

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.

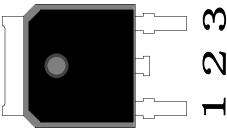

2、Applications

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

3、Features

- Blocking voltage to 600 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-252	
2	main terminal 2(T2)		
3	gate (G)		
tab	main terminal 2(T2)		

5、Quick reference data

SYMBOL	PARAMETER	MAX	UNIT
V_{DRM} V_{RRM}	Repetitive peak off-state voltages	600	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-252 3.7	°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		-	600	V
$I_{T(RMS)}$	RMS on-state current	Full Cycle Sine Wave 50 to 60 Hz (TC = 110°C)	-	8	A
I_{TSM}	Non-repetitive peak Surge current	One Full cycle, 60 Hz, $T_J = +110^\circ\text{C}$	-	65	A
I^2t	I^2t for fusing	$t = 8.3\text{ms}$	-	21	A^2s
I_{GM}	Peak gate current	Pulse Width $\leq 1.0 \mu\text{s}$, TC = 85°C	-	2	A
P_{GM}	Peak gate power	Pulse Width $\leq 1.0 \mu\text{s}$, TC = 85°C	-	5	W
$P_{G(AV)}$	Average gate power	Pulse Width $\leq 1.0 \mu\text{s}$, TC = 85°C	-	0.5	W
T_{stg}	Storage temperature		-40	150	°C
T_j	Operating junction temperature		-40	125	°C

8、 Characteristics

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

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

9. Electrical Characteristics Curve

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

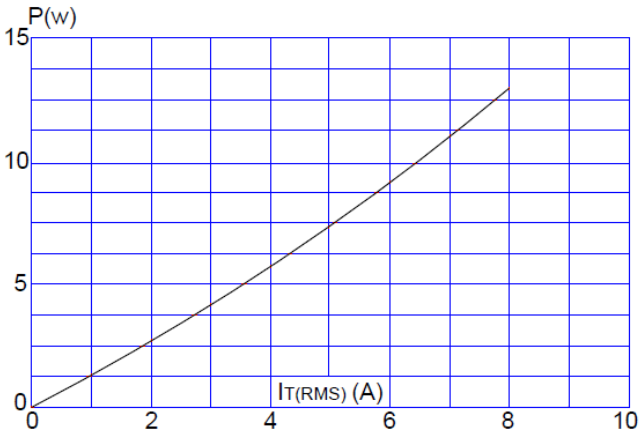


FIG.2: RMS on-state current versus case temperature

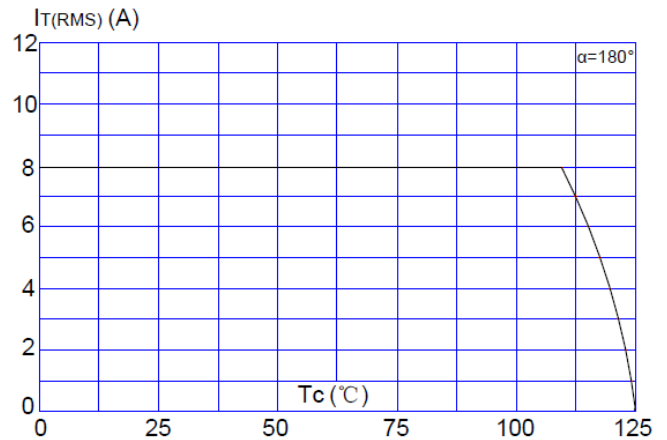


FIG.3: Surge peak on-state current versus number of cycles

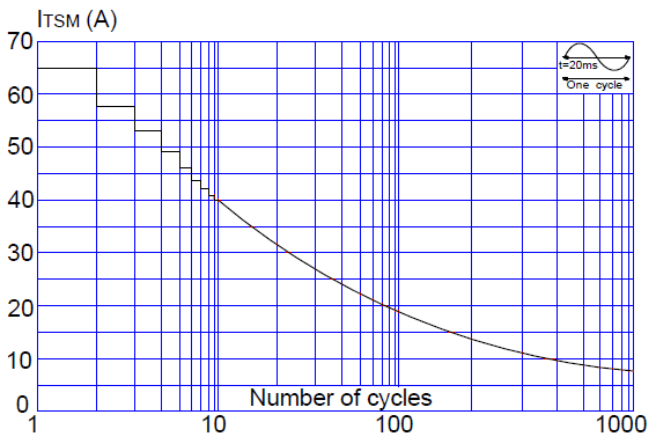


FIG.4: On-state characteristics (maximum values)

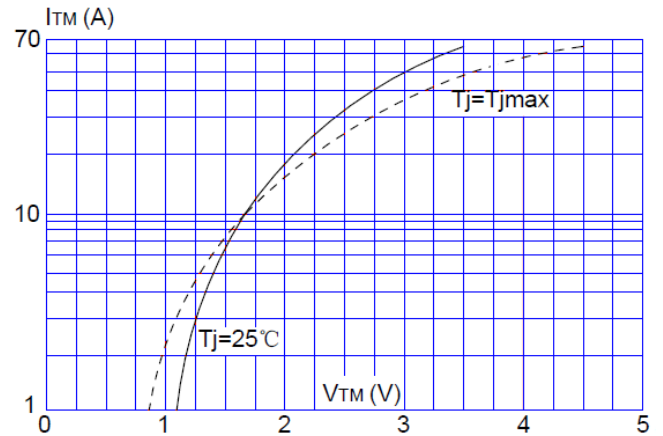


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

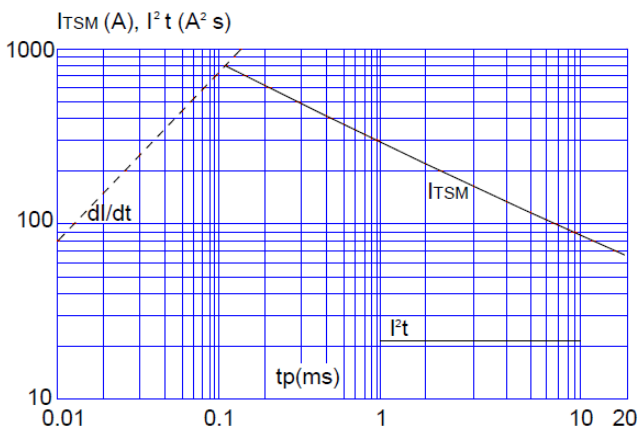
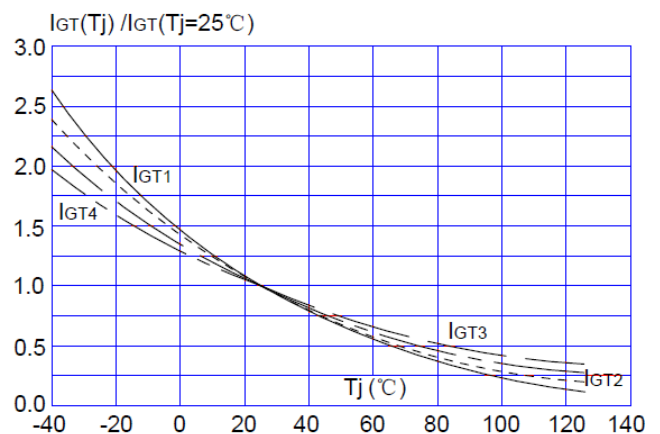
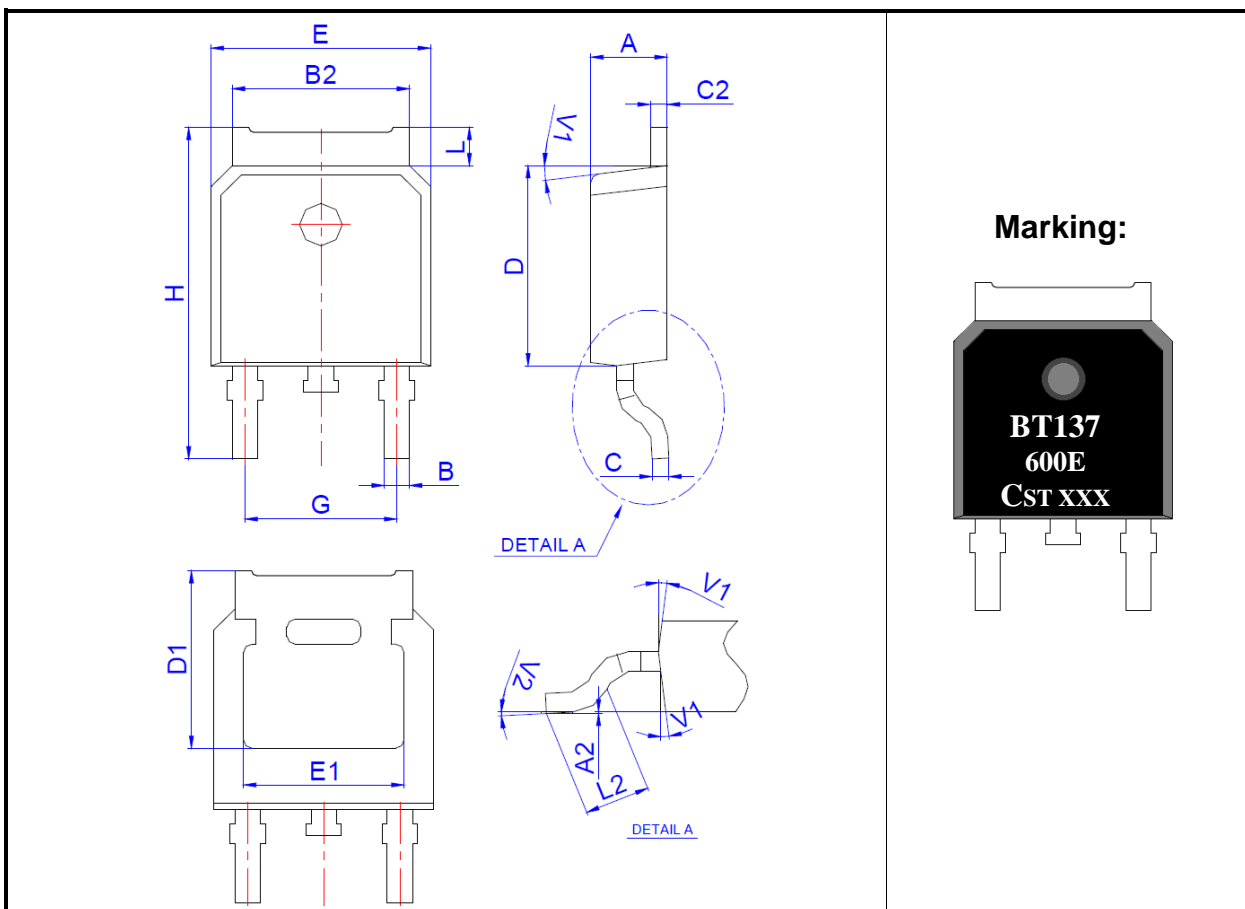


FIG.6: Relative variations of gate trigger current versus junction temperature



10、 Package outline(TO-252)



DIM	Inches			Millimeters		
	Min	Type	Max	Min	Type	Max
A	0.083	-	0.098	2.10	-	2.50
A2	0.001	-	0.009	0.03	-	0.23
B	0.026	-	0.034	0.66	-	0.86
B2	0.202	-	0.216	5.18	-	5.48
C	0.016	-	0.024	0.40	-	0.60
C2	0.017	-	0.023	0.44	-	0.58
D	0.232	-	0.248	5.90	-	6.30
D1		0.209REF			5.30REF	
E	0.252	-	0.268	6.40	-	6.80
E1	0.182			4.63		
G	0.176	-	0.184	4.47	-	4.67
H	0.374	-	0.421	9.50	-	10.70
L	0.043	-	0.048	1.09	-	1.21
L2	0.053	-	0.065	1.35	-	1.65
V1		7°			7°	
V2	0°		6°	0°		6°