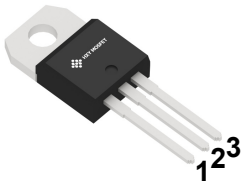
Description

The BTA20-800CW Triac series are suitable for general purpose mains power AC switching. They can be used as ON/OFF in function applications such as static relays, heating regulation or induction motor starting circuit. They are also recommended for phase control operations in light dimmers and appliance motors speed controllers.

1. ANODE
2. ANODE
3. GATE



TO-220A

Main Fetures

Symbol	Value	Unit
$I_{T(RMS)}$	20	A
V_{DRM}/V_{RRM}	800	V
I_{TSM}	200	A

Absolute maximum ratings

Symbol	Parameters			Value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)		T_c = 100 °C	20	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle,T_j initial = 25 °C)	F = 50 Hz	t_p = 20 ms	200	A
		F = 60 Hz	t_p = 16.7 ms	212	
I^2t	I^2t value for fusing	t_p = 10 ms		200	A^2s
dI/dt	Critical rate of rise of on-state current I_G = 2 x I_{GT} , t_r ≤ 100 ns	F = 120 Hz	T_j = 125 °C	100	A/μs
V_{DSM}/V_{RSM}	Non repetitive surge peak off-state voltage	t_p = 10 ms	T_j = 25 °C	V_{DRM}/V_{RRM} + 100	V
I_{GM}	Peak gate current	t_p = 20 μs	T_j = 125 °C	4	A
$P_{G(AV)}$	Average gate power dissipation		T_j = 125 °C	1	W
T_{stg}	Storage junction temperature range			-40 to +150	°C
T_j	Operating junction temperature range			-40 to +125	°C

Static Electrical Characteristics

Symbol	Test conditions	T_j		Value	Unit
V_T(1)	I_{TM} = 22.5 A, t_p = 380 µs	25 °C	Max.	1.5	V
V_{TO}(1)	threshold on-state voltage	125 °C	Max.	0.85	V
R_D(1)	Dynamic resistance	125 °C	Max.	25	mΩ
I_{DRM}/I_{RRM}	V_{DRM} = V_{RRM}	25 °C	Max.	5	µA
		125 °C		2	mA

1. *For both polarities of A2 referenced to A1*

Electrical Characteristics

(T_j = 25 °C, unless otherwise specified) - standard (4 quadrants)

Symbol	Parameters	Quadrant		BTA20-800CW	Unit
I_{GT}(1)	V_D = 12 V, R_L = 33 Ω	I - II - III	Max.	50	mA
		IV		70	
V_{GT}		All	Max.	1.3	V
V_{GD}	V_D = V_{DRM}, R_L = 3.3 kΩ, T_j = 125 °C	All	Min.	0.2	V
I_H(2)	I_T = 100 mA		Max.	60	mA
I_L	I_G = 1.2 I_{GT}	I - III - IV	Max.	70	mA
		II	Max.	90	

Symbol	Parameters	Quadrant		BTA20-800CW	Unit
dV/dt(2)	V_D = 67 % V_{DRM} gate open, T_j = 125 °C		Min.	500	V/µs
(dV/dt)c(2)	(dI/dt)c = 7 A/ms, T_j = 125 °C		Min.	5	V/µs

1. *Minimum I_{GT} is guaranteed at 5 % of I_{GT} max.*
2. *For both polarities of A2 referenced to A1*

Electrical Characteristics

(T_j = 25 °C, unless otherwise specified) - Snubberless and logic level (3quadrants)

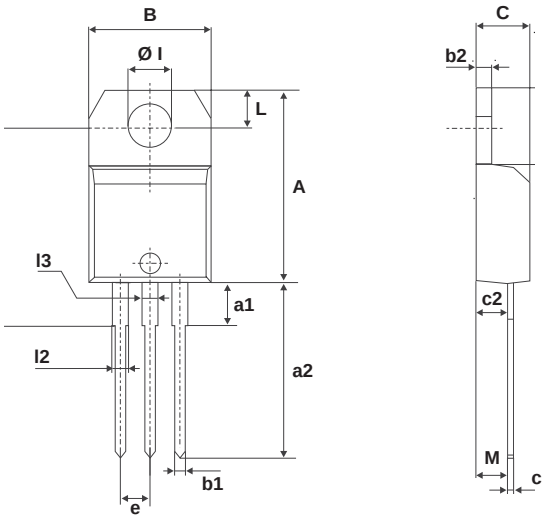
Symbol	Parameters	Quadrant		BTA20-800CW	Unit
I_{GT}(1)	V_D = 12 V, R_L = 33 Ω	I - II - III	Max.	35	mA
V_{GT}			Max.	1.3	V
V_{GD}	V_D = V_{DRM}, R_L = 3,3 kΩ, T_j = 125 °C		Min.	0.2	V
I_H(2)	I_T = 500 mA		Max.	50	mA
I_L	I_G = 1.2 I_{GT}	I - III	Max.	60	mA
		II	Max.	70	
(dV/dt)(2)	VD = 67 % V_{DRM} gate open, T_j = 125 °C		Min.	500	V/µs
(dI/dt)c(2)	(dV/dt)c = 0.1 V/µs, T_j = 125 °C		Min.	8.5	A/ms
	(dV/dt)c = 10 V/µs, T_j = 125 °C			3.0	
	Without snubber, T_j = 125 °C			8.5	

1. *Minimum I_{GT} is guaranteed at 5 % of I_{GT} max.*
2. *For both polarities of A2 referenced to A1*

Thermal resistance

Symbol	Parameters	Value	Unit
$R_{th(j-c)}$	Max. junction to case (AC)	1.1	°C/W
$R_{th(j-a)}$	Junction to ambient	60	

Package Information
TO-220A



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.20		15.90	0.598		0.625
a1		3.75			0.147	
a2	13.00		14.00	0.511		0.551
B	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
C	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
e	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
l4	15.80	16.40	16.80	0.622	0.646	0.661
L	2.65		2.95	0.104		0.116
l2	1.14		1.70	0.044		0.066
l3	1.14		1.70	0.044		0.066
M		2.60			0.102	

Attention

■ Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.

■ HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.

■ Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

■ HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could
give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

■ In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.