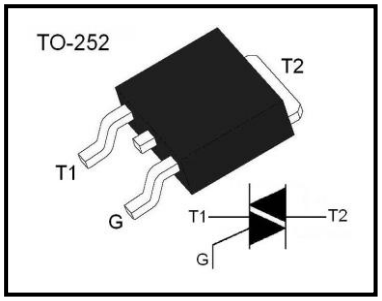
BT137-600E TO-252 Plastic-Encapsulate Triacs

Description

Glass passivated triacs in a plastic envelope, intended for use In applications requiring high bidirectional transient and blocking voltage capability and high thermal cycling performance. Typical applications include motor control, industrial and domestic lighting, heating and static switching.



Absolute Maximum Values

Parameter	Symbol	Conditions		Value	Unit
Repetitive peak off-state voltages	V_{DRM}	T_j = 25℃		600	V
Repetitive peak reverse voltages	V_{RRM}	T_j = 25℃		600	V
On-state RMS current	$I_{T(RMS)}$	full sine wave; $T_C \leq$ 68℃		8	A
Non repetitive surge peak on-state current	I_{TSM}	full cycle ,T_j = 25℃	t=20 ms	65	A
			t=16.7ms	72	
I^2t value for fusing	I^2t	t = 10ms, T_j = 25℃		21	A^2s
Critical rate of rise of on-state current	dI/dt	I_G =2I_{GT}, f=100Hz T_j = 25℃	Ⅰ-Ⅱ-Ⅲ	80	A/μs
			Ⅳ	40	
Peak gate current	I_{GM}	t_p= 20μs, T_j = 125℃		4	A
Peak gate power	P_{GM}			10	W
Average gate power	$P_{G(AV)}$	T_j = 125℃		0.5	W
Peak pulse voltage	V_{pp}	T_j = 25℃, repetitive,off-state		4	kW
Operating junction temperature	T_j			-40 ~ 125	℃
Storage Temperature	T_{stg}			-40 ~ 150	℃

Thermal Resistances

Parameter	Symbol	Value	Unit
Junction to case (AC)	$R_{th(j-c)}$	5	℃/W
Jjunction to ambient (AC)	$R_{th(j-a)}$	130	℃/W

Static Characteristics (T_j = 25 ℃ unless otherwise stated)

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Gate trigger current	I_{GT}	V_D =12 V, R_L = 33Ω	Ⅰ-Ⅱ-Ⅲ			10	mA
			Ⅳ			25	
Gate trigger voltage	V_{GT}	V_D =12 V, R_L = 33Ω	ALL			1	V
Gate non trigger voltage	V_{GD}	V_D = V_{DRM} T_j = 125℃ R_L = 3.3kΩ	ALL	0.2			V
Latching current	I_L	I_G =2I_{GT}	Ⅰ-Ⅲ-Ⅳ			20	mA
			Ⅱ			35	
Holding current	I_H	I_T =500m A				20	mA
On-state voltage	V_{TM}	I_T = 10A, tp=380μs			1.2	1.5	V
Threshold voltage	V_{TO}	T_j = 125℃				0.8	V
Dynamic resistance	R_D	T_j = 125℃				53	mΩ
Off-state leakage current	I_{DRM}	V_D = V_{DRM}	T_j = 25℃			5	μA
Off-state reverse current	I_{RRM}	V_R=V_{RRM}	T_j = 125℃			0.35	mA

Dynamic Characteristics Tj = 25 ˚C unless otherwise stated

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Critical rate of rise of off-state voltage	dV/dt	V_D =400V, gate open, T_j = 125℃	50			V/μs
Critical rate of change Of commutating voltage	(dV/dt)c	(dI/dt)c=2.7A/ms, T_j = 125℃	5			V/μs
Gate turn-on time	t_{on}	I_G = 40mA; I_A = 200mA, I_R=20mA		1.5		μs
Gate turn-off time	t_{off}			15		

Typical Characteristics

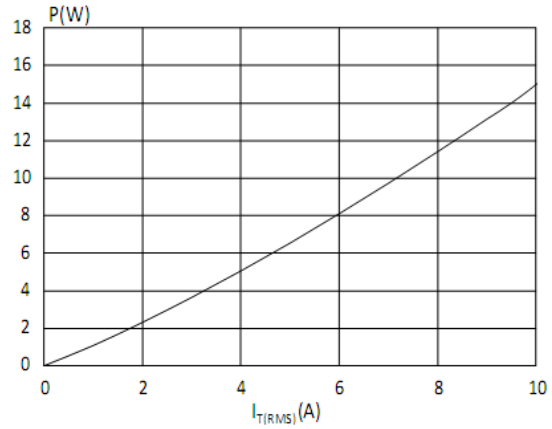


Fig.1. Maximum power dissipation versus RMS on state current

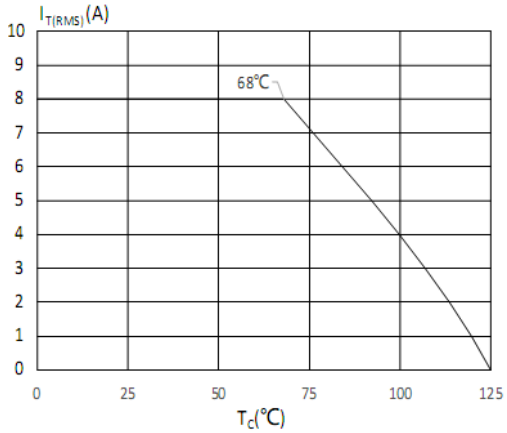


Fig.2. RMS on state current versus case temperature

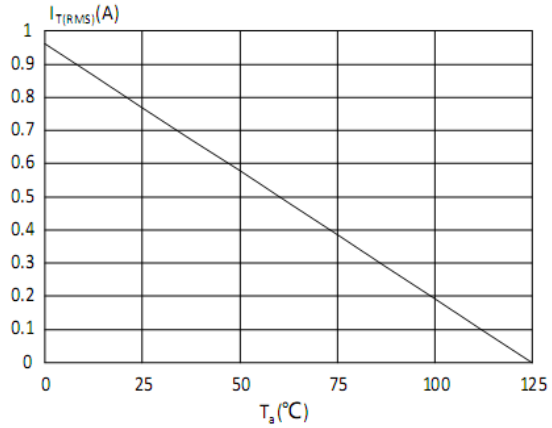


Fig.3. RMS on state current versus ambient temperature (printed circuit board FR4, copper thickness: 35μm) (full cycle)

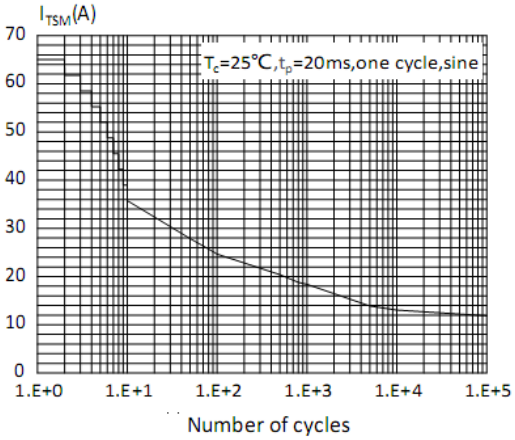


Fig.4. Surge peak on state current versus number of cycles

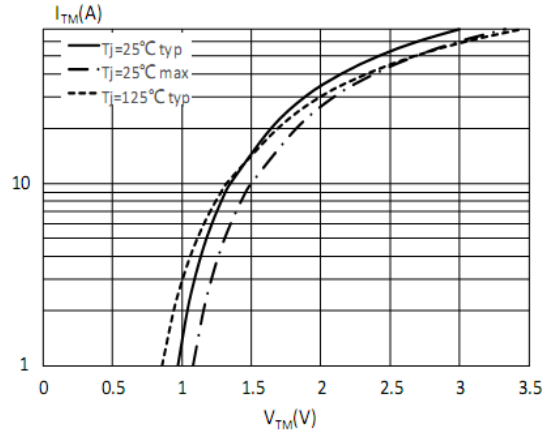


Fig.5. On state characteristics

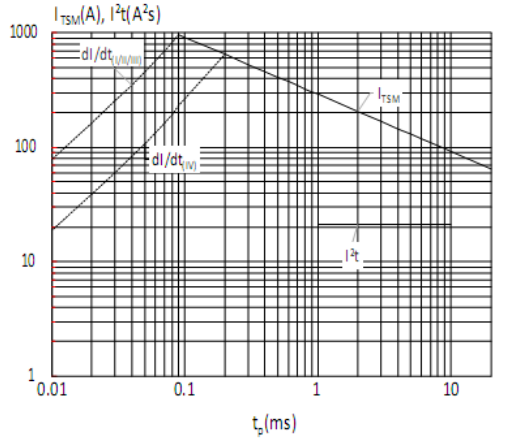
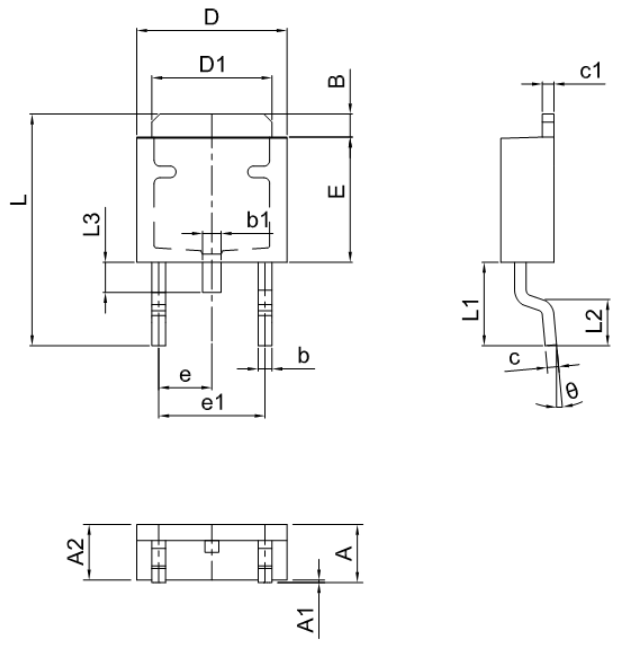


Fig.6. Non repetitive surge peak on state current for a sinusoidal pulse with width t_p <20ms, and corresponding value of I^2t (Ⅰ-Ⅱ-Ⅲ dI/dt<80A/μs; Ⅳ: dI/dt<40A/μs)

Package Dimensions



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.50	0.087	0.098
A1	0.00	0.12	0.000	0.005
A2	2.20	2.40	0.087	0.094
B	1.20	1.60	0.047	0.063
b	0.50	0.70	0.020	0.028
b1	0.70	0.90	0.028	0.035
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.35	6.65	0.250	0.262
D1	5.20	5.40	0.205	0.213
E	5.40	5.70	0.213	0.224
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	9.60	10.20	0.378	0.402
L1	2.70	3.10	0.106	0.122
L2	1.40	1.80	0.055	0.071
L3	0.90	1.50	0.035	0.059