

1、Description

Designed primarily for industrial and consumer applications for full wave control of ac loads such as appliance controls, heater controls, motor controls, and other power switching applications.

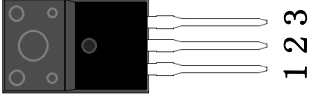

2、Applications

- Motor control
- Industrial and domestic lighting
- Heating
- Static switching

3、Features

- Blocking voltage to 800 V
- On-state RMS current to 8 A
- Ultra low gate trigger current
- Low cost package.

4、Pinning information

PIN	Description	Simplified outline	Symbol
1	main terminal 1(T1)	 TO-220F	
2	main terminal 2(T2)		
3	gate (G)		

5、Quick reference data

SYMBOL	PARAMETER	MAX	UNIT
V_{DRM} V_{RRM}	Repetitive peak off-state voltages	800	V
$I_{T(RMS)}$	RMS on-state current	8	A
I_{TSM}	Non-repetitive peak on-state current	65	A

6、Thermal characteristics

SYMBOL	PARAMETER	Value	UNIT	
$R_{th(j-c)}$	junction to case(AC)	TO-220F	5.5	°C/W

7、 Limiting value

Limiting values in accordance with the Maximum System(IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
V_{DRM} V_{RRM}	Repetitive peak off-state voltages		-	800	V
$I_{T(RMS)}$	RMS on-state current	Full Cycle Sine Wave 50 to 60 Hz (TC = 95°C)	-	8	A
I_{TSM}	Non-repetitive peak Surge current	One Full cycle, 60 Hz, $T_J = +110^{\circ}C$	-	65	A
I^2t	I^2t for fusing	$t = 8.3ms$	-	21	A^2s
I_{GM}	Peak gate current	Pulse Width $\leq 1.0 \mu s$, TC = 85°C	-	2	A
P_{GM}	Peak gate power	Pulse Width $\leq 1.0 \mu s$, TC = 85°C	-	5	W
$P_{G(AV)}$	Average gate power	Pulse Width $\leq 1.0 \mu s$, TC = 85°C	-	0.5	W
T_{stg}	Storage temperature		-40	150	°C
T_J	Operating junction temperature		-40	125	°C

8、 Characteristics

$T_J = 25^{\circ}C$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Static characteristics						
I_{GT}	Gate trigger current	$V_D = 12 V$; $I_T = 0.1A$ T2+ G+ T2+ G- T2- G- T2- G+	-	-	10 10 10 25	mA mA mA mA
I_L	Latching current	$V_D = 12 V$; $I_{GT} = 0.1A$ T2+ G+ T2+ G- T2- G- T2- G+	-	-	15 20 15 15	mA mA mA mA
I_H	Holding current	Main Terminal Voltage = 12 Vdc, Gate Open, Initiating Current $\leq 1 A$ dc $T_J = 25^{\circ}C$	-	-	15	mA
V_{TM}	On-state voltage	$I_{TM} = 10A$, $t_p = 380\mu s$	-	-	1.7	V
V_{GT}	Gate trigger voltage (Continuous dc)	Main Terminal Voltage = 12 Vdc, $R_L = 100 \Omega$, $T_J = -40^{\circ}C$ All Quadrants	-	-	1.5	V
V_{GD}	Gate Non-Trigger Voltage	$V_D = V_{DRM}$ $T_J = 125^{\circ}C$ $R_L = 3.3K\Omega$	0.2	-	-	V
Dynamic Characteristics						
dV/dt	Critical rate of rise of off-state voltage	$V_{DM} = 67\% V_{DRM(max)}$; $T_J = 125^{\circ}C$; Exponential wave form; $R_{GK} = 1K\Omega$	50	-	-	V/ μs

9. Electrical Characteristics Curve

FIG.1 Maximum power dissipation versus RMS on-state current

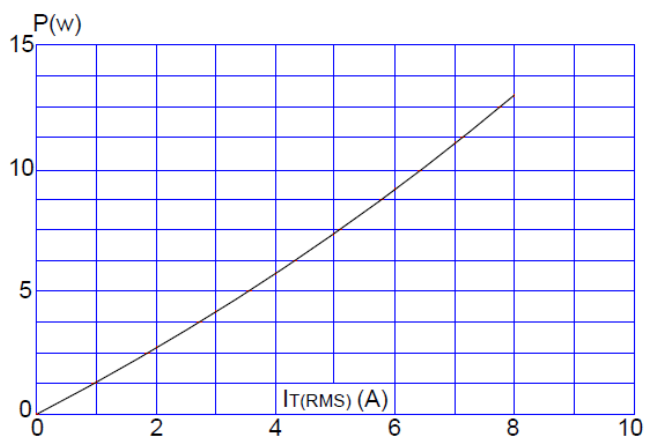


FIG.3: Surge peak on-state current versus number of cycles

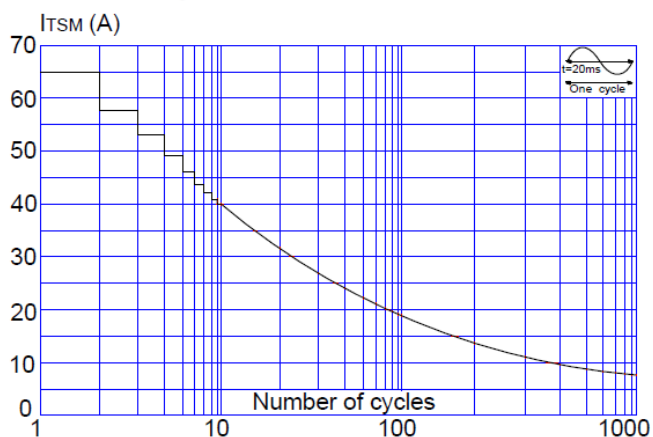


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

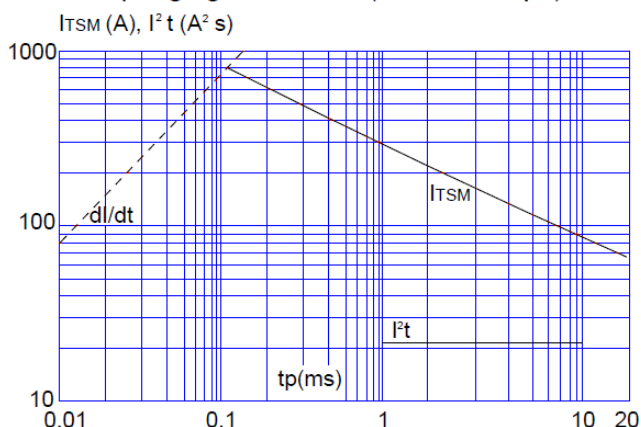


FIG.2: RMS on-state current versus case temperature

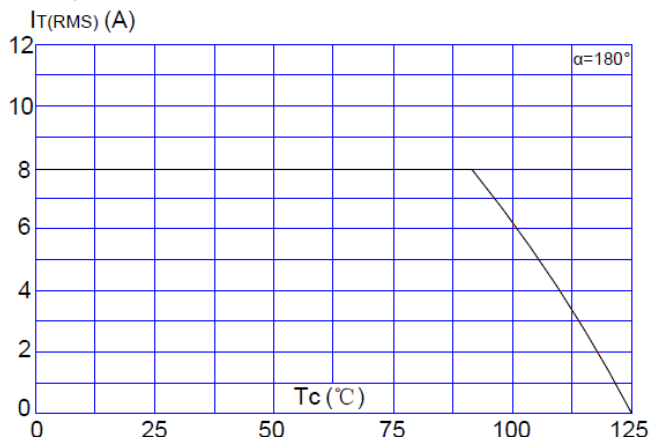


FIG.4: On-state characteristics (maximum values)

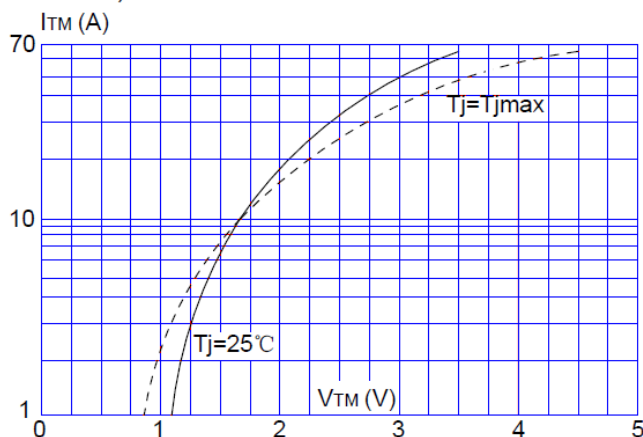
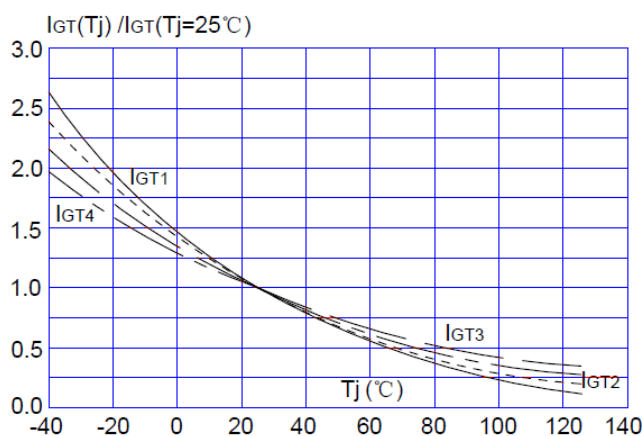
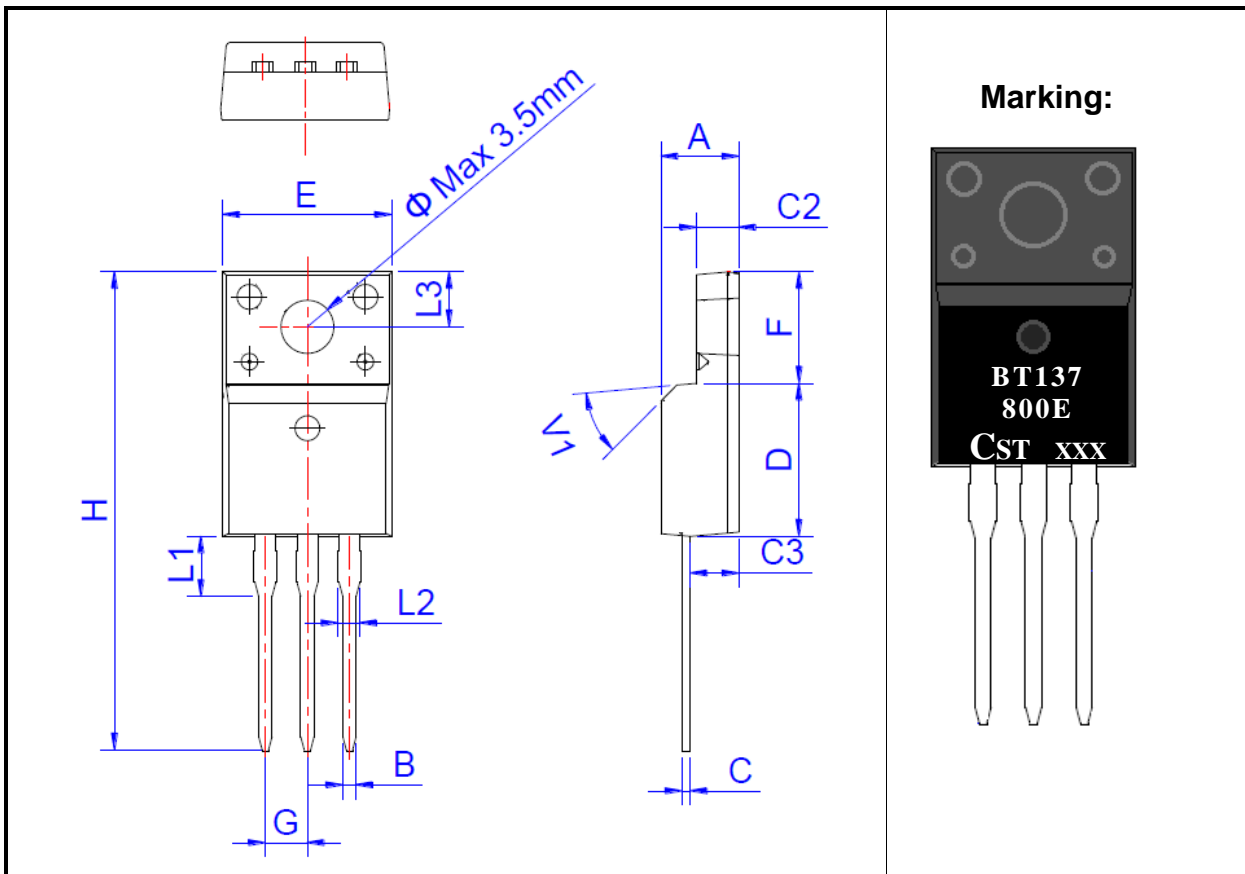


FIG.6: Relative variations of gate trigger current versus junction temperature



10、Package outline(TO-220F)



DIM	Milimeters			Inches		
	Min	Type	Max	Min	Type	Max
A	4.40	-	4.80	0.173	-	0.189
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.48	-	0.75	0.019	-	0.030
C2	2.40	-	2.70	0.094	-	0.106
C3	2.60	-	3.00	0.102	-	0.118
D	8.80	-	9.30	0.346	-	0.366
E	9.70	-	10.3	0.382	-	0.406
F	6.40	-	7.00	0.252	-	0.276
G		2.54			0.1	
H	28.0	-	29.8	1.102	-	1.173
L1		3.10			0.122	
L2	1.14	-	1.70	0.045	-	0.067
L3		3.30			0.130	
V1		45°			45°	