

BTA20 Series

20A TRIACs

Table 1: Main Features

Symbol	Value	Unit	
I _{T(RMS)}	20	А	
V _{DRM} /V _{RRM}	600 and 700	V	
I _{GT (Q1)} (max)	35 and 50	mA	

DESCRIPTION

The **BTA20 BW/CW** triac family are high performance glass passivated chips technology.

The snubberless concept offer suppression of RC network and it is suitable for application such as phase control and static switching on inductive or resistive load.

Thanks to their clip assembly technique, they provide a superior performance in surge current handling capabilities.

By using an internal ceramic pad, the BTA series provides voltage insulated tab (rated at $2500V_{RMS}$) complying with UL standards (File ref.: E81734).

Table 3: Absolute Maximum Ratings

GO-CAL
A1 A2 G
TO-220AB Insulated

Table 2: Order Codes

Part Numbers	Marking
BTA20-600BWRG	BTA20-600BW
BTA20-600CWRG	BTA20-600CW
BTA20-700BWRG	BTA20-700BW
BTA20-700CWRG	BTA20-700CW

Symbol	Paramete		Value	Unit		
I _{T(RMS)}	RMS on-state current (full sine wave)	20	Α			
 	Non repetitive surge peak on-state		t = 10 ms	210	•	
I _{TSM}	current (full cycle, T_j initial = 25°C)	F = 60 Hz	t = 8.3 ms	200	A	
l ² t	I ² t Value for fusing	t _p = 10 ms		200	A ² s	
dl/dt	Critical rate of rise of on-state current $I_G = 500 \text{ mA} \text{ dI}_G/\text{dt} = 1 \text{ A/}\mu\text{s}$	Repetitive F = 50 Hz	T _i = 125°C	20	A/µs	
	$I_{\rm G} = 500 \text{mA} \text{dI}_{\rm G}/\text{dt} = 1 \text{A/}\mu\text{s}$	Non repetitive		100	-	
V _{DSM} /V _{RSM}	Non repetitive peak off-state voltage	t _p = 10 ms	T _j = 25°C	V _{DSM} /V _{RSM} + 100	V	
I _{GM}	Peak gate current	t _p = 20 μs	T _j = 125°C	4	А	
V_{GM}	Peak positive gate voltage	16	V			
$P_{G(AV)}$	Average gate power dissipation	1	T _j = 125°C	1	W	
T _{stg} T _j	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C	

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BTA20 Series

Symbol	Test Conditions	Quadrant		BT	A20	Unit
Symbol	Test Conditions	t Conditions Quadrant		BW	CW	Unit
I _{GT} (1)		ALL	MIN.	2	1	mA
'GT (')	$V_D = 12 V$ $R_L = 33 \Omega$	ALL	MAX.	50	35	mA
V _{GT}		ALL	MAX.	1	.5	V
V _{GD}	$V_D = V_{DRM} R_L = 3.3 \text{ k}\Omega T_j = 125^\circ C$	ALL	MIN.	0	.2	V
I _H (2)	I _T = 500 mA gate open	L	MAX.	75	50	mA
		-	TYP.	50	-	
١L	$I_{G} = 1.2 I_{GT}$	II	ITE.	90	-	mA
		- -	MAX.	-	80	
dV/dt (2)	V _D = 67 %V _{DBM} gate open	T _i = 125°C	TYP.	750	500	V/µs
u v/ut (2)	vD = 07 %vDRM gate open	r _j = 125 0	MIN.	500	250	v/µs
(d)/(dt) = (0)	$(dl/dt)_{0} = 20.4/m_{0}$	T _i = 125°C	TYP.	36	22	V/µs
	(dl/dt)c = 20 A/ms	$r_j = 120.0$	MIN.	18	11	

Tables 4: Electrical Characteristics ($T_j = 25^{\circ}C$, unless otherwise specified)

Table 5: Static Characteristics

Symbol	Test Conditions			Value	Unit
V _{TM} (2)	I _{TM} = 28 A t _p = 380 μs	$T_j = 25^{\circ}C$	MAX.	1.70	V
I _{DRM}	V _{DRM} = V _{RRM}	$T_j = 25^{\circ}C$	ΜΛΥ	10	μA
I _{RRM}		T _j = 125°C	- MAX.	3	mA

Note 1: minimum ${\rm I}_{GT}$ is guaranted at 5% of ${\rm I}_{GT}$ max.

Note 2: for both polarities of A2 referenced to A1.

Table 6: Thermal resistance

Symbol	Parameter	Value	Unit
R _{th(j-c)}	Junction to case (AC)	2.1	°C/W
R _{th(j-c)}	Junction to case (DC)	2.8	0/11
R _{th(j-a)}	Junction to ambient	60	°C/W

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Figure 1: Maximum power dissipation versus RMS on-state current (full cycle)

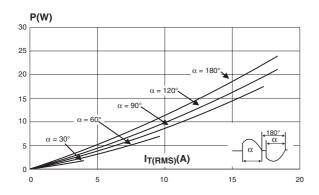


Figure 3: RMS on-state current versus case temperature (full cycle)

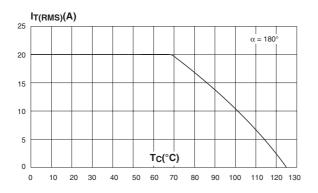


Figure 5: On-state characteristics (maximum values)

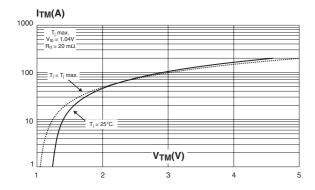


Figure 2: Correlation between maximum RMS power dissipation and maximum allowable temperatures (Tamb and Tcase) for different thermal resistances heatsink + contact

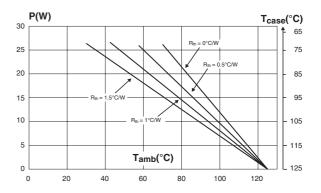
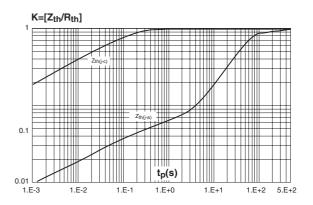
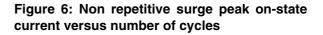
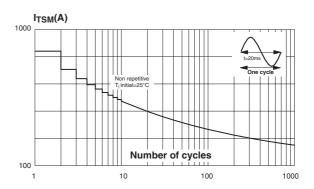


Figure 4: Relative variation of thermal impedance versus pulse duration







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Figure 7: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms and corresponding value of l^2t

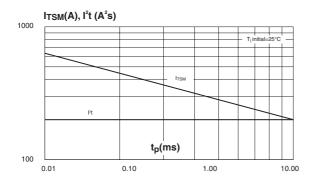
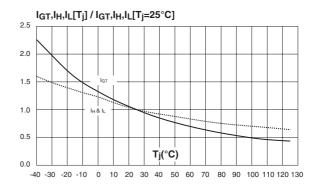


Figure 8: Relative variation of gate trigger current and holding current versus junction temperature



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Figure 9: Ordering Information Scheme

RG = Tube

Table 7: Product Selector

Part Numbers	Voltage (xxx)		Sensitivity	Туре	Package	
r art Numbers	600 V	700 V	Sensitivity	туре	rackage	
BTA20-xxxBWRG	Х	Х	50 mA	Snubberless	TO-220AB Ins.	
BTA20-xxxCWRG	Х	Х	35 mA	Onabbeness	10 22000 113.	

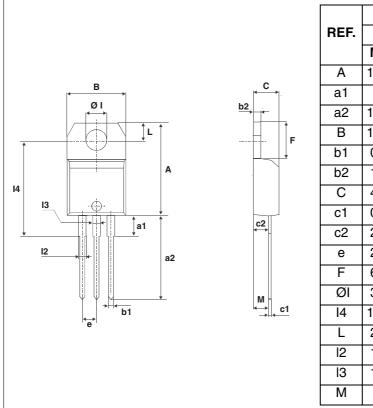


Figure 10: TO-220AB	Insulated Package Mechanical Data
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	DIMENSIONS						
REF.	Millimeters			Inches			
	Min.	Тур.	Max.	Min.	Тур.	Max.	
Α	15.20		15.90	0.598		0.625	
a1		3.75			0.147		
a2	13.00		14.00	0.511		0.551	
В	10.00		10.40	0.393		0.409	
b1	0.61		0.88	0.024		0.034	
b2	1.23		1.32	0.048		0.051	
С	4.40		4.60	0.173		0.181	
c1	0.49		0.70	0.019		0.027	
c2	2.40		2.72	0.094		0.107	
е	2.40		2.70	0.094		0.106	
F	6.20		6.60	0.244		0.259	
ØI	3.75		3.85	0.147		0.151	
14	15.80	16.40	16.80	0.622	0.646	0.661	
L	2.65		2.95	0.104		0.116	
12	1.14		1.70	0.044		0.066	
13	1.14		1.70	0.044		0.066	
М		2.60			0.102		

Table 8: Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BTA20-600BWRG	BTA20-600BW				
BTA20-600CWRG	BTA20-600CW	TO-220AB Ins.	2.3 g	50	Tube
BTA20-700BWRG	BTA20-700BW	10-220AD III3.	2.0 g	50	Tube
BTA20-700CWRG	BTA20-700CW				

Table 9: Revision History

Date	Revision	Description of Changes
Sep-2001	1A	First issue.
08-Feb-2006	2	TO-220AB Ins. delivery mode changed from bulk to tube.

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