

查询"BTA22"供应商

3875081 G E SOLID STATE

01E 17771 D T-25-15

Triacs

**BTA22 Series**

File Number **1300**

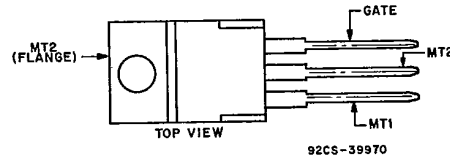
**10-A Silicon Triacs**

For Power-Control and Power-Switching Applications

**Features:**

- 800V, 125 Deg. C T<sub>J</sub> Operating
- High dv/dt and di/dt Capability
- Low Switching Losses
- High Pulse Current Capability
- Low Forward and Reverse Leakage
- Sipos Oxide Glass Multilayer Passivation System
- Advanced Unisurface Construction
- Precise Ion Implanted Diffusion Source

**TERMINAL DESIGNATIONS**



**JEDEC TO-220AB**

The RCA BTA22-series triacs are gate-controlled full-wave silicon switches utilizing a plastic case with three leads to facilitate mounting on printed-circuit boards. They are intended for the control of ac loads in such applications as motor controls, light dimmers, heating controls, and power-switching systems.

These devices are designed to switch from an off-state to an on-state for either polarity of applied voltage with positive or negative gate-triggering voltages. They have an on-state

current rating of 10 amperes at a T<sub>C</sub> of 75°C and repetitive off-state voltage ratings of 200, 300, 400, 500, 600, and 800 volts.

These devices are characterized for I<sup>+</sup>, III<sup>-</sup> gate-triggering modes only and should suit a wide range of applications that employ diac or anode on/off triggering.

All these types are supplied in the JEDEC TO-220AB VER-SAWATT plastic package.

**MAXIMUM RATINGS, Absolute-Maximum Values:**

	BTA22B	BTA22C	BTA22D	BTA22E	BTA22M	BTA22N	
V <sub>DROM</sub> <sup>*</sup> , Gate open, T <sub>J</sub> = -65 to 125°C	200	300	400	500	600	800	V
I <sub>T(RMS)</sub> , T <sub>C</sub> = 75°C, θ = 360°				10			A
I <sub>TSM</sub> (for 1 full cycle) 60 Hz (sinusoidal)				110			A
I <sub>TSM</sub> (for 1 full cycle) 50 Hz (sinusoidal)				103			A
di/dt				70			A/μs
V <sub>D</sub> = V <sub>DROM</sub> , I <sub>G</sub> = 200 mA, t <sub>r</sub> = 0.1 μs (See Fig. 13)				66			A <sup>2</sup> s
i <sup>2</sup> t (See Fig. 11)				33			A <sup>2</sup> s
t = 20 ms				19			A <sup>2</sup> s
t = 2.5 ms							
t = 0.5 ms							
I <sub>GTM</sub> <sup>■</sup>				4			A
For 1 μs max.				16			W
P <sub>GM</sub> (For 1 μs max., I <sub>GTM</sub> ≤ 4 A)				0.35			W
P <sub>G(AV)</sub>				-65 to 150			°C
T <sub>stg</sub> <sup>†</sup>				-65 to 125			°C
T <sub>C</sub> <sup>†</sup>							
T <sub>T</sub> (During Soldering):				225			°C
For 10 s max. (terminals and case)							

\*For either polarity of main terminal 2 voltage (V<sub>MT2</sub>) with reference to main terminal 1.  
 ■For either polarity to gate voltage (V<sub>G</sub>) with reference to main terminal 1.  
 †For temperature measurement reference point, see Dimensional Outline.

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**BTA22 Series**

ELECTRICAL CHARACTERISTICS, At Maximum Ratings Unless Otherwise Specified, and at Indicated Temperature

CHARACTERISTIC	LIMITS			UNITS
	For All Types Unless Otherwise Specified			
	Min.	Typ.	Max.	
$I_{DROM}^*$ Gate open, $T_J = 125^\circ\text{C}$ , $V_{DROM} = \text{Max. rated value}$ .....	—	0.1	2	mA
$V_{TM}^*$ $i_T = 30 \text{ A (peak)}$ , $T_C = 25^\circ\text{C}$ (See Fig. 6) .....	—	—	1.7	V
$I_{HO}^*$ Gate open, Initial principal current = 150 mA (dc) $V_D = 12 \text{ V}$ , $T_C = 25^\circ\text{C}$ .....	—	15	—	mA
For other case temperatures .....	See Fig. 7			
$dv/dt$ (Commutating)* $V_D = V_{DROM}$ , $I_{T(RMS)} = 10 \text{ A}$ , commutating $di/dt = 4.44 \text{ A/ms}$ , gate unenergized, $T_C = 75^\circ\text{C}$ (See Fig. 14) .....	4	10	—	V/ $\mu\text{s}$
$dv/dt^*$ $V_D = V_{DROM}$ , exponential voltage rise, gate open, $T_C = 100^\circ\text{C}$ :				
BTA22B .....	100	300	—	V/ $\mu\text{s}$
BTA22C .....	85	275	—	
BTA22D .....	75	250	—	
BTA22E .....	65	225	—	
BTA22M .....	60	200	—	
BTA22N .....	10	50	—	
$I_{GT}^{*\blacksquare}$ Mode $V_{MT2}$ $V_G$ $V_D = 12 \text{ V (dc)}$ $I^+$ positive positive .....	—	10	25	mA
$R_L = 30 \Omega$ $III^-$ negative negative .....	—	20	30	
$T_C = 25^\circ\text{C}$ $I^-$ positive negative .....	—	20	60	
$III^+$ negative positive .....	—	30	60	
For other case temperatures .....	See Figs. 9 & 10			
$V_{GT}^{*\blacksquare}$ $V_D = 12 \text{ V (dc)}$ , $R_L = 30 \Omega$ , $T_C = 25^\circ\text{C}$ .....	—	1.25	2.5	V
For other case temperatures .....	See Fig. 12			
$V_D = V_{DROM}$ , $R_L = 125 \Omega$ , $T_C = 100^\circ\text{C}$ .....	0.2	—	—	
$t_{gt}$ For $V_D = V_{DROM}$ , $I_G = 80 \text{ mA}$ , $t_r = 0.1 \mu\text{s}$ , $i_T = 10 \text{ A (peak)}$ , $T_C = 25^\circ\text{C}$ (See Fig. 5) .....	—	1.6	—	$\mu\text{s}$
$R_{\theta JC}$ .....	—	—	2.2	$^\circ\text{C/W}$
$R_{\theta JA}$ .....	—	—	60	

\*For either polarity of main terminal 2 voltage ( $V_{MT2}$ ) with reference to main terminal 1.  
 ■For either polarity of gate voltage ( $V_G$ ) with reference to main terminal 1.

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D T-25-15

Trilacs

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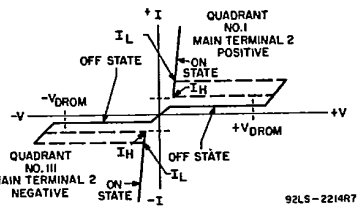


Fig. 1 — Principal voltage-current characteristic.

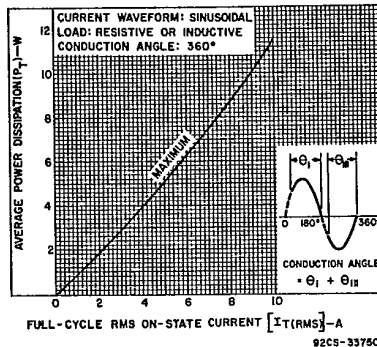


Fig. 2 — Power dissipation vs. on-state current.

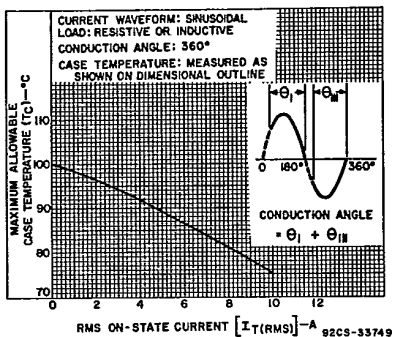


Fig. 3 - Maximum allowable case temperature vs. on-state current.

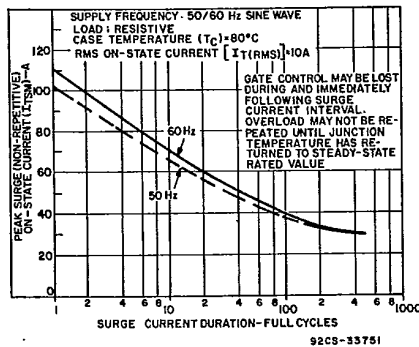


Fig. 4 — Peak surge on-state current vs. surge current duration.

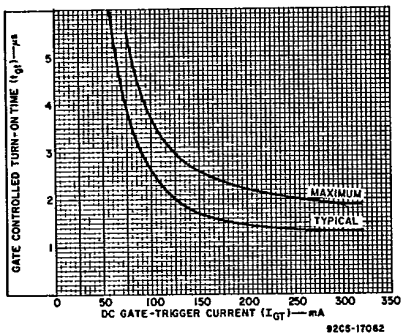


Fig. 5 — Turn-on time vs. gate-trigger current.

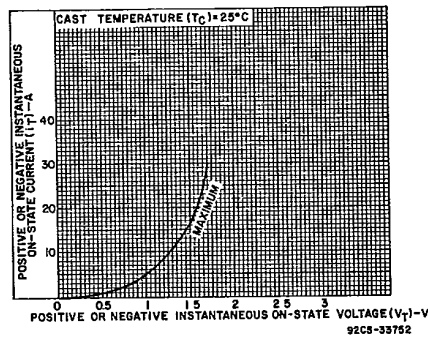


Fig. 6 — On-state current vs. on-state voltage.

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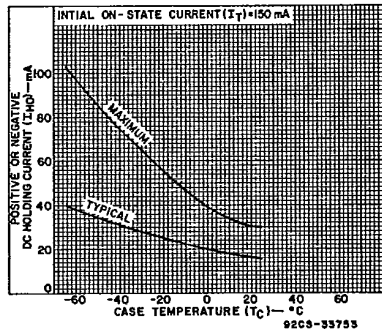


Fig. 7 — DC holding current vs. case temperature.

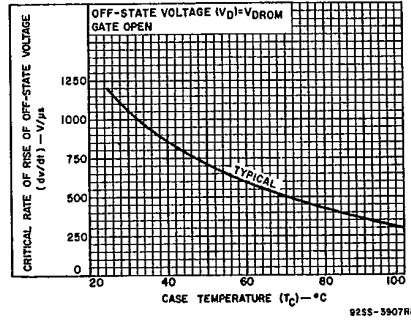


Fig. 8 — Critical rate-of-rise of off-state voltage vs. case temperature.

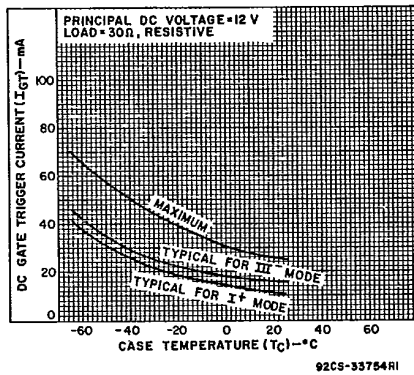


Fig. 9 — DC gate-trigger current (for I<sup>+</sup> and III<sup>-</sup> triggering modes) vs. case temperature.

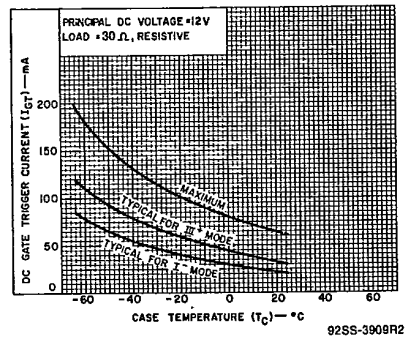


Fig. 10 — DC gate-trigger current (for I<sup>-</sup> and III<sup>+</sup> triggering modes) vs. case temperature.

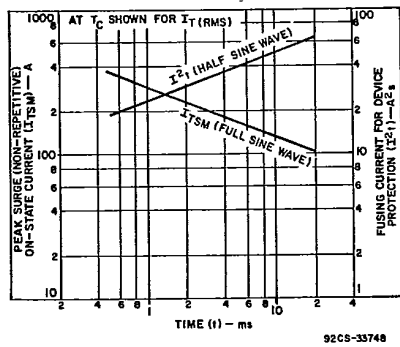


Fig. 11 — Peak surge on-state current and fusing current as a function of time.

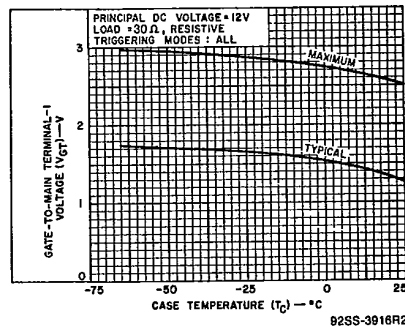


Fig. 12 — DC gate-trigger voltage vs. case temperature.

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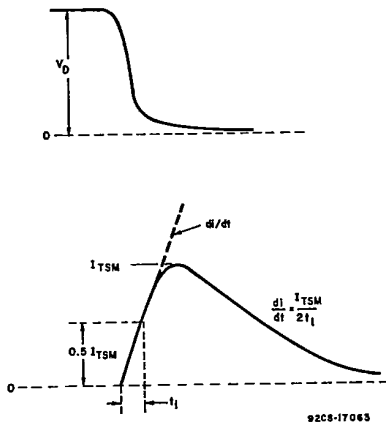


Fig. 13 — Rate-of-change of on-state current with time (defining  $di/dt$ ).

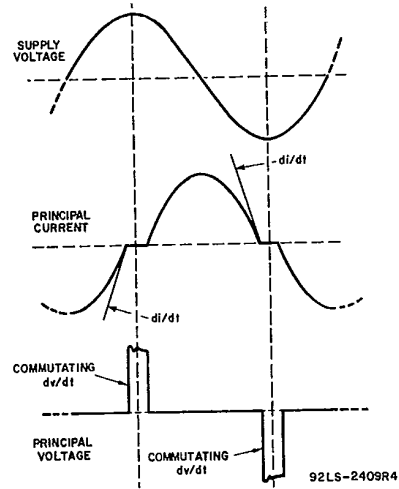


Fig. 14 — Relationship between supply voltage and principal current (inductive load) showing reference points for definition of commutating voltage ( $dv/dt$ ).

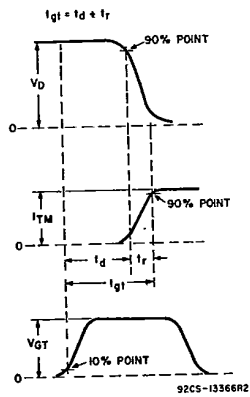
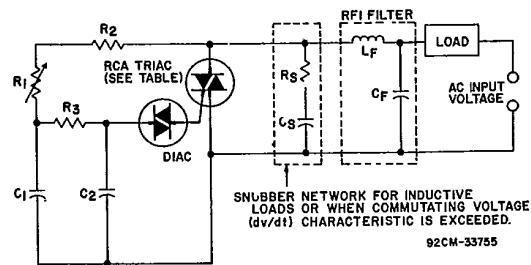


Fig. 15 — Relationship between off-state voltage, on-state current, and gate-trigger voltage showing reference points for definition of turn-on time ( $t_{gt}$ ).



AC INPUT VOLTAGE	120 V 60 Hz	240 V 60 Hz	240 V 50 Hz	
C1	0.1 $\mu$ F 200 V	0.1 $\mu$ F 400 V	0.1 $\mu$ F 400 V	
C2	0.1 $\mu$ F 100 V	0.1 $\mu$ F 100 V	0.1 $\mu$ F 100 V	
R1	100 k $\Omega$ 1/2 W	200 k $\Omega$ 1/2 W	250 k $\Omega$ 1/2 W	
R2	2.2 k $\Omega$ 1/2 W	3.3 k $\Omega$ 1/2 W	3.3 k $\Omega$ 1/2 W	
R3	15 k $\Omega$ 1/2 W	15 k $\Omega$ 1/2 W	15 k $\Omega$ 1/2 W	
SNUBBER NETWORK FOR 10 A (RMS)* INDUCTIVE LOAD	Cs	0.068 $\mu$ F 200 V	0.1 $\mu$ F 400 V	0.1 $\mu$ F 400 V
	Rs	1.2 k $\Omega$ 1/2 W	1 k $\Omega$ 1/2 W	1 k $\Omega$ 1/2 W
RFI FILTER	Cf*	0.1 $\mu$ F 200 V	0.1 $\mu$ F 400 V	0.1 $\mu$ F 400 V
	Lf*	100 $\mu$ H	200 $\mu$ H	200 $\mu$ H
RCA TRIACS	BTA22B BTA22C	BTA22D BTA22E	BTA22D BTA22E	

\*For other RMS current values refer to RCA Application Note AN-4745.  
\*Typical values for lamp dimming circuits.

Fig. 16 — Typical phase-control circuit for lamp dimming, heat control, and universal-motor speed control.