New Jersey Semi-Conductor Products, Inc.

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Silicon Controlled Rectifiers

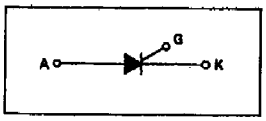
Reverse Blocking Triode Thyristors

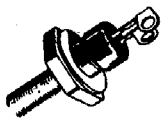
MCR729-5 thru MCR729-10

SCRs
5 AMPERES RMS
300 thru 800 VOLTS

... fast switching, high-voltage Silicon Controlled Rectifiers especially designed for pulse modulator applications in radar and other similar equipment.

- High-Voltage: V_{DRM} = 300 to 800 Volts
- Turn-On Times: In Nanosecond Range
- Repetitive Pulse Current to 100 Amps
- Stable Switching Characteristics Over an Operating Temperature Range From −65 to +105°C
- Pulse Repetition Rates as High as 10,000 pps





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MAXIMUM RATINGS (T_J = 105°C unless otherwise noted.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Forward Blocking Voltage, Note 1 MCR729-5 -6 -7 -8 -9 -10	V_{DRM}	 300 400 500 600 700 800	Volts
Peak Repetitive Reverse Blocking Voltage, Note 1	V_{RRM}	50	Volts
Forward Current RMS	$I_{T(RMS)}$	5	Amps
Average Forward Power	$P_{F(AV)}$	5	Watts
Peak Repetitive On-State Control (PW = 10 μs)	I_{TRM}	100	Amps
Peak Forward Gate Power	P_{GFM}	20	Watts
Average Forward Gate Power	$P_{GF(AV)}$	1	Watt
Peak Forward Gate Current	I_{GFM}	5	Amps
Peak Forward Gate Voltage	V_{GFM}	10	Volts
Peak Reverse Gate Voltage	V_{GRM}	10	Volts
Operating Junction Temperature Range	T_J	−65 to +105	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C
Stud Torque		15	in. lb.

Note 1. Ratings apply for zero or negative gate voltages. Devices shall not have a positive bias to the gate concurrently with a negative potential on the anode. Devices should not be tested with a constant current source for forward and reverse blocking voltages such that the applied voltage exceeds the ratings.

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak Forward or Reverse Blocking Current (Rated V_{DRM} or V_{RRM}, gate open) T_C = 105°C	I_{DRM}, I_{RRM}	—	0.2	2	mA
Gate Trigger Current (Continuous dc) (V_D = 7 Vdc, R_L = 100 ohms)	I_{GT}	—	10	50	mAdc
Gate Trigger Voltage (Continuous dc) (V_D = 7 Vdc, R_L = 100 ohms)	V_{GT}	—	0.8	1.5	Volts
Holding Current (V_D = 7 Vdc, gate open)	I_H	3	15	—	mA
Forward On Voltage (I_{TM} = 5 A, PW ≤ 1 ms, Duty Cycle ≤ 1%)	V_{TM}	—	—	2.6	Volts
Dynamic Forward On Voltage (0.5 μs after 50% pt, I_G = 200 mA, V_D = Rated V_{DRM}, $I_{F(pulse)}$ = 30 Amps)	V_{TM}	—	15	25	Volts
Turn-On Time (t_d + t_r) (I_G = 200 mA, V_D = Rated V_{DRM}) (I_{TM} = 30 Amps peak) (I_{TM} = 100 Amps peak)	t_{on}	 — —	 200 400	 — —	ns
Turn-On Time Variation (T_C = +25°C to +105°C and −65°C to +25°C, I_{TM} = 30 A)	t_{on}	—	±500	—	ns
Pulse Turn-Off Time ($I_{F(pulse)}$ = 30 Amps, $I_{reverse}$ = 0) (Inductive charging circuit)	t_{rec}	—	15	—	μs
Forward Voltage Application Rate (Linear Rate of Rise) (V_D = Rated V_{DRM}, gate open, T_C = 105°C)	dv/dt	50	—	—	V/μs
Thermal Resistance (Junction to Case)	θ_{JC}	—	—	4	°C/W