

DIGITRON SEMICONDUCTORS

MAC6401 SERIES

BIDIRECTIONAL TRIODE 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
Repetitive peak off-stage voltage, gate open ($T_J = -65$ to $+100^\circ\text{C}$) MAC6401B MAC6401D MAC6401M MAC6401N	V_{DRM}	200 400 600 800	Volts
RMS on-state current (conduction angle = 360° , $T_C \leq 65^\circ\text{C}$)	$I_{\text{T(RMS)}}$	30	Amps
Peak non-repetitive surge current (One Cycle, 60Hz)	I_{TSM}	300	Amps
Circuit fusing considerations ($T_J = -65$ to $+100^\circ\text{C}$, $t = 1.25$ to 10ms)	I^2t	450	A^2s
Peak gate power (pulse width = $1.0\mu\text{s}$)	P_{GM}	40	Watts
Average gate power	$P_{\text{G(AV)}}$	0.75	Watts
Peak gate current (pulse width $\leq 1.0\mu\text{s}$)	I_{GM}	2	Amps
Operating junction temperature range	T_J	-65 to $+100$	$^\circ\text{C}$
Storage temperature range	T_{stg}	-65 to $+150$	$^\circ\text{C}$
Stud torque		30	In. lb.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal resistance, junction to case	$R_{\theta\text{JC}}$	0.9	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS

($T_C = 25^\circ\text{C}$ unless otherwise noted, either polarity of MT2 to MT1, unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Peak off state current ($V_D = V_{\text{DRM}}$, gate open, $T_J = 100^\circ\text{C}$)	I_{DRM}	-	-	4	mA
Peak on-state voltage (either direction) ($I_{\text{TM}} = 100\text{A}$ peak)	V_{TM}	-	2.1	2.5	Volts
DC gate trigger current (continuous dc) ($V_D = 12\text{V}$, $R_L = 30\Omega$) MT2(+), G(+); MT2(-), G(-) MT2(+), G(-); MT2(-), G(+)	I_{GT}	- -	20 35	50 80	mA
DC gate trigger voltage (continuous dc), all trigger modes ($V_D = 12\text{V}$, $R_L = 30\Omega$) ($V_D = \text{Rated } V_{\text{DRM}}$, $R_L = 125\Omega$, $T_C = 100^\circ\text{C}$)	V_{GT}	- 0.2	1.35 -	2.5 -	Volts
Holding current ($V_D = 12\text{V}$, gate open, $I_T = 150\text{mA}$)	I_H	-	-	60	mA
Gate controlled turn on time ($V_D = \text{Rated } V_{\text{DRM}}$, $I_{\text{TM}} = 45\text{A}$, $I_{\text{GT}} = 200\text{mA}$, rise time = $0.1\mu\text{s}$)	t_{gt}	-	1.7	3	μs
Critical rate of rise of commutating voltage (commutating $di/dt = 16\text{A/ms}$, gate unenergized, $V_D = \text{Rated } V_{\text{DRM}}$, $I_{\text{T(RMS)}} = 30\text{A}$, $T_C = \text{rated value from figure 1}$)	$dv/dt(c)$	3	20	-	$\text{V}/\mu\text{s}$
Critical rate of rise of off-state voltage ($V_D = \text{Rated } V_{\text{DRM}}$, gate open, exponential waveform, $T_C = 100^\circ\text{C}$) MAC6401B MAC6401D MAC6401M	dv/dt	40 25 20	-	-	$\text{V}/\mu\text{s}$

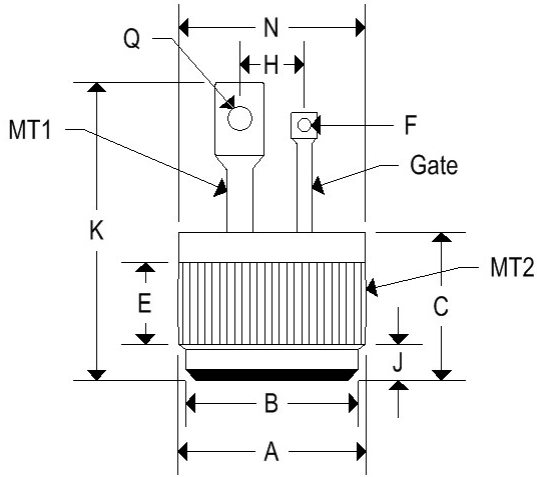
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MECHANICAL CHARACTERISTICS

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

FIGURE 1 - CURRENT DERATING

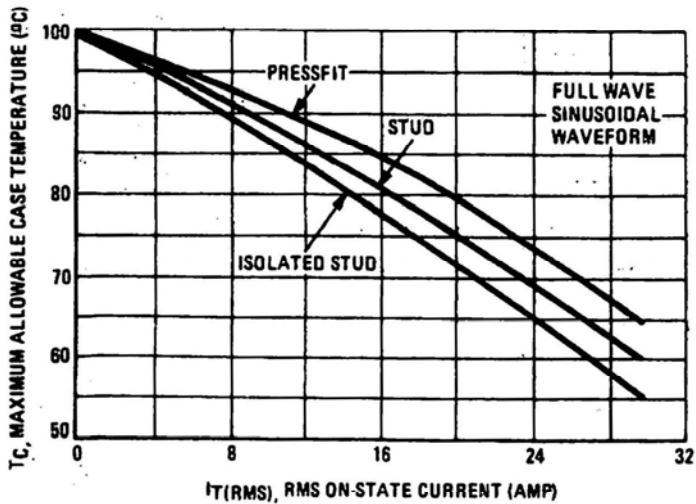


FIGURE 2 - POWER DISSIPATION

