

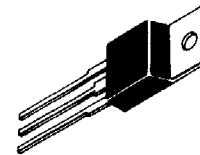
Silicon Controlled Rectifier Reverse Blocking Triode Thyristor

... designed for industrial and consumer applications such as temperature, light and speed control; process and remote controls; warning systems; capacitive discharge circuits and MPU interface.

- Center Gate Geometry for Uniform Current Density
- All Diffused and Glass-Passivated Junctions for Parameter Uniformity and Stability
- Small, Rugged Thermowatt Construction for Low Thermal Resistance, High Heat Dissipation and Durability
- Low Trigger Currents, 200 μ A Maximum for Direct Driving from Integrated Circuits

**MCR72-1
 thru
 MCR72-8**

**SCRs
 8 AMPERES RMS
 25 thru 600 VOLTS**

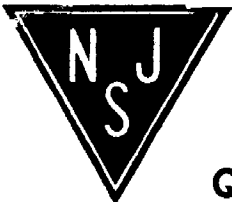


TO-220AB

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Blocking Voltage (Note 1) ($T_J = -40$ to 110°C) (1/2 Sine Wave, $R_{GK} = 1 \text{ k}\Omega$)	V_{DRM} or V_{RRM}		Volts
MCR72		-1 -2 -3 -4 -5 -6 -7 -8	25 50 100 200 300 400 500 600
On-State RMS Current ($T_C = 83^\circ\text{C}$)	$I_T(\text{RMS})$	8	Amps
Peak Non-Repetitive Surge Current (1/2 Cycle, 60 Hz, $T_J = -40$ to 110°C)	I_{TSM}	100	Amps
Circuit Fusing ($t = 1$ to 8.3 ms)	I^2t	40	A^2s
Peak Gate Voltage ($t \leq 10 \mu\text{s}$)	V_{GM}	± 5	Volts
Peak Gate Current ($t \leq 10 \mu\text{s}$)	I_{GM}	1	Amp
Peak Gate Power ($t \leq 10 \mu\text{s}$)	P_{GM}	5	Watts
Average Gate Power	$P_{G(AV)}$	0.75	Watts
Operating Junction Temperature Range	T_J	-40 to $+110$	$^\circ\text{C}$

Note 1: Ratings apply for negative gate voltage or $R_{GK} = 1 \text{ k}\Omega$. Devices shall not have a positive gate voltage concurrently with a negative voltage on the anode. Devices should not be tested with a constant current source for forward and reverse blocking capability such that the voltage applied exceeds the rated blocking voltage. (cont.)



MCR70 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 (Note 1) (Rated V_{DRM} or V_{RRM}) $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	I_{DRM} , I_{RRM}	— —	— —	10 2	μA mA
On-State Voltage (Note 2) ($I_{TM} = 70\text{ A}$) MCR70 series ($I_{TM} = 175\text{ A}$) MCR71 series ($I_{TM} = 850\text{ A}$, $t_W = 1\text{ ms}$) Note 3 MCR70 series ($I_{TM} = 1700\text{ A}$, $t_W = 1\text{ ms}$) Note 3 MCR71 series	V_{TM}	— — — —	1.5 1.7 6 7	1.85 2.1 — —	Volts
Gate Trigger Current ($V_D = 12\text{ V}$, $R_L = 100\ \Omega$)	I_{GT}	2	10	30	mA
Gate Trigger Voltage ($V_D = 12\text{ Volts}$, $R_L = 100\ \Omega$) ($V_D = \text{Rated } V_{DRM}$, $R_L = 1\text{ k}\Omega$, $T_J = 125^\circ\text{C}$)	V_{GT}	— 0.2	1 —	1.5 —	volts
Holding Current ($I_{TM} = 0.5\text{ A}$, 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 ($V_D = \text{Rated } V_{DRM}$, Gate Open, Exponential Waveform, $T_C = 125^\circ\text{C}$)	dv/dt	10	—	—	$\text{V}/\mu\text{s}$
Turn-On Time (Note 3) ($V_D = \text{Rated } V_{DRM}$, $I_G = 150\text{ mA}$) ($I_{TM} = 70\text{ Amps, peak}$) MCR70 series ($I_{TM} = 110\text{ Amps, peak}$) MCR71 series	t_{on}	— —	1 1.2	— —	μs

- Notes: 1. The rated voltages can be applied over the rated operating junction temperatures without incurring damage. Ratings apply for shorted-open or shorted-gate conditions or negative voltage on the gate. Devices should not be tested for blocking capability in a manner such that the voltage supplied exceeds the rated blocking voltages.
2. Duty Cycle $\leq 1\%$, Pulse Width $\leq 300\ \mu\text{s}$.
3. Characteristic applies for $t_W = 1\text{ ms}$. t_W is defined as 5 time constants of an exponentially decaying current pulse.
4. The gate controlled turn-on time in a crowbar circuit will be influenced by the circuit inductance.