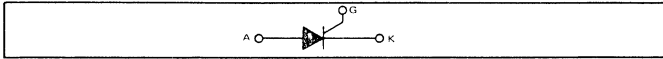


MCR3818-1 thru MCR3818-10

MCR3918-1 thru MCR3918-10



REVERSE BLOCKING TRIODE THYRISTOR

... designed for industrial and consumer applications such as power supplies, battery chargers, temperature, motor, light and welder controls.

- Supplied in Either Pressfit or Stud Package
- High Surge Current Rating - $I_{TSM} = 240$ Amp
- Low On-State Voltage - 1.2 V (Typ) @ $I_{TM} = 20$ Amp
- Practical Level Triggering and Holding Characteristics - 40 mA (Max) and 50 mA (Max) @ $T_C = 25^\circ\text{C}$

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Forward and Reverse Voltage (1)			
MCR3818, MCR3918 - 1	V_{DRM}	25	Volts
- 2	-or-	50	
- 3	V_{RRM}	100	
- 4		200	
- 5		300	
- 6		400	
- 7		500	
- 8		600	
- 9		700	
- 10		800	
Non-Repetitive Reverse Blocking Voltage	V_{RSM}		Volts
MCR3818, MCR3918 - 1		35	
- 2		75	
- 3		150	
- 4		300	
- 5		400	
- 6		500	
- 7		600	
- 8		700	
- 9		800	
- 10		900	
On-State Current RMS	$I_{T(RMS)}$	20	Amp
Average On-State Current ($T_C = 67^\circ\text{C}$)	$I_{T(AV)}$	13	Amp
Circuit Fusing ($T_J = -40$ to $+100^\circ\text{C}$, $t \leq 8.3$ ms)	I^2t	235	A^2s
Peak Non-Repetitive Surge Current (One cycle, 60 Hz, $T_J = -40$ to $+100^\circ\text{C}$)	I_{TSM}	240	Amp
Peak Gate Power (Maximum Pulse Width = 10 μs)	P_{GM}	5.0	Watts
Average Gate Power	$P_{G(AV)}$	0.5	Watt
Peak Forward Gate Current (Maximum Pulse Width = 10 μs)	I_{GM}	2.0	Amp
Peak Gate Voltage	V_{GM}	10	Volts
Operating Junction Temperature Range	T_J	-40 to +100	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +150	$^\circ\text{C}$
Stud Torque		30	in. lb.

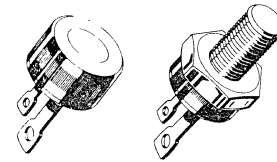
THERMAL CHARACTERISTICS

Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$			$^\circ\text{C/W}$
Pressfit Package		1.0	1.5	
Stud Package		1.1	1.6	

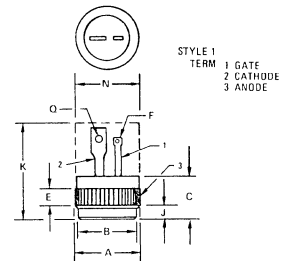
(1) See note on page 2.

SILICON CONTROLLED RECTIFIER

20 AMPERES RMS
25-800 VOLTS



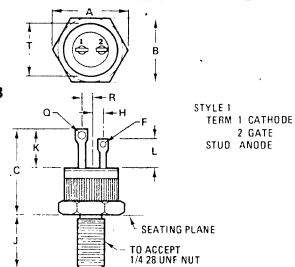
MCR3818 SERIES



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	12.73	12.83	0.501	0.505
B	11.81	12.06	0.465	0.475
C	8.39	9.65	0.330	0.380
E	2.54		0.100	
F	0.89	2.16	0.035	0.085
J	2.04	2.46	0.080	0.097
K		20.32		0.800
N		12.95		0.510
Q	1.65	4.06	0.065	0.160

CASE 174-03

MCR3918 SERIES



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	15.34	15.60	0.604	0.614
B	14.00	14.20	0.551	0.559
C	23.70	24.13	0.933	0.950
F	0.89	2.16	0.035	0.085
H	2.29	REF	0.090	REF
J	10.67	11.56	0.420	0.455
K	9.78	10.54	0.385	0.415
L	6.99	7.75	0.275	0.305
Q	1.65	4.06	0.065	0.160
R	1.65	REF	0.065	REF
T	12.70	12.83	0.500	0.505

CASE 175-02

MCR3818/3918 series

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

Characteristic	Symbol	Min	Max	Unit
Peak Forward Blocking Current (V _D = Rated V _{DRM} @ T _J = 100°C, gate open)	I _{DRM}	–	5.0	mA
Peak Reverse Blocking Current (V _R = Rated V _{RRM} @ T _J = 100°C, gate open)	I _{RRM}	–	5.0	mA
Gate Trigger Current (Continuous dc) (2) (V _D = 7.0 Vdc, R _L = 100 Ω) (V _D = 7.0 Vdc, R _L = 100 Ω, T _C = –40°C)	I _{GT}	– –	40 75	mA
Gate Trigger Voltage (Continuous dc) (V _D = 7.0 Vdc, gate open) (V _D = 7.0 Vdc, R _L = 100 Ω, T _C = –40°C) (V _D = Rated V _{DRM} , R _L = 100 Ω, T _J = 100°C)	V _{GT}	– – 0.2	1.5 2.5 –	Volts
Peak On-State Voltage (Pulse Width = 1.0 ms max, duty cycle ≤ 1%) (I _{TM} = 20 A) (I _{TM} = 41 A)	V _{TM}	– –	1.5 1.7	Volts
Holding Current (V _D = 7.0 Vdc, gate open) (V _D = 7.0 Vdc, gate open, T _C = –40°C)	I _H	– –	50 90	mA
Gate Controlled Turn-On Time (t _d + t _r) (I _{TM} = 20 A, I _{GT} = 40 mA, V _D = Rated V _{DRM})	t _{gt}	Typical		μs
		1.0		
Circuit Commutated Turn-Off Time (I _{TM} = 10 A, I _R = 10 A) (I _{TM} = 10 A, I _R = 10 A, T _J = 100°C) (V _D = V _{DRM} = rated voltage) (dv/dt = 30 V/μs)	t _q	20		μs
		30		
Critical Rate of Rise of Off-State Voltage (V _D = Rated V _{DRM} , Exponential Wave Form, Gate open, T _J = 100°C)	dv/dt	50		V/μs

(1) V_{DRM} for all types can be applied on a continuous dc basis without incurring damage. Ratings apply for zero or negative gate voltage. These devices should not be tested with a constant current source for forward or reverse blocking capability such that the voltage applied exceeds the rated blocking voltage.



EFFECT OF TEMPERATURE UPON TYPICAL TRIGGER CHARACTERISTICS

FIGURE 1 – GATE TRIGGER CURRENT

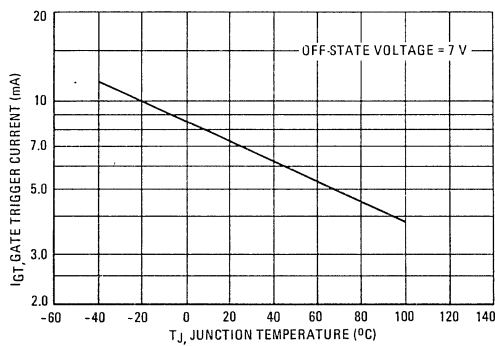


FIGURE 2 – GATE TRIGGER VOLTAGE

