

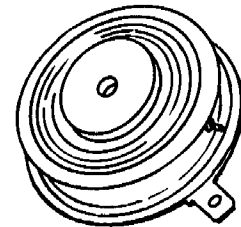
# New Jersey Semi-Conductor Products, Inc.

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# 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:

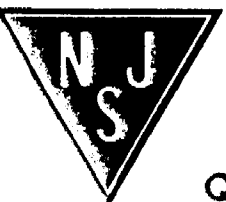
- Pressure contacts
- Increased current capability when double-sided cooling is used
- Smaller size and lighter weight
- Reversibility eliminates need for special reverse polarity units
- Hermetically sealed

### 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  $\leq 400$  Hz.) . . . . .  
     Switch From  $< 500\text{V}$  . . . . . 100A/ $\mu\text{sec}$   
     Switch From  $< 1000\text{V}$  . . . . . 75A/ $\mu\text{sec}$   
     Switch From  $< 1200\text{V}$  . . . . . 50A/ $\mu\text{sec}$   
     Switch From  $< 1300\text{V}$  . . . . . 25A/ $\mu\text{sec}$   
 $I^2t$  (for fusing) (for times  $\geq 1.5$  milliseconds) . . . . . 32,000 ampere<sup>2</sup> seconds  
 $I^2t$  (for fusing) (at 8.3 milliseconds) . . . . . 50,000 ampere<sup>2</sup> 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 $^\circ\text{C/watt}$ .



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**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)	$\theta_{J-C}$	—	—	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/ $\mu sec$	$T_C = +120^\circ C$ , 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	—	$\mu sec$	$T_C = +25^\circ C$ , $I_F = 100Adc$ , $V_{FXM}$ = rated. Gate supply: 10 volt open circuit, 25 ohm, 0.1 $\mu sec$ max. rise time.
Gate Pulse Width Necessary to Trigger		—	8	10	$\mu sec$	Gate supply: 5 volt open circuit, 5 ohm, 0.1 $\mu sec$ 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	—	$\mu sec$	$T_C = +120^\circ C$ , $I_{FM} = 250A$ , $V_{RX} = 50V$ min. $V_{FXM}$ (reapplied) Rated Rate of rise of reapplied Forward Blocking Voltage = 20 volts/ $\mu sec$ . 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

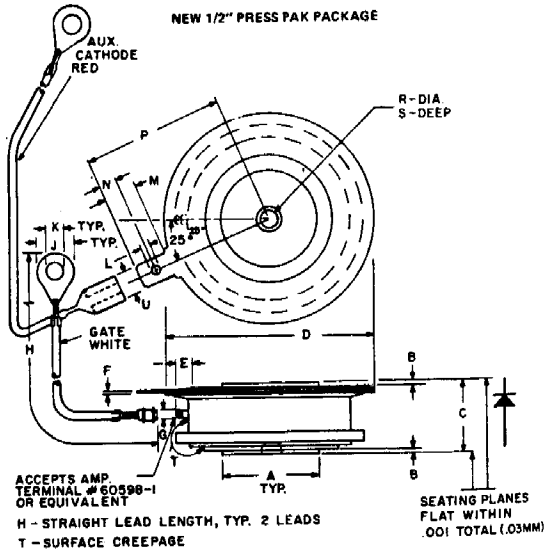


TABLE OF DIMENSIONS  
Conversion Table

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