Triak BTA140-800;NXP;25A;800V;35mA TO220AB;przewlekany THT;RoHS

Dane techniczne:
Nazwa: BTA140-800
Typ: Triak
Prąd przewodzenia: 25A
Napięcie wsteczne: 800V
Prąd bramki: 35mA
Obudowa: TO220AB
Montaż: THT
Producent: NXP

GENERAL DESCRIPTION

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.

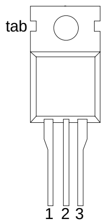
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	BTA140-	**600**	**800**	
V_{DRM}	Repetitive peak off-state voltages	600	800	V
$I_{T(RMS)}$	RMS on-state current	25	25	A
I_{TSM}	Non-repetitive peak on-state current	190	190	A

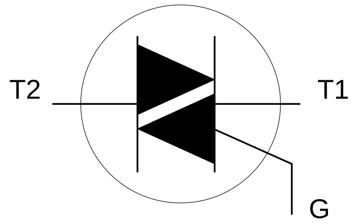
PINNING - TO220AB

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
				-600	**-800**	
V_{DRM}	Repetitive peak off-state voltages		-	600[1]	800	V
$I_{T(RMS)}$	RMS on-state current	full sine wave; $T_{mb} \leq 91$ ˚C	-	25		A
I_{TSM}	Non-repetitive peak on-state current	full sine wave; $T_j = 25$ ˚C prior to surge				
		t = 20 ms	-	190		A
		t = 16.7 ms	-	209		A
I^2t	I^2t for fusing	t = 10 ms	-	180		A^2s
dI_T/dt	Repetitive rate of rise of on-state current after triggering	$I_{TM} = 30$ A; $I_G = 0.2$ A; $dI_G/dt = 0.2$ A/µs				
		T2+ G+	-	50		A/µs
		T2+ G-	-	50		A/µs
		T2- G-	-	50		A/µs
		T2- G+	-	10		A/µs
I_{GM}	Peak gate current		-	2		A
P_{GM}	Peak gate power		-	5		W
$P_{G(AV)}$	Average gate power	over any 20 ms period	-	0.5		W
T_{stg}	Storage temperature		-40	150		˚C
T_j	Operating junction temperature		-	125		˚C

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 15 A/µs.

THERMAL RESISTANCES

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{th\ j-mb}$	Thermal resistance junction to mounting base	full cycle	-	-	1.0	K/W
		half cycle	-	-	1.4	K/W
$R_{th\ j-a}$	Thermal resistance junction to ambient	in free air	-	60	-	K/W

STATIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{GT}	Gate trigger current	V_D = 12 V; I_T = 0.1 A				
		T2+ G+	-	6	35	mA
		T2+ G-	-	10	35	mA
		T2- G-	-	11	35	mA
		T2- G+	-	23	70	mA
I_L	Latching current	V_D = 12 V; I_{GT} = 0.1 A				
		T2+ G+	-	8	40	mA
		T2+ G-	-	30	60	mA
		T2- G-	-	18	40	mA
		T2- G+	-	15	60	mA
I_H	Holding current	V_D = 12 V; I_{GT} = 0.1 A				
		T2+	-	7	30	mA
		T2-	-	12	30	mA
V_T	On-state voltage	I_T = 30 A	-	1.3	1.55	V
V_{GT}	Gate trigger voltage	V_D = 12 V; I_T = 0.1 A	-	0.7	1.5	V
		V_D = 400 V; I_T = 0.1 A; T_j = 125 ˚C	0.25	0.4	-	V
I_D	Off-state leakage current	V_D = $V_{DRM(max)}$; T_j = 125 ˚C	-	0.1	0.5	mA

DYNAMIC CHARACTERISTICS

T_j = 25 ˚C unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
dV_D/dt	Critical rate of rise of off-state voltage	V_{DM} = 67% $V_{DRM(max)}$; T_j = 125 ˚C; exponential waveform; gate open circuit	100	300	-	V/µs
dV_{com}/dt	Critical rate of change of commutating voltage	V_{DM} = 400 V; T_j = 95 ˚C; $I_{T(RMS)}$ = 25 A; dI_{com}/dt = 9 A/ms; gate open circuit	-	10	-	V/µs
t_{gt}	Gate controlled turn-on time	I_{TM} = 30 A; V_D = $V_{DRM(max)}$; I_G = 0.1 A; dI_G/dt = 5 A/µs	-	2	-	µs

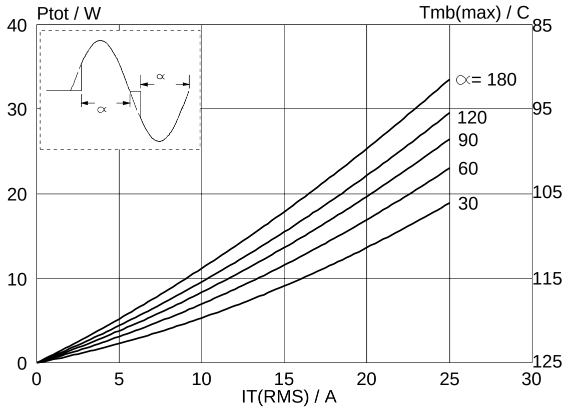


Fig.1. Maximum on-state dissipation, P_{tot}, versus rms on-state current, $I_{T(RMS)}$, where α = conduction angle.

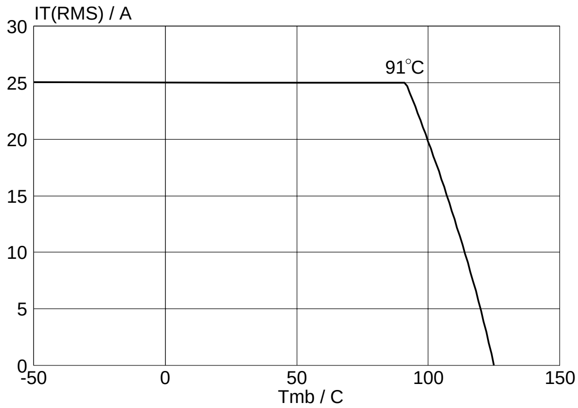


Fig.4. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb}.

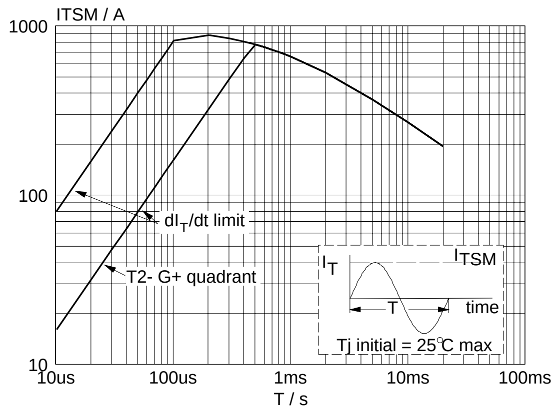


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus pulse width t_p, for sinusoidal currents, $t_p \leq 20ms$.

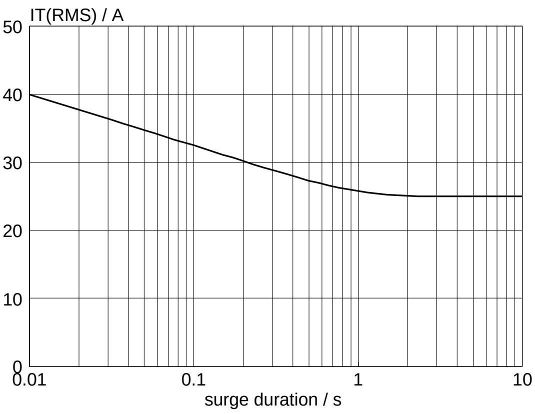


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, f = 50 Hz; $T_{mb} \leq 91$°C.

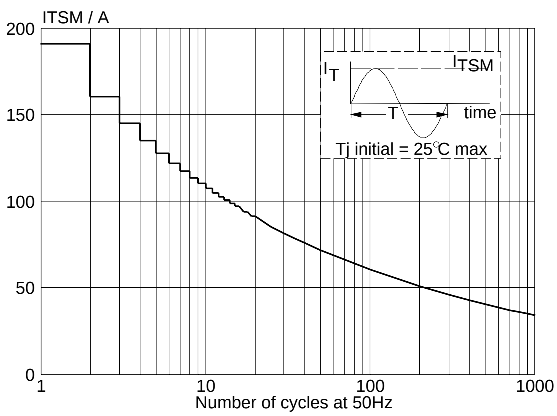


Fig.3. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus number of cycles, for sinusoidal currents, f = 50 Hz.

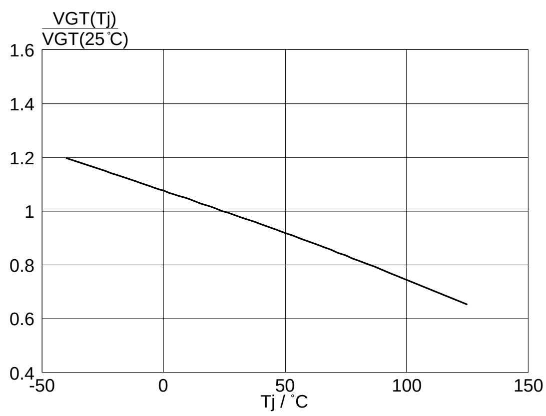


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)$/ V_{GT}(25°C), versus junction temperature T_j.

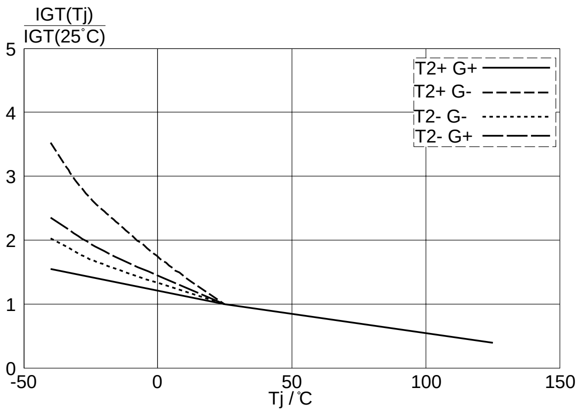


Fig.7. Normalised gate trigger current $I_{GT}(T_j)/\ I_{GT}(25˚C)$, versus junction temperature T_j.

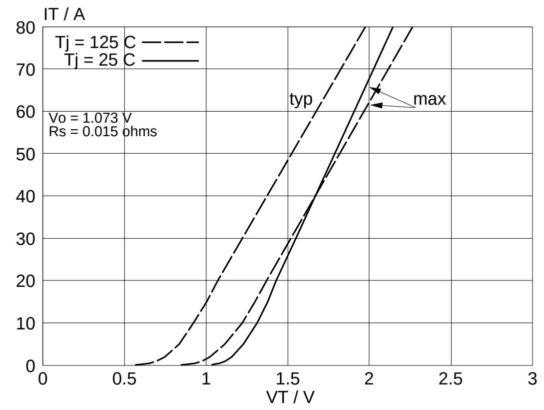


Fig.10. Typical and maximum on-state characteristic.

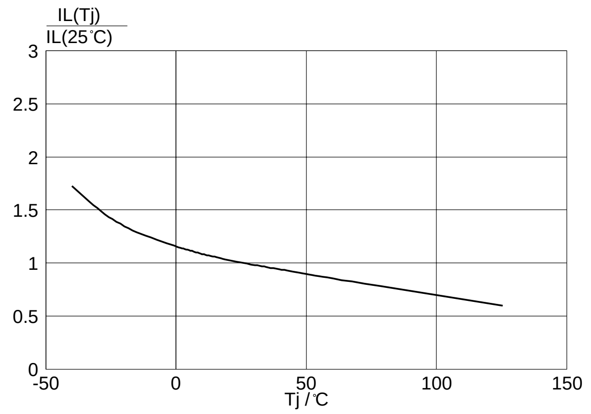


Fig.8. Normalised latching current $I_L(T_j)/\ I_L(25˚C)$, versus junction temperature T_j.

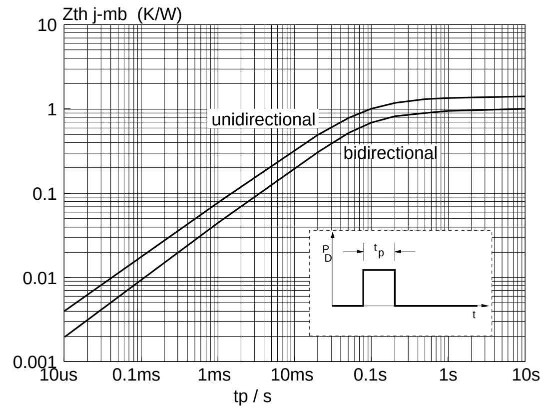


Fig.11. Transient thermal impedance $Z_{th\ j\text{-}mb}$, versus pulse width t_p.

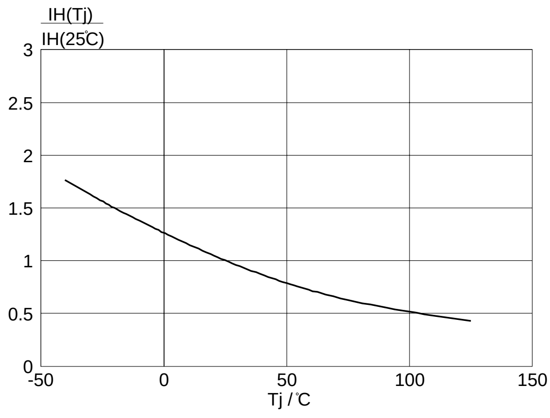


Fig.9. Normalised holding current $I_H(T_j)/\ I_H(25˚C)$, versus junction temperature T_j.

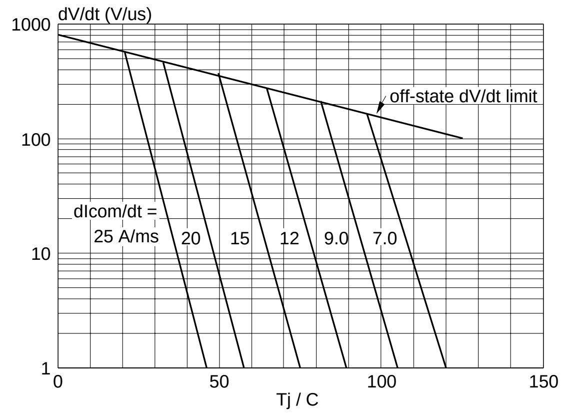


Fig.12. Typical commutation dV/dt versus junction temperature, parameter commutation dI_T/dt. The triac should commutate when the dV/dt is below the value on the appropriate curve for pre-commutation dI_T/dt.

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

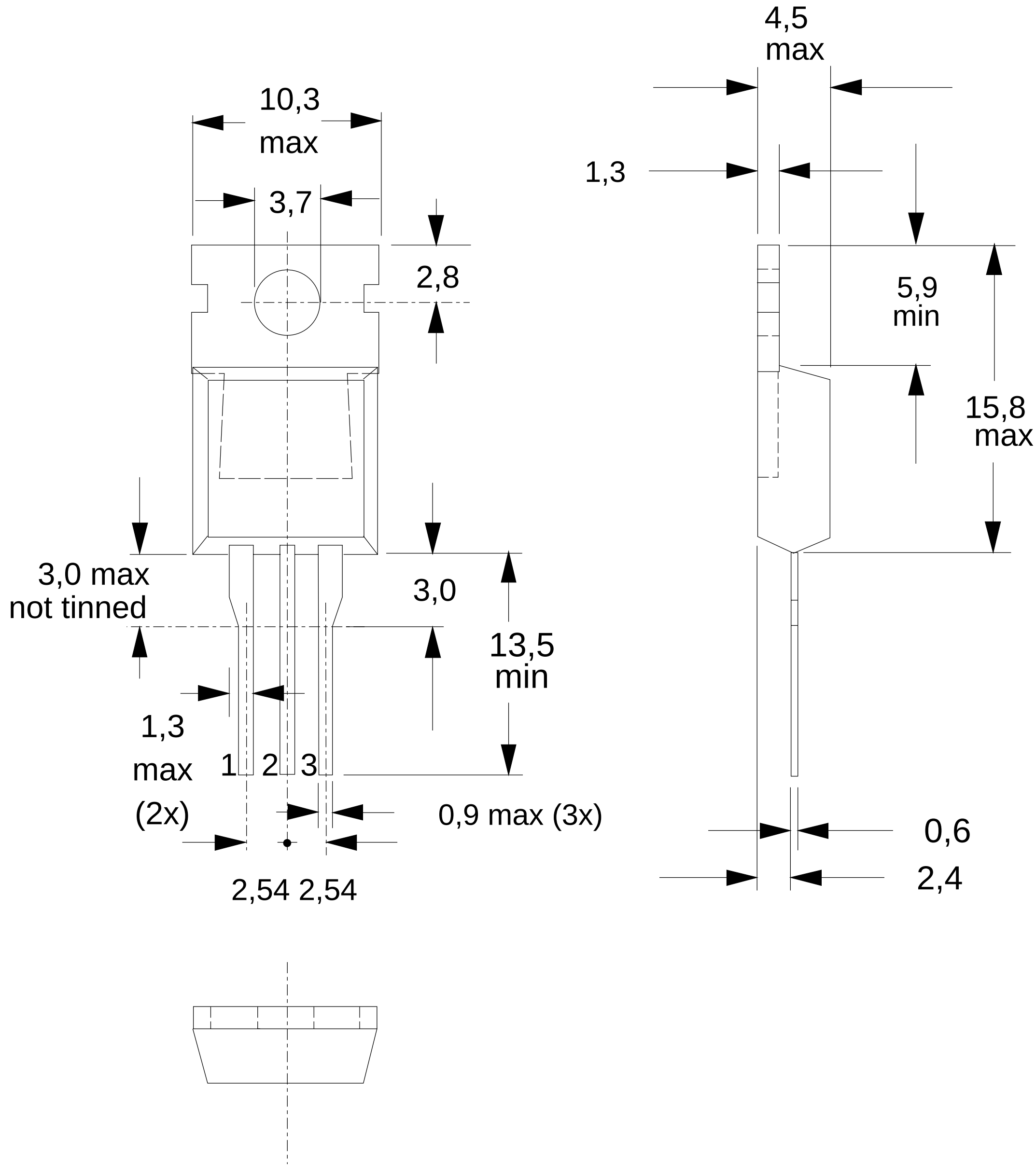


Fig.13. SOT78 (TO220AB). pin 2 connected to mounting base.

Notes

1. Refer to mounting instructions for SOT78 (TO220) envelopes.
2. Epoxy meets UL94 V0 at 1/8".

DEFINITIONS

DATA SHEET STATUS		
DATA SHEET STATUS[2]	**PRODUCT STATUS**[3]	**DEFINITIONS**
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Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product
Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A
Limiting values		
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Application information		
Where application information is given, it is advisory and does not form part of the specification.		
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