

DIGITRON SEMICONDUCTORS

T2801 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⁽¹⁾ ($T_J = -40$ to $+100^\circ\text{C}$, gate open)	V_{DRM}	200	Volts
T2801B		300	
T2801C		400	
T2801D		500	
T2801E		600	
T2801M			
RMS on-state current (conduction angle = 360° , $T_C = 80^\circ\text{C}$)	$I_{\text{T(RMS)}}$	6	Amps
Peak non-repetitive surge current (One Cycle, 60Hz)	I_{TSM}	80	Amps
Circuit fusing considerations ($T_J = -40$ to $+100^\circ\text{C}$, $t = 1$ to 8.3ms)	I^2t	35	A^2s
Peak gate power (pulse width = $2.0\mu\text{s}$, $T_C = 80^\circ\text{C}$)	P_{GM}	16	Watts
Average gate power ($T_C = 80^\circ\text{C}$, $t = 8.3\text{ms}$)	$P_{\text{G(AV)}}$	0.35	Watts
Peak trigger current (pulse width = $1.0\mu\text{s}$)	I_{GM}	4	Amps
Operating junction temperature range	T_J	-40 to $+100$	$^\circ\text{C}$
Storage temperature range	T_{stg}	-40 to $+150$	$^\circ\text{C}$

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

Characteristics	Symbol	Max	Unit
Thermal resistance, junction to case	$R_{\theta\text{JC}}$	2.2	$^\circ\text{C}/\text{W}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
Peak off state current (Rated V_{DRM} @ $T_J = 100^\circ\text{C}$)	I_{DRM}	-	-	2	mA
Peak on-state voltage ($I_{\text{TM}} = 30\text{A}$ peak, pulse width = 1 to 2ms, duty cycle $\leq 2\%$)	V_{TM}	-	2	3	Volts
DC gate trigger current (continuous dc) ⁽²⁾ ($V_D = 12\text{V}$, $R_L = 12\Omega$)	I_{GT}	-	25	80	mA
DC gate trigger voltage (continuous dc) ⁽²⁾ ($V_D = 12\text{V}$, $R_L = 12\Omega$) ($V_D = V_{\text{DRM}}$, $R_L = 125\Omega$, $T_C = 100^\circ\text{C}$)	V_{GT}	- 0.2	1.5 -	4 -	Volts
Holding current (either direction) ($V_D = 12\text{V}$, gate open, $I_T = 150\text{mA}$)	I_{H}	-	100	-	mA
Gate controlled turn on time ⁽²⁾ ($V_D = \text{Rated } V_{\text{DRM}}$, $I_T = 10\text{A}$, $I_{\text{GT}} = 80\text{mA}$, rise time = $0.1\mu\text{s}$)	t_{gt}	-	2.2	-	μs
Critical rate of rise of commutating voltage (Rated V_{DRM} , $I_{\text{T(RMS)}} = 6\text{A}$, commutating $di/dt = 4.3\text{A/ms}$, gate unenergized, $T_C = 80^\circ\text{C}$)	$dv/dt(c)$	-	10	-	$\text{V}/\mu\text{s}$
Critical rate of rise of off-state voltage (Rated V_{DRM} , exponential voltage rise, gate open, $T_C = 100^\circ\text{C}$)	dv/dt	50	-	-	$\text{V}/\mu\text{s}$
T2801B		40	-	-	
T2801C		30	-	-	
T2801D		30	-	-	
T2801E		20	-	-	

Note 2: Applies for MT2(+), G(+); MT2(-), G (-)

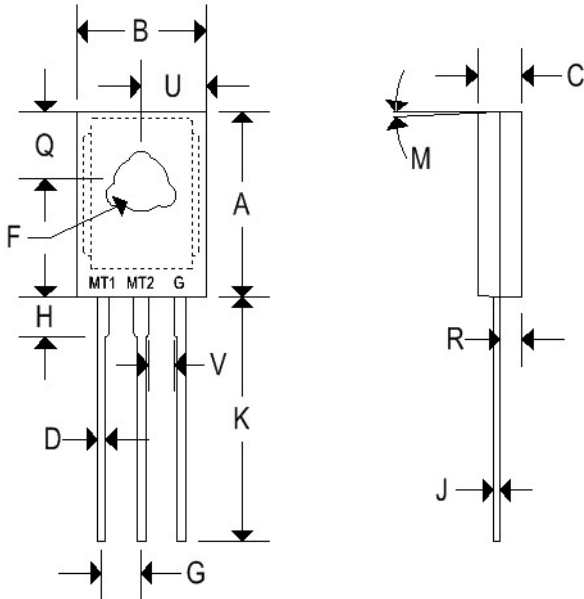
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MECHANICAL CHARACTERISTICS

Case	TO-220AB
Marking	Alpha-numeric
Pin out	See below



	TO-220AB			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.575	0.620	14.600	15.750
B	0.380	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.025	0.035	0.640	0.890
F	0.142	0.147	3.610	3.730
G	0.095	0.105	2.410	2.670
H	0.110	0.155	2.790	3.930
J	0.014	0.022	0.360	0.560
K	0.500	0.562	12.700	14.270
L	0.045	0.055	1.140	1.390
N	0.190	0.210	4.830	5.330
Q	0.100	0.120	2.540	3.040
R	0.080	0.110	2.040	2.790
S	0.045	0.055	1.140	1.390
T	0.235	0.255	5.970	6.480
U	-	0.050	-	1.270
V	0.045	-	1.140	-
Z	-	0.080	-	2.030

FIGURE 1 - CURRENT DERATING

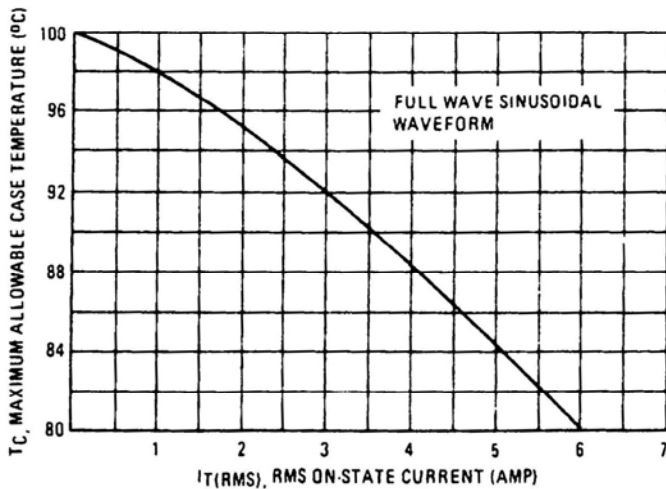


FIGURE 2 - POWER DISSIPATION

