward Blocking Voltage = 20 volts/ μsec . Linear $I_{RM} = 25A$ min. Gate bias: 0 volts, 100 ohms during turn-off interval. Duty Cycle = 0.01%

OUTLINE DRAWINGS
NEW 1/2" PRESS PAK PACKAGE

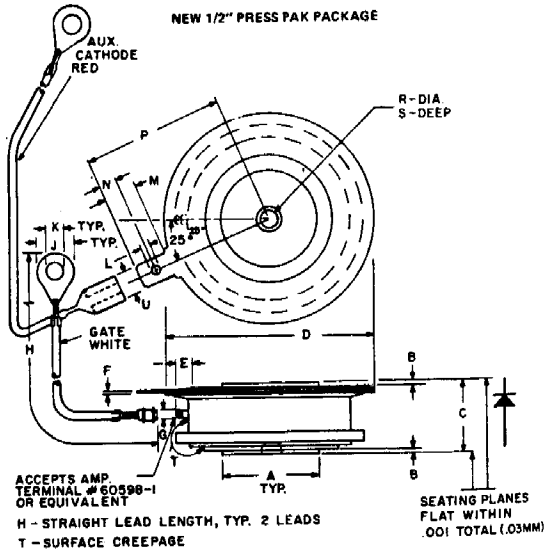


TABLE OF DIMENSIONS
Conversion Table

SYM	DECIMAL INCHES		METRIC MM	
	MIN.	MAX.	MIN.	MAX.
A	.744	.792	18.897	19.101
B	.030	.060	.762	1.524
C	.515	.565	13.081	14.351
D	1.600	1.656	40.64	42.06
E	.110	—	2.794	—
F	.031	.017	.330	.432
G	.057	.099	1.447	1.449
H	7.980	8.115	202.70	206.11
J	—	.300	—	7.620
K	.137	.153	3.478	3.886
L	.065	.070	1.651	1.778
M	.245	.260	6.223	6.604
N	.120	.140	3.048	3.556
P	1.090	1.125	27.69	28.55
R	.135	.145	3.429	3.683
S	.067	.083	1.701	2.108
T	.340	—	8.636	—
U	.186	.189	4.724	4.801