DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

MAC6400 SERIES

BIDIRECTIONAL TRIODE 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
Repetitive peak off-stage voltage, gate open (T_J = -65 to +110°C) MAC6400B MAC6400D MAC6400M MAC6400N	V_{DRM}	 200 400 600 800	Volts
RMS on-state current (conduction angle = 360°, $T_C \leq$ 70°C)	$I_{T(RMS)}$	40	Amps
Peak non-repetitive surge current (One Cycle, 60Hz)	I_{TSM}	300	Amps
Circuit fusing considerations (t = 8.3ms)	I^2t	375	A^2s
Peak gate power (pulse width = 10µs)	P_{GM}	40	Watts
Average gate power	$P_{G(AV)}$	0.75	Watts
Peak gate current (pulse width ≤ 1µs)	I_{GM}	12	Amps
Operating junction temperature range	T_J	-65 to +110	°C
Storage temperature range	T_{stg}	-65 to +150	°C
Stud torque		30	In. lb.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal resistance, junction to case	$R_{\Theta JC}$	0.8	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C and either polarity of MT2 to MT1 voltage, unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak off state current ($V_D = V_{DRM}$, gate open, T_J = 25°C) ($V_D = V_{DRM}$, gate open, T_J = 100°C)	I_{DRM}	 - -	 - -	 10 4	 µA mA
Peak on-state voltage (either direction) (I_{TM} = 100A peak)	V_{TM}	 -	 1.5	 2.0	Volts
DC gate trigger current (continuous dc) (V_D = 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}	 - - - - - -	 15 30 20 40 - -	 50 80 50 80 125 240	 mA
DC gate trigger voltage (continuous dc), all trigger modes (V_D = 12V, R_L = 30Ω) (V_D = 12V, R_L = 30Ω, T_C = -65°C) (V_D = Rated V_{DRM}, R_L = 125Ω, T_C = 110°C)	V_{GT}	 - - 0.2	 1.35 - -	 2.5 3.4 -	 Volts

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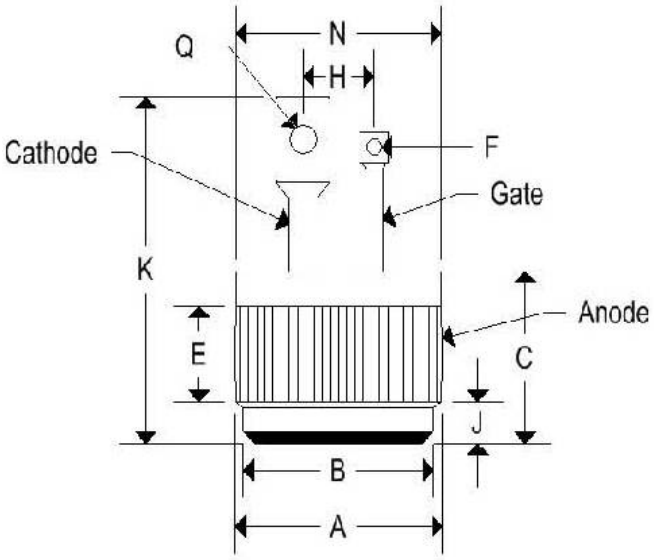
Holding current (either direction) (V_D = 12V, gate open, I_T = 500mA, T_C = 25°C) (V_D = 12V, gate open, I_T = 500mA, T_C = -65°C)	I_H	- -	25 -	60 100	mA
Gate controlled turn on time (V_D = Rated V_{DRM}, I_T = 60A, I_{GT} = 200mA, rise time = 0.1µs)	t_{gt}	-	1.7	3	µs
Critical rate of rise of commutating voltage (commutating di/dt = 22A/ms, gate unenergized, V_D = Rated V_{DRM}, $I_{T(RMS)}$ = 40A, T_C = 70°C)	dv/dt(c)	-	5	-	V/µs

MECHANICAL CHARACTERISTICS

Case	Digi PF1
Marking	Alpha-numeric



	DIGI PF1			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.501	0.505	12.730	12.830
F	-	0.160	-	4.060
G	0.085	0.095	2.160	2.410
H	0.060	0.070	1.520	1.780
J	0.300	0.350	7.620	8.890
K	-	1.050	-	26.670
L	-	0.670	-	17.020
Q	0.055	0.085	1.400	2.160

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FIGURE 1 – ON-STATE POWER DISSIPATION

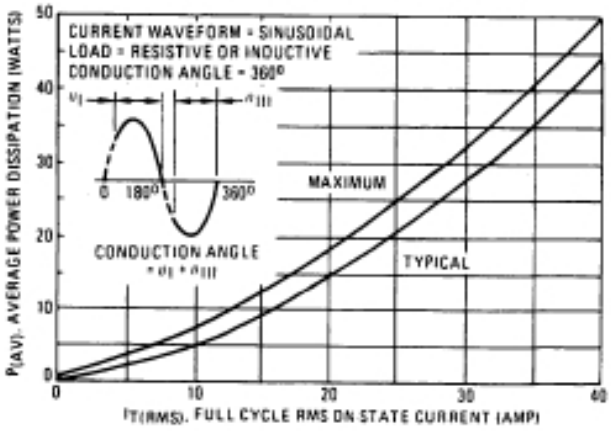

FIGURE 2 – RMS CURRENT DERATING