Silicon Controlled Rectifiers Reverse Blocking Triode Thyristors

... PNPN devices designed for high volume, low cost consumer applications such as temperature, light and speed control; process and remote control; and warning systems where reliability of operation is critical.

- Small Size
- Passivated Die Surface for Reliability and Uniformity
- · Low Level Triggering and Holding Characteristics
- Recommend Electrical Replacement for C106
- Available in Two Package Styles: Surface Mount Leadforms — Case 369A Miniature Plastic Package — Straight Leads — Case 369

ORDERING INFORMATION

- To Obtain "DPAK" in Surface Mount Leadform (Case 369A): Shipped in Sleeves — No Suffix, i.e., MCR706A
 Shipped in 16 mm Tape and Reel — Add "RL" Suffix to Device Number, i.e., MCR706ARL
- To Obtain "DPAK" in Straight Lead Version: Shipped in Sleeves — Add '1' Suffix to Device Number, i.e., MCR706A1

MAXIMUM RATINGS (TJ = 25°C unless otherwise noted.)

Characteristic		Symbol	Value	Unit	
Peak Repetitive Forward ar (1) (1/2 Sine Wave) (R_{GK} = 1000 Ohms, T_{C} = -40 to +110°C)	MCR703A1, MCR703A MCR703A1, MCR703A MCR704A1, MCR704A MCR706A1, MCR706A MCR708A1, MCR708A	VDRM or VRRM	100 200 400 600	Volts	
Peak Non-repetitive Revers (1/2 Sine Wave, R _{GK} = 1 T _C = -40 to +110°C)	e Blocking Voltage 000 Ohms, MCR703A1, MCR703A MCR704A1, MCR704A MCR706A1, MCR706A MCR708A1, MCR708A	VRSM	150 250 450 650	Volts	
Average On-State Current	(T _C = -40 to +90°C) (T _C = +100°C)	^I T(AV)	2.6 1.6	Amps	
Surge On-State Current (1 +5 (1 +5	/2 Sine Wave, 60 Hz, T _C = 90°C) /2 Sine Wave, 1.5 ms T _C = 90°C)	ITSM	25 35	Amps	
Circuit Fusing (t = 8.3 ms)		l ² t	2.6	A ² s	
Peak Gate Power (Pulse Width = 10 µs, T _C = 90°C)		PGM	0.5	Watt	
Average Gate Power (t = 8.3 ms, T _C = 90°C)		PG(AV)	0.1	Watt	
Peak Forward Gate Current		^I GM	0.2	Amp	
Peak Reverse Gate Voltage		VRGM	6	Volts	
Operating Junction Temperature Range		ТJ	-40 to +110	°C	
Storage Temperature Range		Tstg	-40 to +150	°C	



SCRs 4.0 AMPERES RMS 100 thru 600 VOLTS





 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.

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

Quality Semi-Conductors

MCR703A thru MCR708A

THERMAL CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}		8.33	°C/W
Thermal Resistance, Junction to Ambient (Case 369A-04) ⁽¹⁾	R _{θJA}	_	80	°C/W
Thermal Resistance, Junction to Ambient (Case 369-03) ⁽²⁾	R _{θJA}	—	85	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C and R_{GK} = 1000 ohms unless otherwise noted.)

Characteristic	Symbol	Min	Тур	Max	Unit
Peak Forward or Reverse Blocking Current (V _{AK} = Rated V _{DRM} or V _{RRM}) T _C = 25°C T _C = 110°C	^I DRM ^{, I} RRM		—	10 200	μA
Peak Forward "On" Voltage (I _{TM} = 8.2 A Peak, Pulse Width ≐ 1 to 2 ms, 2% Duty Cycle)	∨тм		_	2.2	Volts
Gate Trigger Current (Continuous dc) ⁽³⁾ (V _{AK} = 12 Vdc, R _L = 24 Ohms) (V _{AK} = 12 Vdc, R _L = 24 Ohms, T _C = -40°C)	IGT		25 —	75 300	μA
Gate Trigger Voltage (Continuous dc) (Source Voltage = 12 V, R _S = 50 Ohms) (V _{AK} = 12 Vdc, R _L = 24 Ohms, T _C = -40°C)	V _{GT}	_	_	1	Volts
Gate Non-Trigger Voltage (V _{AK} = Rated V _{DRM} , R _L = 100 Ohms, T _C = 110°C)	V _{GD}	0.2			Volts
Holding Current (V _{AK} = 12 Vdc, I _{GT} = 2 mA) $T_C = 25^{\circ}C$ (Initiating On-State Current = 200 mA) $T_C = -40^{\circ}C$	Чн	_		5 10	mA
Total Turn-On Time (Source Voltage = 12 V, R _S = 6 k Ohms) (I _{TM} = 8.2 A, I _{GT} = 2 mA, Rated V _{DRM}) (Rise Time = 20 ns, Pulse Width = 10 μs)	tgt	_	2	—	μs
Forward Voltage Application Rate (V _D = Rated V _{DRM} , Exponential Waveform, T _C = 110°C)	dv/dt	—	10	—	V/µs

1. Case 369A-04 when surface mounted on minimum pad sizes recommended.

2. Case 369-03 standing in free air.

3. R_{GK} current not included in measurement.







