

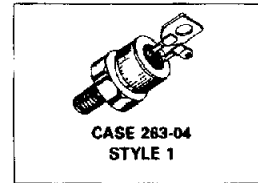
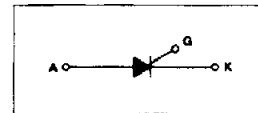
New Jersey Semi-Conductor Products, Inc.

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

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

MCR70-()A Series MCR71 Series

SCRs
35 and 55 AMPERES RMS
50 thru 400 VOLTS



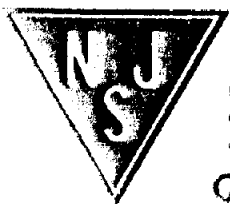
MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted.)

Rating	Symbol	Value		Unit
		MCR70-()A	MCR71	
Peak Repetitive Forward or Reverse Blocking Voltage, Note 1 ($T_J = 25$ to 125°C Gate Open)	V_{DRM} or V_{RRM}			Volts
	MCR70-()A	50		
	MCR71	100		
		3		
		6		
Peak Discharge Current, Note 2	I_{TM}	850	1700	Amps
On-State Current ($T_C \leq 75^\circ\text{C}$)	$I_T(\text{RMS})$ $I_T(\text{AV})$	35 22	55 35	Amps
Peak Non-Repetitive Surge Current (1/2 Cycle, Sine Wave, 60 Hz, $T_J = 125^\circ\text{C}$)	I_{TSM}	350	550	Amps
Circuit Fusing ($t = 8.3$ ms)	I^2t	510	1255	A^2s
Critical Rate-of-Rise of Current, Note 3	di/dt	100	200	$\text{A}/\mu\text{s}$
Forward Peak Gate Power ($t \leq 20 \mu\text{s}$)	P_{GM}	20		Watts
Forward Average Gate Power	$P_{G(\text{AV})}$	0.5		Watts
Forward Peak Gate Current ($t \leq 20 \mu\text{s}$)	I_{GM}	2		Amps
Operating Junction Temperature Range	T_J	-40 to +125		$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +150		$^\circ\text{C}$
Mounting Torque	—	30		in. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1	$^\circ\text{C}/\text{W}$

- Note 1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.
2. Rating is for $t_w = 1$ ms. See Figure 1 for I_{TM} limits of an exponentially decaying current pulse of various durations.
3. Test Conditions: $I_G = 150$ mA, $V_D =$ Rated V_{DRM} , $I_{TM} =$ Rated Value, $T_J = 125^\circ\text{C}$.



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 datasheet are current before placing orders.

Quality Semi-Conductors

MCR70-()A Series • MCR71 Series

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current ($V_{AK} = \text{Rated } V_{DRM} \text{ or } V_{RRM}, \text{ Gate Open}$) $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	I_{DRM}, I_{RRM}	— —	— —	10 2	μA mA
On-State Voltage, Note 1 ($I_{TM} = 70 \text{ A}$) MCR70 series ($I_{TM} = 175 \text{ A}$) MCR71 series ($I_{TM} = 850 \text{ A}, t_w = 1 \text{ ms}$) Note 2 MCR70 series ($I_{TM} = 1700 \text{ A}, t_w = 1 \text{ ms}$) Note 2 MCR71 series	V_{TM}	— — — —	1.5 1.7 6 7	1.85 2.1 — —	Volts
Gate Trigger Current (Continuous dc) ($V_D = 12 \text{ V}, R_L = 100 \Omega$)	I_{GT}	2	10	30	mA
Gate Trigger Voltage (Continuous dc) ($V_D = 12 \text{ V}, R_L = 100 \Omega$) ($V_D = \text{Rated } V_{DRM}, R_L = 1 \text{ k}\Omega, T_J = 125^\circ\text{C}$)	V_{GT}	— 0.2	1 —	1.5 —	Volts
Holding Current ($I_{TM} = 0.5 \text{ A}, \text{ Gate Open}$)	I_H	3	15	50	mA
Latching Current ($V_D = 12 \text{ Vdc}, I_G = 150 \text{ mA}, t_r \leq 50 \mu\text{s}$)	I_L	—	30	60	mA
Critical Rate-of-Rise of Off-State Voltage ($V_D = \text{Rated } V_{DRM}, \text{ Gate Open}, \text{ Exponential Waveform}, T_C = 125^\circ\text{C}$)	dv/dt	10	—	—	$\text{V}/\mu\text{s}$
Turn-On Time, Note 3 ($V_D = \text{Rated } V_{DRM}, I_G = 150 \text{ mA}$) ($I_{TM} = 70 \text{ A Peak}$) MCR70 series ($I_{TM} = 110 \text{ A Peak}$) MCR71 series	t_{on}	— —	1 1.2	— —	μs

- Notes: 1. Duty Cycle $\leq 1\%$, Pulse Width $\leq 300 \mu\text{s}$
 2. Characteristic applies for $t_w = 1 \text{ ms}$. t_w is defined as 5 time constants of an exponentially decaying current pulse.
 3. The gate controlled turn-on time in a crowbar circuit will be influenced by the circuit inductance.