

# DIGITRON SEMICONDUCTORS

## T2802 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
<b>Repetitive peak off-stage voltage<sup>(1)</sup></b> ( $T_J = -40$ to $+100^\circ\text{C}$ , gate open)	$V_{\text{DRM}}$	200	Volts
T2802B		300	
T2802C		400	
T2802D		500	
T2802E		600	
T2802M			
<b>RMS on-state current</b> (conduction angle = $360^\circ$ , $T_C = 80^\circ\text{C}$ )	$I_{\text{T(RMS)}}$	8	Amps
<b>Peak non-repetitive surge current</b> (One Cycle, 60Hz, $T_J = 80^\circ\text{C}$ )	$I_{\text{TSM}}$	100	Amps
<b>Circuit fusing considerations</b> ( $T_J = -40$ to $+100^\circ\text{C}$ , $t = 1.25$ to $10\text{ms}$ )	$I^2t$	50	$\text{A}^2\text{s}$
<b>Peak gate power</b> (pulse width = $1.0\mu\text{s}$ )	$P_{\text{GM}}$	16	Watts
<b>Average gate power</b>	$P_{\text{G(AV)}}$	0.35	Watts
<b>Peak gate trigger current</b> (pulse width = $1.0\mu\text{s}$ )	$I_{\text{GM}}$	4	Amps
<b>Operating junction temperature range</b>	$T_J$	$-40$ to $+100$	$^\circ\text{C}$
<b>Storage temperature range</b>	$T_{\text{stg}}$	$-40$ 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
<b>Thermal resistance, junction to case</b>	$R_{\theta\text{JC}}$	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
<b>Peak off state current</b> (Rated $V_{\text{DRM}}$ @ $T_C = 100^\circ\text{C}$ , gate open)	$I_{\text{DRM}}$	-	-	2	mA
<b>Peak on-state voltage</b> ( $I_{\text{TM}} = 30\text{A}$ peak)	$V_{\text{TM}}$	-	1.7	2	Volts
<b>DC gate trigger current</b> (continuous dc) ( $V_D = 12\text{V}$ , $R_L = 12\Omega$ ) MT2(+), G(+) MT2(-), G(-)	$I_{\text{GT}}$	-	25	50	mA
<b>DC gate trigger voltage</b> (continuous dc) all polarities ( $V_D = 12\text{V}$ , $R_L = 100\Omega$ ) ( $V_D = V_{\text{DRM}}$ , $R_L = 125\Omega$ , $T_C = 100^\circ\text{C}$ )	$V_{\text{GT}}$	-	1.25	2.5	Volts
<b>Holding current</b> (either direction) ( $V_D = 12\text{V}$ , gate open, $I_T = 125\text{mA}$ )	$I_{\text{H}}$	-	20	60	mA
<b>Gate controlled turn on time</b> ( $V_D = \text{Rated } V_{\text{DRM}}$ , $I_T = 10\text{A}$ , $I_{\text{GT}} = 80\text{mA}$ , rise time = $0.1\mu\text{s}$ )	$t_{\text{gt}}$	-	1.6	-	$\mu\text{s}$
<b>Critical rate of rise of commutating voltage</b> (Rated $V_{\text{DRM}}$ , $I_{\text{T(RMS)}} = 8\text{A}$ , commutating $di/dt = 4.3\text{A/ms}$ , gate unenergized, $T_C = 80^\circ\text{C}$ )	$dv/dt(c)$	-	10	-	$\text{V}/\mu\text{s}$

# DIGITRON SEMICONDUCTORS

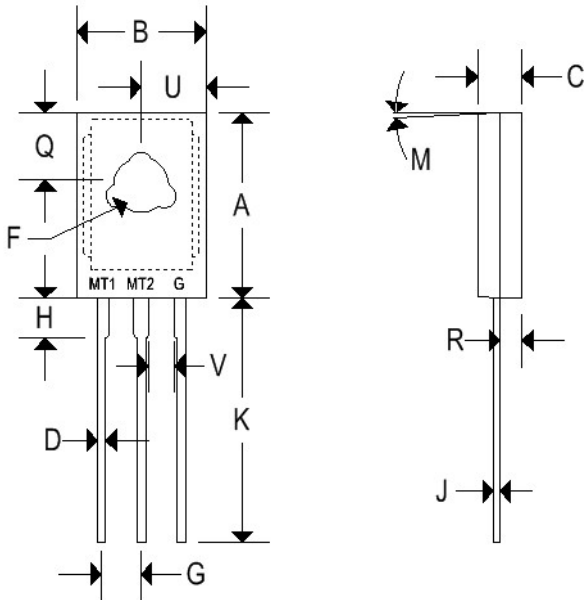
## T2802 SERIES

## BIDIRECTIONAL TRIODE THYRISTORS

Characteristic	Symbol	Min	Typ	Max	Unit
<b>Critical rate of rise of off-state voltage</b> (Rated $V_{DRM}$ , exponential voltage rise, gate open, $T_c = 100^\circ\text{C}$ )					
T2802B	dv/dt	100	-	-	V/ $\mu\text{s}$
T2802C		85	-	-	
T2802D		75	-	-	
T2802E		65	-	-	
T2802M		60	-	-	

### MECHANICAL CHARACTERISTICS

<b>Case</b>	TO-220AB
<b>Marking</b>	Alpha-numeric
<b>Pin out</b>	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

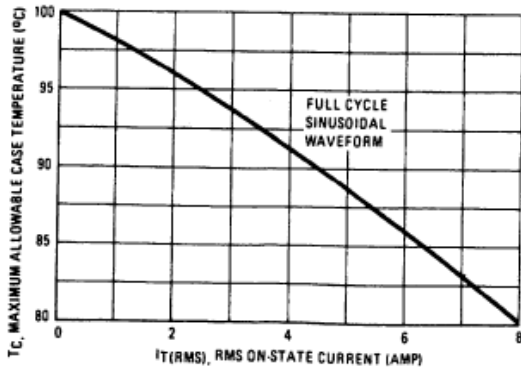


FIGURE 2 – POWER DISSIPATION

