JSMICRO SEMICONDUCTOR

BTA216-600F

GENERAL DESCRIPTION

Passivated guaranteed commutation triacs in a plastic envelope intended for use in motor control circuits or with other highly inductive loads. These devices balance the requirements of commutation performance and gate sensitivity. The "sensitive gate" E series and "logic level" D series are intended for interfacing with low power drivers, including micro controllers.

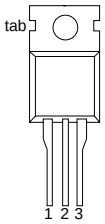
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	UNIT
	BTA216-	**600D**	**-**	
	BTA216-	**600E**	**800E**	
	BTA216-	**600F**	**800F**	
V_{DRM}	Repetitive peak off-state voltages	600	800	V
$I_{T(RMS)}$	RMS on-state current	16	16	A
I_{TSM}	Non-repetitive peak on-state current	140	140	A

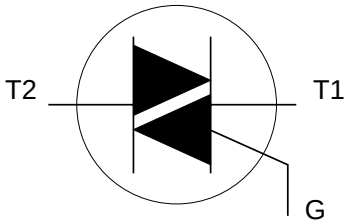
PINNING - TO220AB

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; $T_{mb} \leq 99$ ˚C	-	16		A
I_{TSM}	Non-repetitive peak on-state current	full sine wave; T_j = 25 ˚C prior to surge				
		t = 20 ms	-	140		A
		t = 16.7 ms	-	150		A
I^2t	I^2t for fusing	t = 10 ms	-	98		A^2s
dI_T/dt	Repetitive rate of rise of on-state current after triggering	I_{TM} = 20 A; I_G = 0.2 A; dI_G/dt = 0.2 A/µs	-	100		A/µs
I_{GM}	Peak gate current		-	2		A
V_{GM}	Peak gate voltage		-	5		V
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
$R_{th\ j\text{-}mb}$	Thermal resistance junction to mounting base	full cycle	-	-	1.2	K/W
		half cycle	-	-	1.7	K/W
$R_{th\ j\text{-}a}$	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
		BTA216-			**...D**	**...E**	**...F**	
I_{GT}	Gate trigger current[2]	V_D = 12 V; I_T = 0.1 A						
		T2+ G+	-	-	5	10	25	mA
		T2+ G-	-	-	5	10	25	mA
		T2- G-	-	-	5	10	25	mA
I_L	Latching current	V_D = 12 V; I_{GT} = 0.1 A						
		T2+ G+	-	-	15	20	25	mA
		T2+ G-	-	-	25	30	40	mA
		T2- G-	-	-	25	30	40	mA
I_H	Holding current	V_D = 12 V; I_{GT} = 0.1 A	-	-	15	25	30	mA
V_T	On-state voltage	I_T = 20 A	-	1.2		1.5		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
		BTA216-	**...D**	**...E**	**...F**			
dV_D/dt	Critical rate of rise of off-state voltage	V_{DM} = 67% $V_{DRM(max)}$; T_j = 110 ˚C; exponential waveform; gate open circuit	30	60	70	-	-	V/µs
dI_{com}/dt	Critical rate of change of commutating current	V_{DM} = 400 V; T_j = 110 ˚C; $I_{T(RMS)}$ = 16 A; dV_{com}/dt = 20v/µs; gate open circuit	1.8	3.5	4.5	-	-	A/ms
dI_{com}/dt	Critical rate of change of commutating current	V_{DM} = 400 V; T_j = 110 ˚C; $I_{T(RMS)}$ = 16 A; dV_{com}/dt = 0.1v/µs; gate open circuit	4.3	5.3	6.3	-	-	A/ms
t_{gt}	Gate controlled turn-on time	I_{TM} = 20 A; V_D = $V_{DRM(max)}$; I_G = 0.1 A; dI_G/dt = 5 A/µs	-	-	-	2	-	µs

2 Device does not trigger in the T2-, G+ quadrant.

MECHANICAL DATA

Dimensions in mm

Net Mass: 2 g

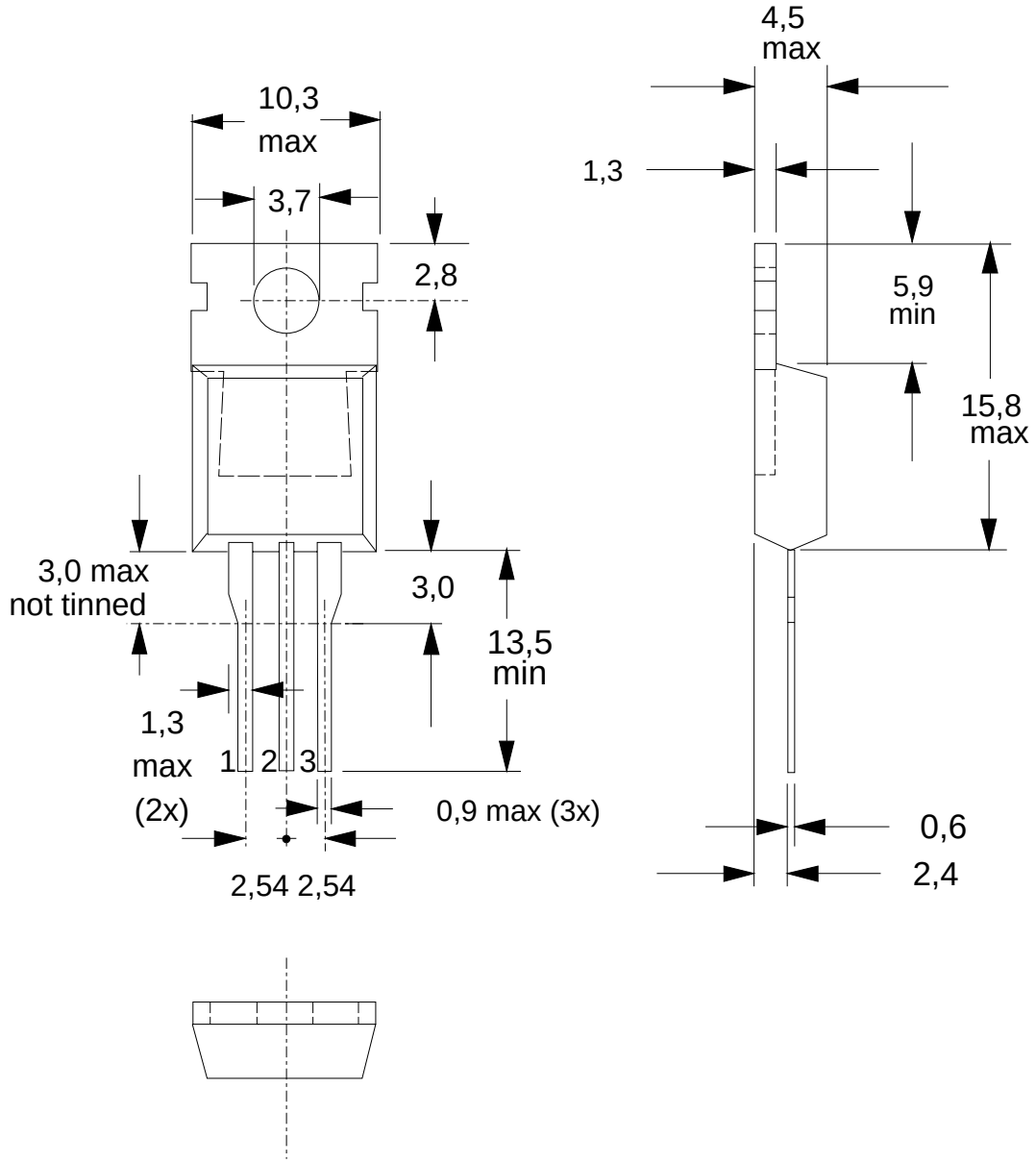


Fig.1. SOT78 (TO220AB). pin 2 connected to mounting base.

Notes

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