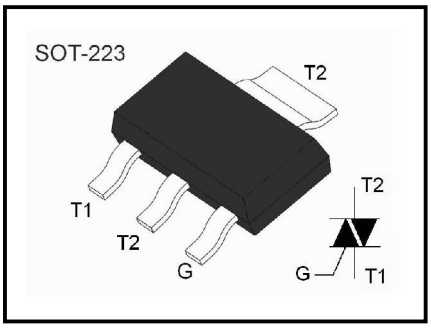
BT131W-600/800



General Description

Glass passivated triacs in a plastic envelope suitable for surface mounting, 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 Rating (Ta=25°C)

Limiting values in accordance with the Absolute Maximum System

Parameter	Symbol	Conditions		Min	Ratings		Unit
Repetitive peak off-state voltages	V_{DRM},V_{RRM}			-	600	800	V
On-State RMS Current	$I_{T(RMS)}$	full sine wave; $T_{mb} \leq 108$ °C		-	1		A
Non-repetitive peak on-state current	I_{TSM}	full sine wave; T_j = 25 °C prior to surge	t = 20 ms	-	10		A
			t = 16.7 ms	-	11		
I^2t for fusing	I^2t	t = 10 ms		-	0.5		A^2s
Repetitive rate of rise of on-state current after triggering	dI_T/dt	I_{TM} = 6 A; I_G = 0.2 A; dI_G/dt = 0.2 A/μs	T2+ G+	-	50		A/μs
			T2+ G-	-	50		
			T2- G-	-	50		
			T2- G+	-	10		
Peak gate current	I_{GM}			-	2		A
Peak Gate Voltage	V_{GM}			-	5		V
Peak gate power	P_{GM}			-	5		W
Average gate power	$P_{G(AV)}$	over any 20 ms period		-	0.5		W
Operating junction temperature	T_J			-	125		°C
Storage Temperature	T_{stg}			-40	150		°C

Thermal Resistances

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Thermal resistance junction to solder point	Rth j-sp	full or half cycle	-		15	K/W
Thermal resistance junction to ambient	Rth j-a	pcb mounted; minimum footprint pcb mounted;	-	156 70		K/W

Static Characteristics T_j = 25 °C unless otherwise stated

Parameter	Symbol	Conditions		Min	Max				Unit
					-B	-C	-D	-E	
Gate trigger current	I_{GT}	V_D = 12 V I_T = 0.1 A	T2+ G+		50	25	5	10	mA
			T2+ G-		50	25	5	10	
			T2- G-		50	25	5	10	
			T2- G+		100	50	10	25	
Latching current	I_L	V_D = 12 V I_{GT} = 0.1 A	T2+ G+		50	40	10	15	mA
			T2+ G-		50	40	10	15	
			T2- G-		50	40	10	15	
			T2- G+		100	80	10	15	
Holding current	I_H	V_D = 12 V, I_{GT} = 0.1 A			50	25	10	15	mA
On-state voltage	V_T	I_T = 2A			1.5				V
Gate trigger voltage	V_{GT}	V_D = 12 V; I_T = 0.1 A			1.5				V
Gate non-trigger voltage	V_{GD}	V_D = 400 V; I_T = 0.1 A; T_j = 125 °C		0.25					V
Off-state leakage current	I_D	V_D = $V_{DRM(max)}$; T_j = 125 °C			0.5				mA

Dynamic Characteristics Tj = 25 ˚C unless otherwise stated

Parameter	Symbol	Conditions	Min				Typ	Unit
			-B	-C	-D	-E		
Critical rate of rise of Off-State Voltage	dV_D/dt	V_{DM} =67% V_{DRM}(max);	400	200	10	20	250	V/μs
Critical Rate of Rise of Off-State Voltage at Commutation	(dV/dt)c	V_{DM} =400V; T_j = 95 °C $I_{T\ (RMS)}$ = 1A; dI_{com}/dt= 1.8A/ms gate open circuit					50	A/ms
Gate controlled turn-on time	tgt	I_{TM} = 1.5 A; V_D = $V_{DRM(max)}$; I_G=0.1 A; dI_G/dt = 5 A/μs;					2	μs

Typical Characteristics

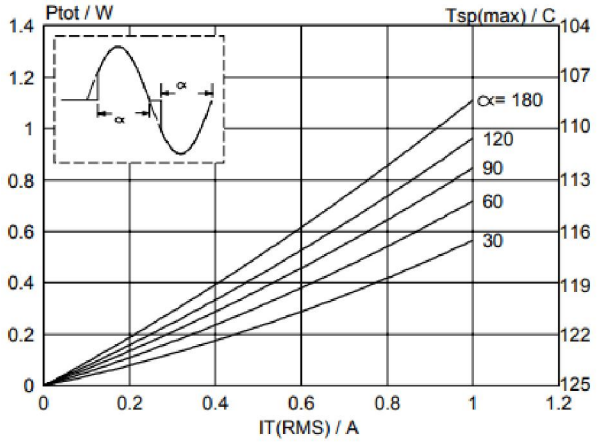


Fig.1. Maximum on-state dissipation, Ptot, versus rms on-state current, $I_{T(RMS)}$, where α = conduction angle.

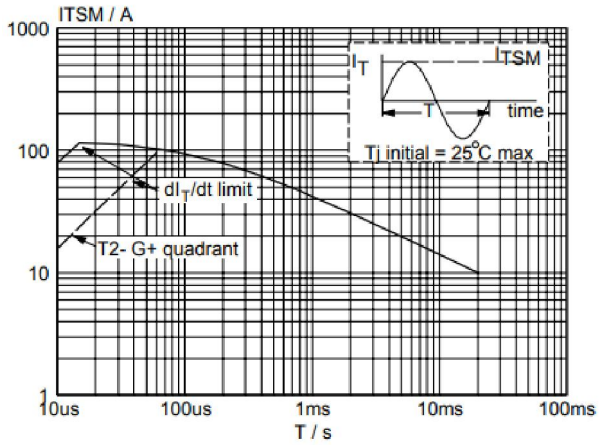


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus pulse width tp, for sinusoidal currents, tp ≤ 20ms.

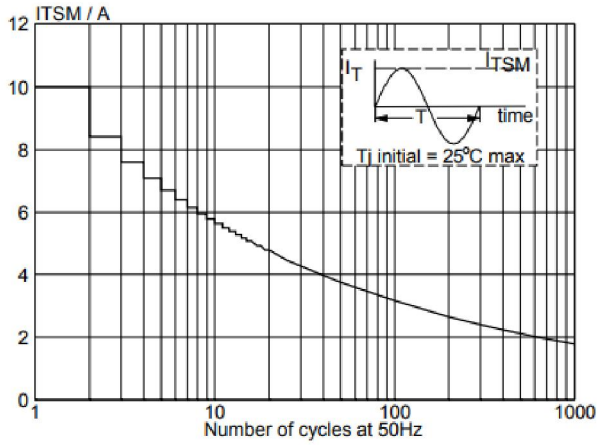


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus number of cycles, for sinusoidal currents, f = 50 Hz.

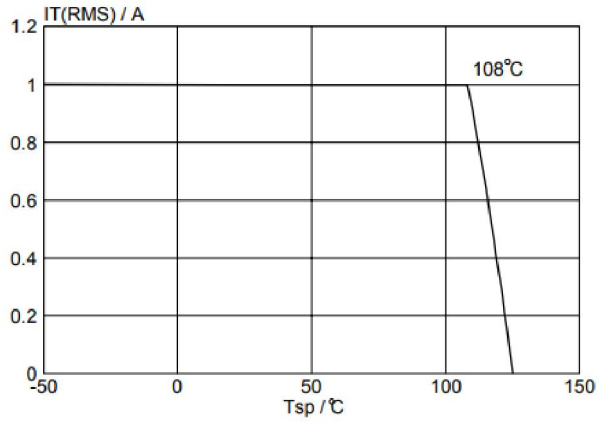


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus solder point temperature Tsp.

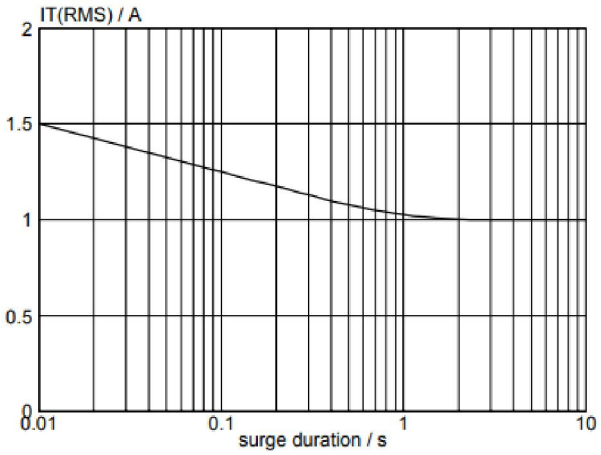


Fig.5. Maximum ermissible repetitive rms n-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, f = 50Hz; T_{sp} ≤ 108˚C.

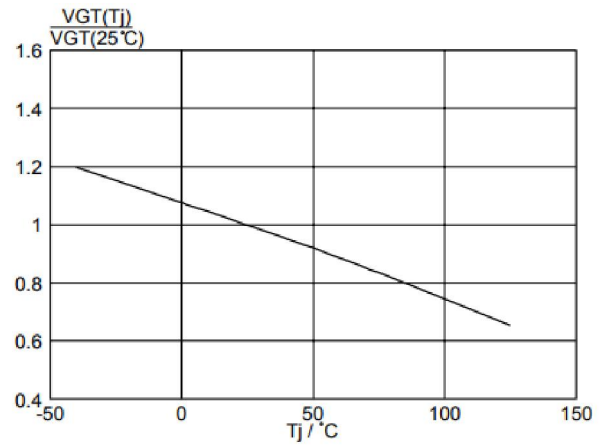


Fig.6.Normalised gate trigger voltage $V_{GT}(T_j)/V_{GT}$ (25˚C), versus junction temperature T_j .

Typical Characteristics

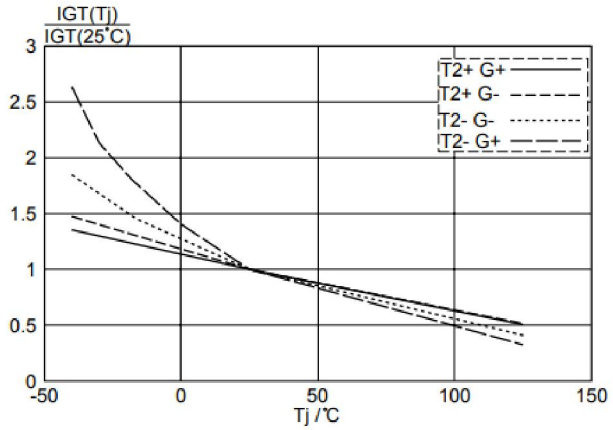


Fig.7. Normalised gate trigger current $I_{GT}(T_j)$/ $I_{GT}(25^{\circ}C)$, versus junction temperature T_j.

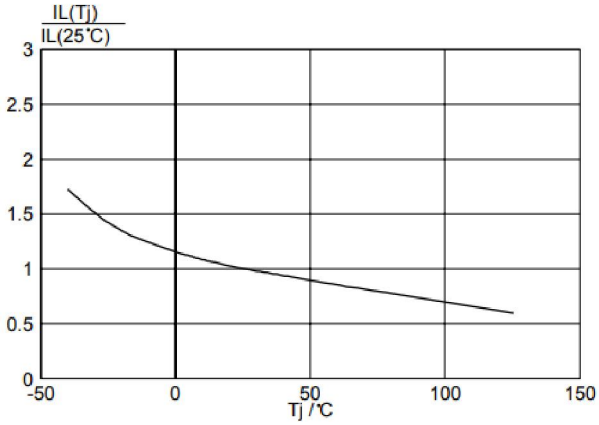


Fig.8. Normalised latching current $I_L(T_j)$/ $I_L(25^{\circ}C)$, versus junction temperature T_j.

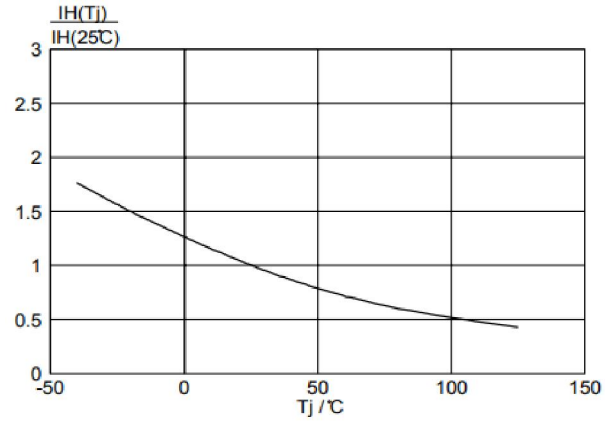


Fig.9. Normalised holding current $I_H(T_j)$/ I_H (25°C), versus junction temperature T_j.

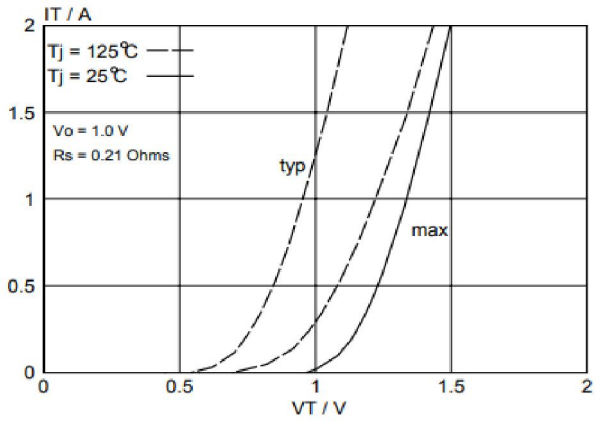


Fig.10. Typical and maximum on-state characteristic.

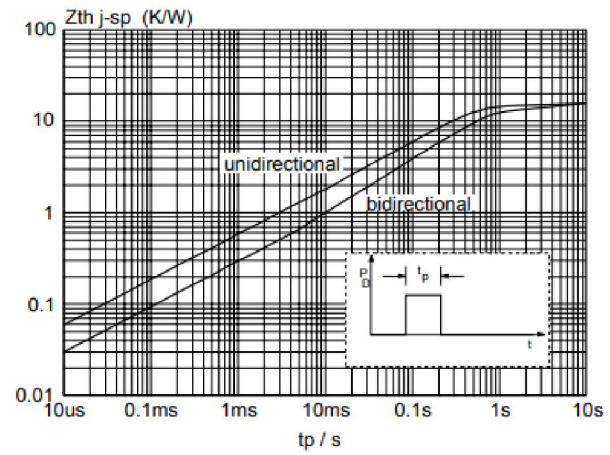


Fig.11. Transient thermal impedance $Z_{th\ j\text{-}sp}$, versus pulse width tp.

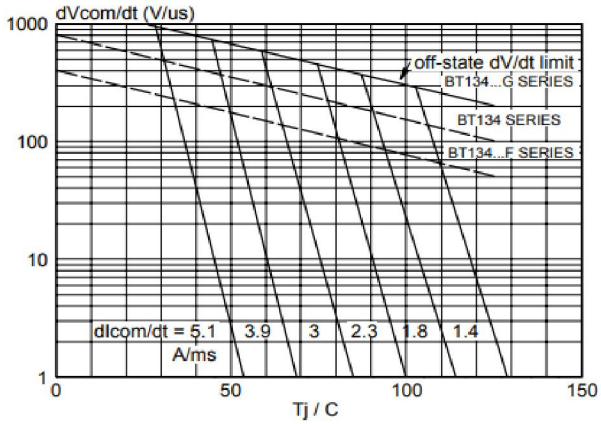
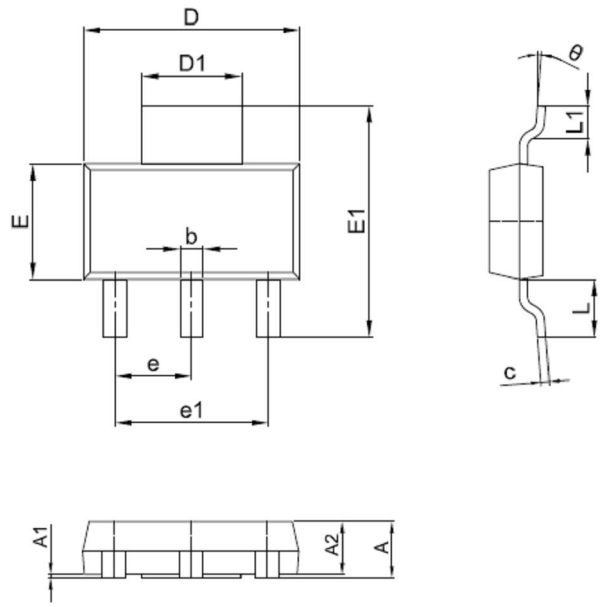


Fig.12. Typical commutation dV/dt versus junction temperature, parameter commutation dI_T/dt. The triac should commutate when the dV/dt is below the value on the appropriate curve for pre-commutation dI_T/dt.

Package Dimensions



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.50	1.80	0.059	0.071
A1	0.00	0.10	0.000	0.004
A2	1.50	1.70	0.059	0.067
b	0.65	0.75	0.026	0.030
c	0.20	0.30	0.008	0.012
D	6.40	6.60	0.252	0.260
D1	2.90	3.10	0.114	0.122
E	3.30	3.70	0.130	0.146
E1	6.85	7.15	0.270	0.281
e	2.20	2.40	0.087	0.094
e1	4.40	4.80	0.173	0.189
L	1.65	1.85	0.065	0.073
L1	0.90	1.15	0.035	0.045