

DIGITRON SEMICONDUCTORS

MAC4120 SERIES

SILICON BIDIRECTIONAL THYRISTORS

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).

Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

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 (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ.	Max	Unit
Peak blocking current (either direction) (V _D = Rated V _{DRM} @ T _C = 25°C) (V _D = Rated V _{DRM} @ T _C = 100°C)	I _{DRM}	- -	- -	10 2	μA mA
Peak on-state voltage (either direction) (I _{TM} = 21A peak)	V _{TM}	-	1.4	1.8	Volts
Gate trigger current (continuous dc) ⁽²⁾ (main terminal voltage = 12V, R _L = 30Ω) MT2(+),G(+);MT2(-),G(-) MT2(+),G(-);MT2(-),G(+) MT2(+),G(+);MT2(-),G(-), T _C = -65°C MT2(+),G(-);MT2(-),G(+), T _C = -65°C	I _{GT}	- - - -	- - - -	50 80 150 200	mA
Gate trigger voltage (continuous dc) All quadrants (main terminal voltage = 12V, R _L = 30Ω, T _C = 25°C) (main terminal voltage = 12V, R _L = 30Ω, T _C = -65°C) (Rated V _{DRM} , R _L = 125Ω, T _C = 100°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°C) (main terminal voltage = 12V, gate open, initiating current = 500mA, T _C = -65°C)	I _H	- -	- -	75 300	mA
Gate controlled turn-on time (V _D = Rated V _{DRM} , I _{TM} = 25A peak, I _{GT} = 160mA, rise time = 0.1μs)	t _{gt}	-	1.6	2.5	μs
Rate of rise of commutation voltage (Rated V _{DRM} , I _{T(RMS)} = 15A, commutating di/dt = 8A/ms, gate unenergized, T _C = 75°C)	dv/dt(c)	2	10	-	V/μs

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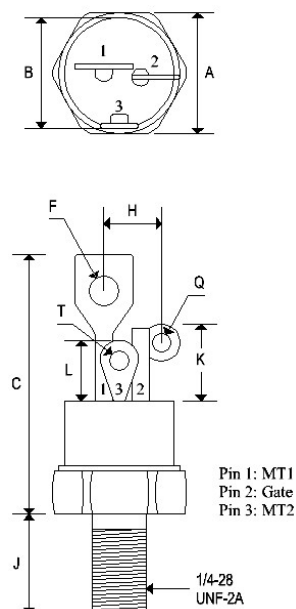
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Characteristic	Symbol	Min	Typ.	Max	Unit
Critical rate of rise of off-state voltage (V_D = Rated V_{DRM} , exponential voltage rise, gate open, $T_C = 100^\circ\text{C}$)					
MAC4120-B	dv/dt	30	150	-	V/ μs
MAC4120-D		20	100	-	
MAC4120-M		10	75	-	
MAC4120-N		10	-	-	

MECHANICAL CHARACTERISTIC

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

