

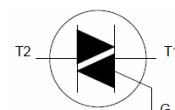
BT131

1A 800V TRIACS

General Description

- Package: TO-92
- Passivated, sensitive gate triacs in an plastic envelope. Intended for use in general purpose bidirectional switching and phase control applications. These devices are intended to be interfaced directly to micro controllers, logic integrated circuits and other low power gate trigger circuits.

DRAWING



- 1 (main terminal 2)
2 (gate)
3 (main terminal 1)

LIMITING VALUES

Limiting values in accordance with the absolute Maximum System

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
VDRM	Repetitive peak off-state voltages			800	V
IT(RMS)	RMS on-state current	full sine wave; Tlead≤66°C		1	A
ITSM	Non-repetitive peak on-state current	full sine wave; Tj=25°C prior to surge	t=20ms	12.5	A
			t=16.7ms	13.8	A
I2t	I2t for fusing			1.28	A2S
DIT/dt	Repetitive rate of rise of on-state current after triggering	ITM=1.5A;IG=0.2A DIT/dt=0.2A/us	T2+G+	50	A/us
			T2+G-	50	A/us
			T2-G-	50	A/us
			T2-G+	10	A/us
IGM	Peak gate current			2	A
PGM	Peak gate power			5	W
PG(AV)	Average gate power	over any 20ms period		0.5	W
Tstg	Storage temperature		-40	150	°C
Tj	Junction temperature			125	°C

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Rth j-lead	Thermal resistance junction to lead	Full cycle			60	K/W
		half cycle			80	K/W
th j-a	Thermal resistance junction to ambient	pcb mounted; lead length=4mm		150		K/W

STATIC CHARACTERISTICS($T_j=25^\circ\text{C}$ 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+	0.4	3	mA
			T2+G-	1.3	3	mA
			T2-G-	1.4	3	mA
			T2-G+	3.8	7	mA
I_L	Latching current	$V_D=12\text{V}; I_{GT}=0.1\text{A}$	T2+G+	1.2	5	mA
			T2+G-	4	8	mA
			T2-G-	1	5	mA
			T2-G+	2.5	8	mA
I_H	Holding current	$V_D=12\text{V}; I_{GT}=0.1\text{A}$		1.3	5	mA
V_T	On-state voltage	$I_T=1.4\text{A}$		1.2	1.5	V
V_{GT}	Gate trigger voltage	$V_D=12\text{V}; I_T=0.1\text{A}$		0.7	1.5	V
		$V_D=400\text{V}; I_T=0.1\text{A} T_j=125^\circ\text{C}$	0.2	0.3		V
I_D	Off-state leakage current	$V_D=V_{DRM(\text{MAX})} T_j=125^\circ\text{C}$		0.1	0.5	mA

DYNAMIC CHARACTERISTICS($T_j=25^\circ\text{C}$ unless otherwise stated)

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
dVD/dt	Critical rate of rise of off-state voltage	$V_{DM}=67\%V_{DRM(\text{MAX})}; T_j=125^\circ\text{C}$; exponential waveform; $R_{GK}=1\text{K}\Omega$	10	20		V/us
dVcom/dt	Critical rate of change of commutating voltage	$V_{DM}=400\text{V}; T_j=125^\circ\text{C}$; $dI_{com}/dt=0.5\text{A/ms}$	2			V/us
Tgt	Gate controlled turn-on time	$ITM=1.5\text{A}; V_D=V_{DRM(\text{MAX})}$; $IG=0.1\text{A}$; $DIG/DT=5\text{A/us}$		2		us

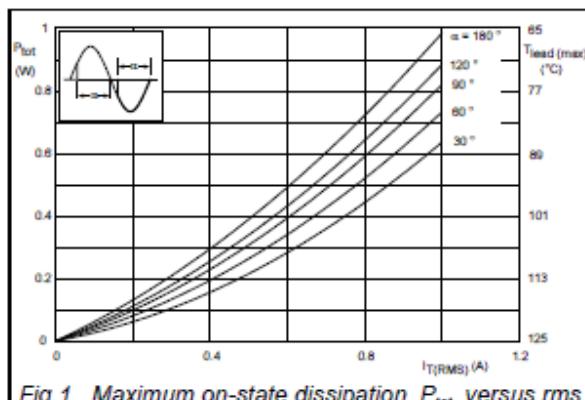
Typical Characteristics


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

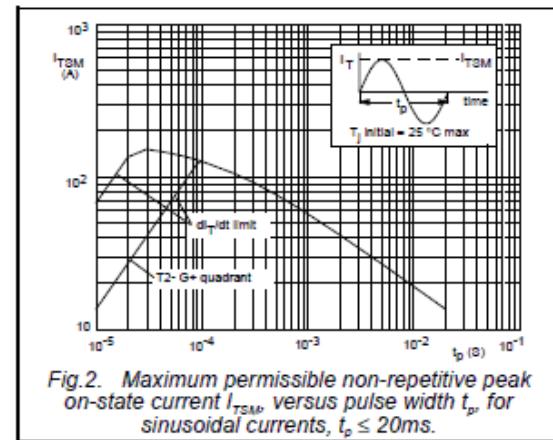


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSMP} versus pulse width t_p , for sinusoidal currents, $t_p \leq 20\text{ms}$.

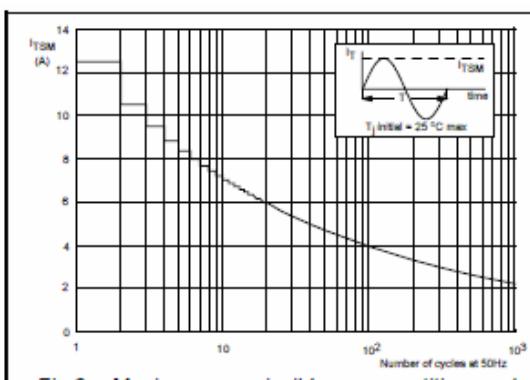


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM} , versus number of cycles, for sinusoidal currents, $f = 50$ Hz.

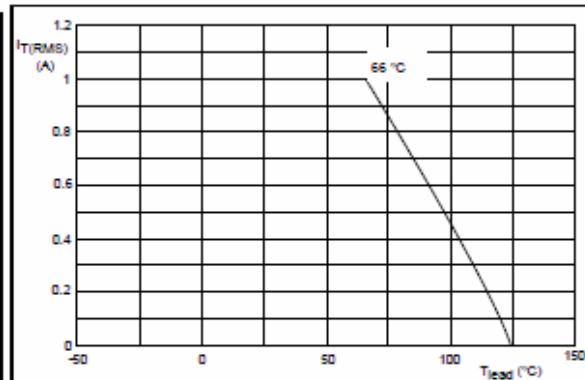


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus lead temperature T_{lead} .

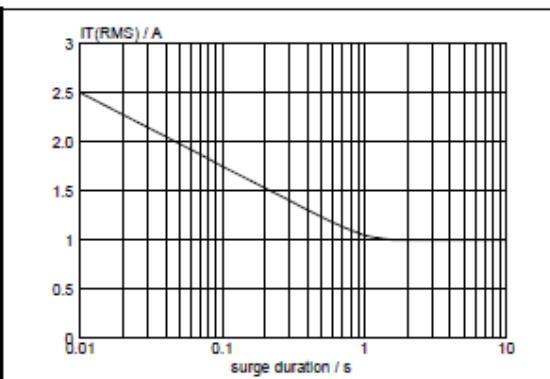


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, $f = 50$ Hz; $T_{lead} \leq 66^\circ\text{C}$.

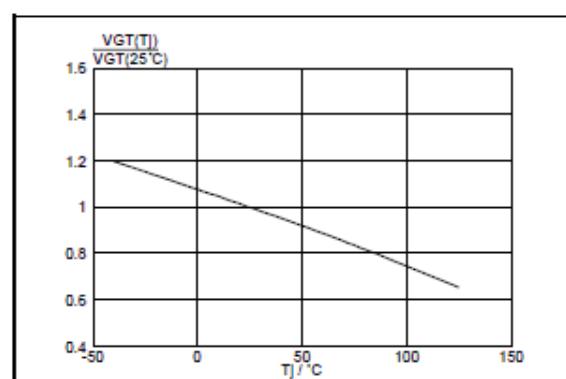


Fig.6. Normalised gate trigger voltage $V_{GT}(T_J)/V_{GT}(25^\circ\text{C})$, versus junction temperature T_J .

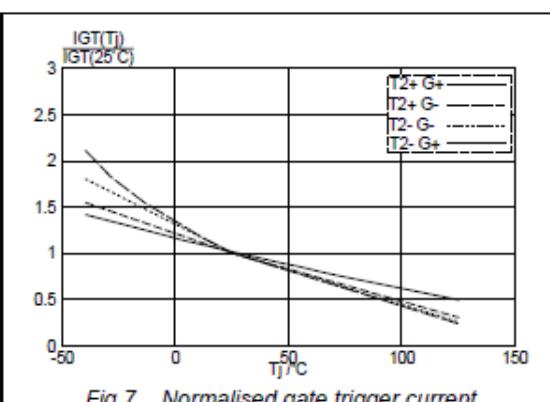


Fig.7. Normalised gate trigger current $I_{gt}(T_J)/I_{gt}(25^\circ\text{C})$, versus junction temperature T_J .

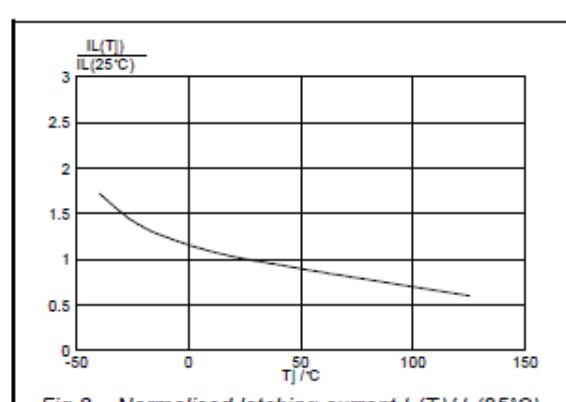


Fig.8. Normalised latching current $I_L(T_J)/I_L(25^\circ\text{C})$, versus junction temperature T_J .

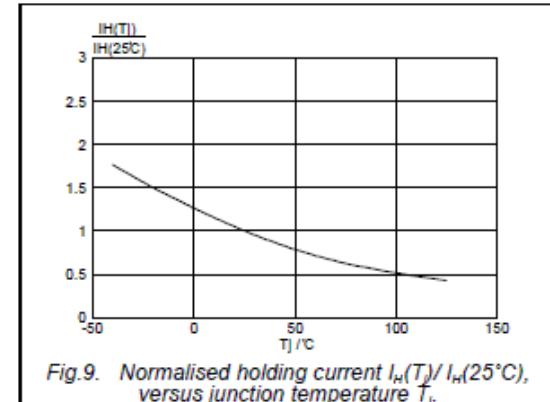


Fig.9. Normalised holding current $I_h(T_J)/I_h(25^\circ\text{C})$, versus junction temperature T_J .

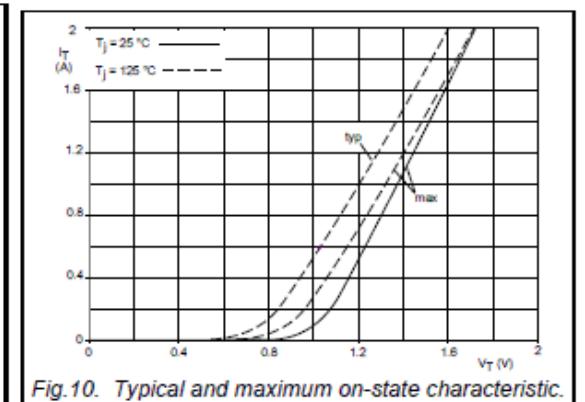
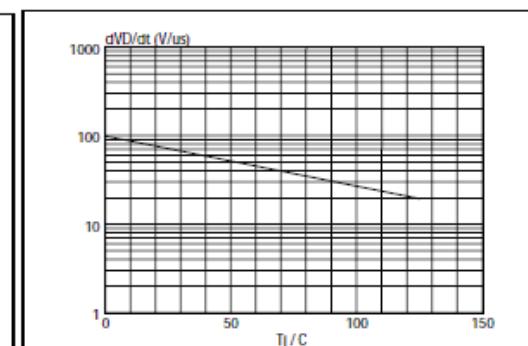
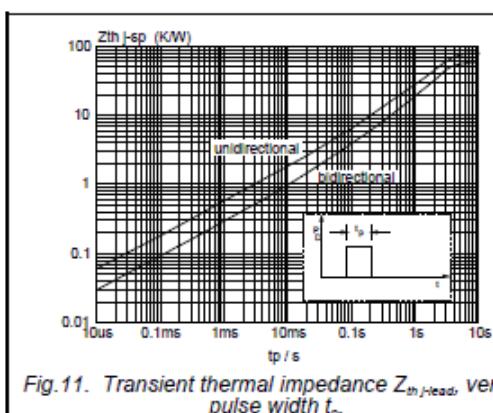
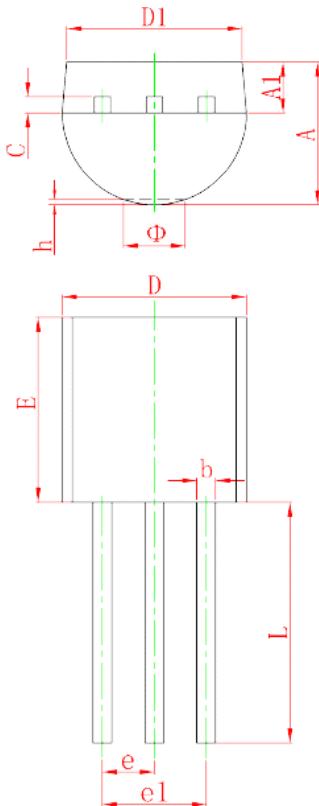


Fig.10. Typical and maximum on-state characteristic.



Package Mechanical Data



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.400	4.700	0.173	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015