

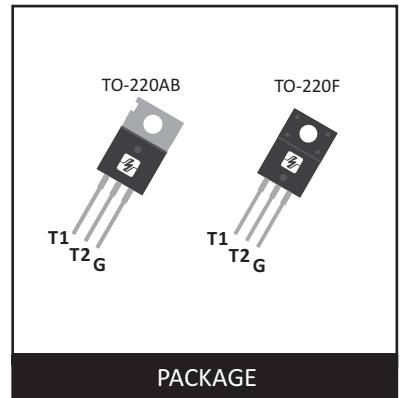
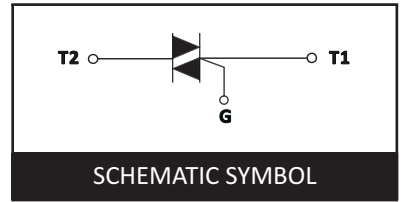
## 12A SERIES BI-DIRECTIONAL TRIODE THYRISTOR

### DESCRIPTION

General purpose switching and phase control applications. These devices are intended to be interfaced directly to microcontrollers, logic integrated circuits and other low power gate trigger circuits such as fan speed and temperature modulation control, lighting control and static switching relay.

### FEATURES

- Repetitive Peak off-State Voltage: 600V/800V
- R.M.S On-State Current ( $I_{T(RMS)}=12A$ )
- Low on-state voltage:  $V_{TM}=1.55(Max.)@ I_{TM}$
- Low reverse and forward blocking current:
- High Commutation  $dV/dt$ .



### ABSOLUTE MAXIMUM RATINGS ( $T_J = 25^{\circ}C$ UNLESS OTHERWISE SPECIFIED )

Symbol	Parameter	Condition	Ratings	Units
$V_{DRM}$	Repetitive Peak Off-State Voltage		600/800	V
$V_{RRM}$	Repetitive Peak Reverse Voltage		600/800	V
$I_{T(RMS)}$	R.M.S On-State Current	All Conduction Angle	12	A
$I_{TSM}$	Surge OnState Current	$F=50Hz, t_p=20ms$	120	A
$I^2t$	$I^2t$ for Fusing	$t_p=10ms$	55	$A^2S$
$dI/dt$	Repetitive rate of rise of on-state current after triggering	$I_G=2I_{GT} F=100Hz t_r \leq 100ns$	78	A/ $\mu S$
$P_{GM}$	Forward Peak Gate Power Dissipation		5.0	W
$P_{G(AV)}$	Forward Average Gate Power Dissipation		1.0	W
$I_{GM}$	Peak Gate Current		4.0	A
$T_J$	Operating Junction Temperature		-40~125	$^{\circ}C$
$T_{STG}$	Storage Temperature		-40~150	$^{\circ}C$

**ELECTRICAL CHARACTERISTICS** (  $T_C = 25\text{ }^\circ\text{C}$  UNLESS OTHERWISE NOTED )

Symbol	Items	Conditions	Ratings					Unit	
			SW	CW	BW	C	B		
$I_{DRM}$	Repetitive Peak Off-State Current	$V_D = V_{DRM}$	$T_C = 25\text{ }^\circ\text{C}$	$\leq 5$					uA
			$T_C = 125\text{ }^\circ\text{C}$	$\leq 1000$					
$V_{TM}$	Peak On-State Voltage	$I_{TM} = 14\text{A}$	$\leq 1.55$					V	
$I_{GT}$	Gate Trigger Current	$V_D = 12\text{V}$	I II III	$\leq 10$	$\leq 25$	$\leq 50$	$\leq 25$	$\leq 50$	mA
			IV	-	-	-	$\leq 50$	$\leq 100$	
$V_{GT}$	Gate Trigger Voltage	$V_D = 12\text{V}$	$\leq 1.3$					V	
$V_{GD}$	Non-Trigger Gate Voltage	$V_D = 2/3V_{DRM}, T_J = 125\text{ }^\circ\text{C}$	$\geq 0.2$					V	
dv/dt	Critical Rate of Rise Off-State Voltage	$V_D = 2/3V_{DRM}, T_J = 125\text{ }^\circ\text{C}$	$\geq 40$	$\geq 200$	$\geq 1000$	$\geq 200$	$\geq 400$	V/uS	
$I_H$	Holding Current	$I_T = 0.1\text{A}$	$\leq 15$	$\leq 35$	$\leq 50$	$\leq 25$	$\leq 50$	mA	
$I_L$	Latching current	$I_G = 1.2I_{GT}$	I III	$\leq 25$	$\leq 50$	$\leq 70$	$\leq 40$	$\leq 50$	mA
			II	$\leq 30$	$\leq 60$	$\leq 80$	$\leq 80$	$\leq 100$	
			IV	-	-	-	$\leq 40$	$\leq 50$	

**PACKAGE MECHANICAL DATA**
**TO-220AB**

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	3.56	4.83	0.140	0.190
A1	2.03	2.92	0.080	0.115
b	0.38	1.02	0.015	0.040
b1	1.14	1.78	0.045	0.070
C	0.51	1.40	0.020	0.055
C1	0.36	0.61	0.014	0.024
D	9.65	10.67	0.380	0.420
E	14.22	16.51	0.560	0.650
e	2.54BSC		0.10BSC	
F	2.54	3.05	0.100	0.120
G	3.53	3.90	0.139	0.154
H	12.70	14.73	0.500	0.580
L	5.84	6.86	0.230	0.270
L1	-	6.35	-	0.250

**TO-220F**

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.60	2.80	0.102	0.110
A2	2.45	2.55	0.096	0.100
b	0.50	0.75	0.020	0.030
b1	1.10	1.40	0.043	0.055
C	0.50	0.70	0.020	0.028
D	9.70	10.30	0.382	0.406
E	14.70	15.30	0.579	0.602
e	2.54TYP		0.10TYP	
e1	4.88	5.28	0.192	0.208
H	27.40	28.60	1.079	1.126
L	2.50	3.00	0.098	0.118
L1	6.70	6.90	0.264	0.272
L2	3.60	3.80	0.142	0.150

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