

MAC4120 SERIES

BIDIRECTIONAL THYRISTORS

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak repetitive off-state voltage ⁽¹⁾ (T _J = -65 to +100°C, gate open) MAC4120-B MAC4120-D MAC4120-M MAC4120-N	V _{DRM}	200 400 600 800	Volts
RMS on-state current (conduction angle = 360°, T _C = 75°C)	I _{T(RMS)}	15	Amps
Peak non-repetitive surge current (1 cycle, 60 Hz)	I _{TSM}	100	Amps
Circuit fusing considerations (t = 8.3ms)	I ² t	40	A ² s
Peak gate power (Pulse width = 1μs)	P _{GM}	16	Watts
Average gate power	P _{G(AV)}	0.5	Watts
Peak gate trigger current (Pulse width = 1.0μs)	I _{GM}	4	Amps
Operating junction temperature range	T _J	-65 to +100	°C
Storage temperature range	T _{stg}	-65 to +150	°C
Stud torque		30	In. lb.

Note 1: Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.

THERMAL CHARACTERISTICS

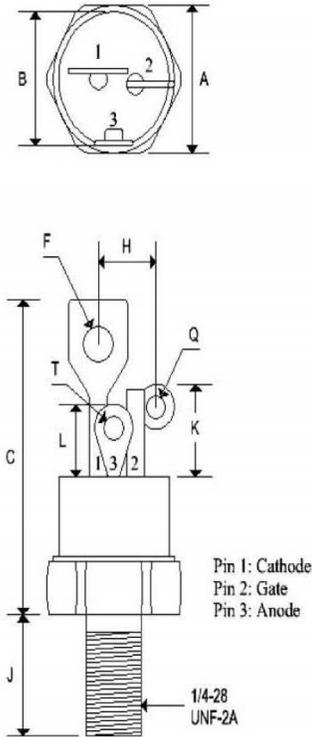
Characteristic	Symbol	Maximum	Unit
Thermal resistance, junction to case	R _{θJC}	1.1	°C/W

ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise noted

Characteristic	Symbol	Min	Typ.	Max	Unit
Peak blocking current (either direction) ($V_D = \text{Rated } V_{DRM} @ T_C = 25^\circ\text{C}$) ($V_D = \text{Rated } V_{DRM} @ T_C = 100^\circ\text{C}$)	I_{DRM}	-	-	10 2	μA mA
Peak on-state voltage (either direction) ($I_{TM} = 21\text{A peak}$)	V_{TM}	-	1.4	1.8	Volts
Gate trigger current (continuous dc) ⁽²⁾ (main terminal voltage = 12V, $R_L = 30\Omega$) MT2(+),G(+);MT2(-),G(-) MT2(+),G(-);MT2(-),G(+) MT2(+),G(+);MT2(-),G(-), $T_C = -65^\circ\text{C}$ MT2(+),G(-);MT2(-),G(+), $T_C = -65^\circ\text{C}$	I_{GT}	-	-	50 80 150 200	mA
Gate trigger voltage (continuous dc) All quadrants (main terminal voltage = 12V, $R_L = 30\Omega$, $T_C = 25^\circ\text{C}$) (main terminal voltage = 12V, $R_L = 30\Omega$, $T_C = -65^\circ\text{C}$) (Rated V_{DRM} , $R_L = 125\Omega$, $T_C = 100^\circ\text{C}$)	V_{GT}	- - 0.2	- - -	2.5 4.0 -	Volts
Holding current (either direction) (main terminal voltage= 12V, gate open, initiating current = 500mA, $T_C = 25^\circ\text{C}$) (main terminal voltage= 12V, gate open, initiating current = 500mA, $T_C = -65^\circ\text{C}$)	I_H	- -	- -	75 300	mA
Gate controlled turn-on time ($V_D = \text{Rated } V_{DRM}$, $I_{TM} = 25\text{A peak}$, $I_{GT} = 160\text{mA}$, rise time = 0.1 μs)	t_{gt}	-	1.6	2.5	μs
Rate of rise of commutation voltage (Rated V_{DRM} , $I_{T(RMS)} = 15\text{A}$, commutating $di/dt = 8\text{A/ms}$, gate unenergized, $T_C = 75^\circ\text{C}$)	$dv/dt(c)$	2	10	-	V/ μs
Critical rate of rise of off-state voltage ($V_D = \text{Rated } V_{DRM}$, exponential voltage rise, gate open, $T_C = 100^\circ\text{C}$) MAC4120-B MAC4120-D MAC4120-M MAC4120-N	dv/dt				V/ μs
		30 20 10 10	150 100 75 -	- - - -	

MECHANICAL CHARACTERISTICS

Case	TO-48 ISO
Marking	Body painted, alpha-numeric
Polarity	Cathode is stud



	TO-48 ISO			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.551	0.559	14.000	14.200
B	0.501	0.505	12.730	12.830
C	-	1.280	-	32.510
F	-	0.160	-	4.060
H	-	0.265	-	6.730
J	0.420	0.455	10.670	11.560
K	0.300	0.350	7.620	8.890
L	0.255	0.275	6.480	6.990
Q	0.055	0.085	1.400	2.160
T	0.135	0.150	3.430	3.810

