DISCRETE SEMICONDUCTORS

DATA SHEET

BT134 series ETriacs sensitive gate

Product specification

August 1997



Triacs sensitive gate

BT134 series E

GENERAL DESCRIPTION

Glass passivated, sensitive gate triacs in a plastic envelope, intended for use in general purpose bidirectional switching and phase control applications, where high sensitivity is required in all four quadrants.

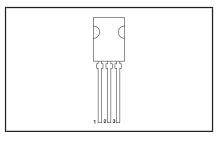
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	UNIT
	BT134-	500E	600E	800E	
V_{DRM}	Repetitive peak off-state voltages	500	600	800	V
I _{T(RMS)}	RMS on-state current	4	4	4	Α
I _{TSM}	Non-repetitive peak on-state	25	25	25	Α

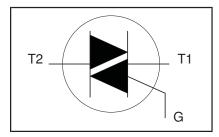
PINNING - SOT82

PIN	DESCRIPTION
1	main terminal 1
2	main terminal 2
3	gate
tab	main terminal 2

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.		MAX.		UNIT
V_{DRM}	Repetitive peak off-state voltages		-	-500 500 ¹	-600 600 ¹	-800 800	V
$I_{T(RMS)}\\I_{TSM}$	RMS on-state current Non-repetitive peak on-state current	full sine wave; $T_{mb} \le 107 ^{\circ}\text{C}$ full sine wave; $T_{j} = 25 ^{\circ}\text{C}$ prior to surge	-		4		А
		t = 20 ms t = 16.7 ms	-		25 27		Α
l ² t dl _T /dt	I ² t for fusing Repetitive rate of rise of on-state current after	t = 10.7 H/s t = 10 ms $I_{TM} = 6 \text{ A}; I_{G} = 0.2 \text{ A};$ $dI_{G}/dt = 0.2 \text{ A}/\mu\text{s}$	-		3.1		A A ² s
	triggering	T2+ G+ T2+ G- T2- G- T2- G+	- - -		50 50 50 10		Α/μs Α/μs Α/μs Α/μs
I _{GM} V _{GM} P _{GM}	Peak gate current Peak gate voltage Peak gate power	1.2 0.1	- - -		2 5 5		Å V W
$ \begin{array}{c} P_{G(AV)}^{cm} \\ T_{stg} \\ T_{j} \end{array} $	Average gate power Storage temperature Operating junction temperature	over any 20 ms period	-40 -		0.5 150 125		Ç

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¹ Although not recommended, off-state voltages up to 800V may be applied without damage, but the triac may switch to the on-state. The rate of rise of current should not exceed 3 $A/\mu s$.

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THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th j-mb}$ $R_{th j-a}$	Thermal resistance junction to mounting base Thermal resistance junction to ambient	full cycle half cycle in free air	-	- - 100	3.0 3.7 -	K/W K/W K/W

STATIC CHARACTERISTICS

 $T_i = 25$ °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
I _{GT}	Gate trigger current	$V_D = 12 \text{ V}; I_T = 0.1 \text{ A}$					
			T2+ G+	-	2.5	10	mA
			T2+ G-	-	4.0	10	mA
			T2- G-	-	5.0	10	mA
			T2- G+	-	11	25	mA
l IL	Latching current	$V_D = 12 \text{ V}; I_{GT} = 0.1 \text{ A}$					
			T2+ G+	-	3.0	15	mA
			T2+ G-	-	10	20	mA
			T2- G-	-	2.5	15	mA
			T2- G+	-	4.0	20	mA
I _H	Holding current	$V_D = 12 \text{ V}; I_{GT} = 0.1 \text{ A}$		-	2.2	15	mA
V_T	On-state voltage	$I_T = 5 A$		-	1.4	1.70	V
$egin{array}{c} I_{H} \ V_{T} \ V_{GT} \end{array}$	Gate trigger voltage	$ V_D = 12 \text{ V}; I_T = 0.1 \text{ A}$		-	0.7	1.5	V
		$ V_D = 400 \text{ V}; I_T = 0.1 \text{ A}; I_i = 125$	°C	0.25	0.4	-	V
I_{D}	Off-state leakage current	$V_D = V_{DRM(max)}$; $T_j = 125 ^{\circ}C$		-	0.1	0.5	mA

DYNAMIC CHARACTERISTICS

 $T_i = 25$ °C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
dV _D /dt	off-state voltage	$V_{DM} = 67\% V_{DRM(max)}; T_j = 125 °C;$ exponential waveform; gate open circuit	-	50	-	V/μs
t _{gt}	Gate controlled turn-on time	$I_{TM} = 6 \text{ A}; V_D = V_{DRM(max)}; I_G = 0.1 \text{ A}; \\ dI_G/dt = 5 \text{ A}/\mu s$	-	2	-	μs

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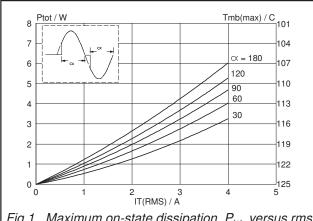


Fig.1. Maximum on-state dissipation, P_{tot} , versus rms on-state current, $I_{T(RMS)}$, where $\alpha =$ conduction angle.

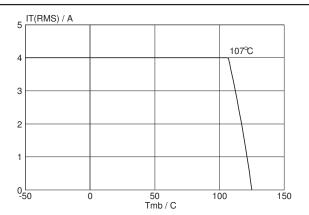


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb} .

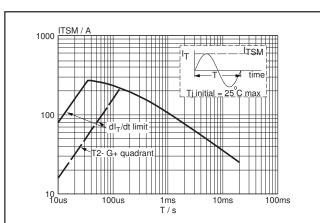


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus pulse width t_p , for sinusoidal currents, $t_p \le 20$ ms.

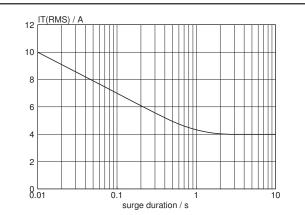


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, f = 50 Hz; $T_{mb} \le 107 ^{\circ}\text{C}$.

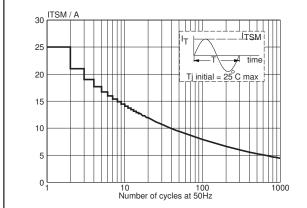


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, f = 50 Hz.

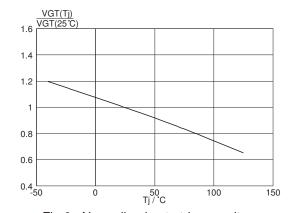
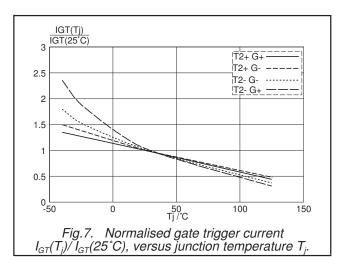


Fig.6. Normalised gate trigger voltage $V_{GT}(T_i)/V_{GT}(25^{\circ}C)$, versus junction temperature T_i .

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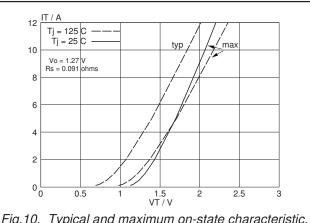
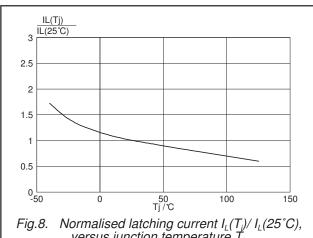


Fig. 10. Typical and maximum on-state characteristic.



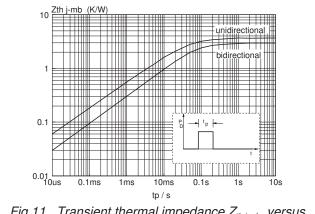
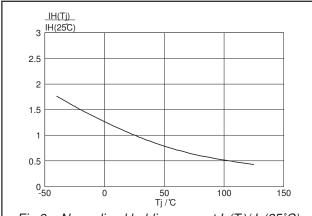


Fig.8. Normalised latching current $I_L(T_i)/I_L(25^{\circ}C)$, versus junction temperature T_i . Fig.11. Transient thermal impedance $Z_{th j-mb}$, versus pulse width t_o .



1000 dVD/dt (V/us 100 10 50 100 Tj / C

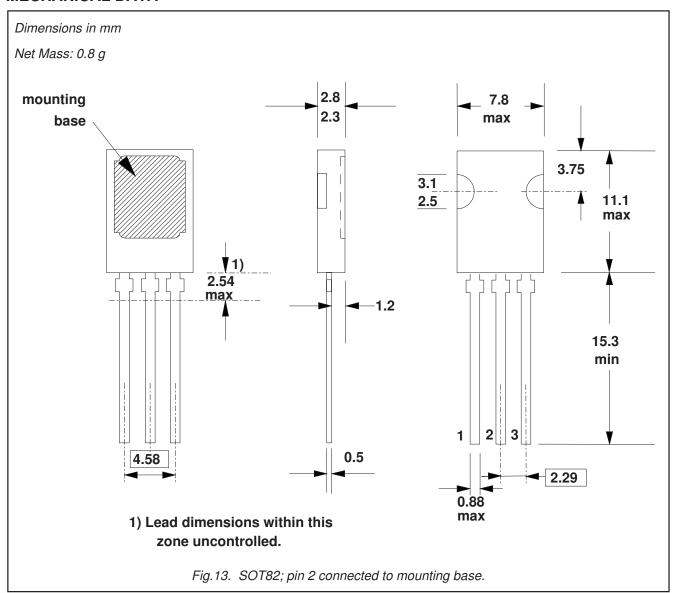
Fig.9. Normalised holding current $I_H(T_i)/I_H(25^{\circ}C)$, versus junction temperature T_i .

Fig.12. Typical, critical rate of rise of off-state voltage, $d\dot{V}_D/dt$ versus junction temperature T_i .

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MECHANICAL DATA



- Refer to mounting instructions for SOT82 envelopes.
 Epoxy meets UL94 V0 at 1/8".

Legal information

DATA SHEET STATUS

DOCUMENT STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

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