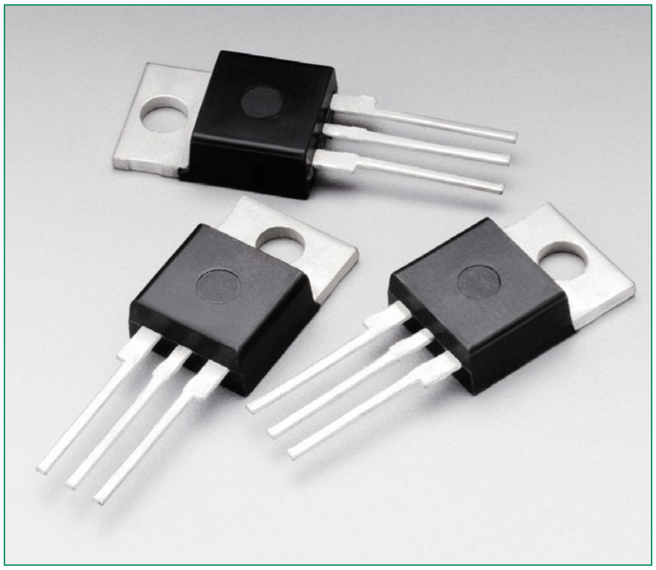
BTA16-600SW3G, BTA16-800SW3G,



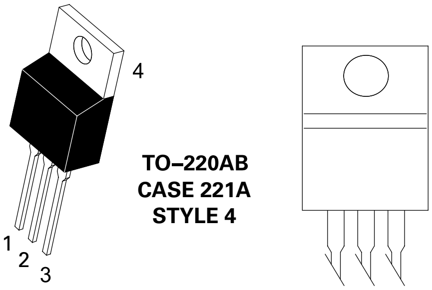
Description

Designed for high performance full–wave ac control applications where high noise immunity and high commutating di/dt are required.

Features

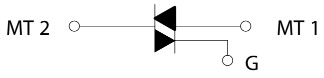
- Blocking Voltage to 800 V
- On-State Current Rating of 16 A RMS at 25°C Uniform Gate Trigger Currents in Three Quadrants
- High Immunity to dV/dt – 250 V/µs minimum at 110°C
- Minimizes Snubber Networks for Protection
- Industry Standard TO-220AB Package
- High Commutating dI/dt – 2 A/ms minimum at 110°C
- Internally Isolated (2500 V_{RMS})
- These Devices are Pb–Free

Pin Out



TO–220AB
CASE 221A
STYLE 4

Functional Diagram



Additional Information

Datasheet | **Resources** | **Samples**

Revised: 06/07/19

Maximum Ratings (T_J = 25°C unless otherwise noted)

Rating		Symbol	Value	Unit
Peak Repetitive Off-State Voltage (Note 1) (Gate Open, Sine Wave 50 to 60 Hz, T_J = -40° to 125°C)	BTA16–600SW3G BTA16–800SW3G	V_{DRM}, V_{RRM}	600 800	V
On-State RMS Current (Full Cycle Sine Wave, 60 Hz, T_C = 25°C		$I_{T\ (RMS)}$	16	A
Peak Non-Repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, T_C = 25°C)		I_{TSM}	170	A
Circuit Fusing Consideration (t = 8.3 ms)		I^2t	120	A²sec
Non–Repetitive Surge Peak Off–State Voltage (T_J = 25°C, t = 8.3ms)		V_{DSM}/V_{RSM}	V_{DSM}/V_{RSM} +100	V
Peak Gate Current (T_J = 110°C, t ≤20 µs)		I_{GM}	4.0	A
Peak Gate Power (Pulse Width≤ 20 µs, T_C = 80°C)		P_{GM}	20	W
Average Gate Power (T_J = 125°C)		$P_{G(AV)}$	1.0	W
Operating Junction Temperature Range		T_J	-40 to +125	°C
Storage Temperature Range		T_{stg}	-40 to +125	°C
RMS Isolation Voltage (t = 300 ms, R.H. ≤ 30%, T_A = 25°C)		V_{iso}	2500	V

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. V_{DRM} and V_{RRM} for all types can be applied on a continuous basis. Ratings apply for zero or negative gate voltage; however, positive gate voltage shall not be applied concurrent with negative potential on the anode. Blocking voltages shall not be tested with a constant current source such that the voltage ratings of the devices are exceeded.

Thermal Characteristics

Rating		Symbol	Value	Unit
Thermal Resistance,	Junction–to–Case (AC) Junction–to–Ambient	$R_{\theta JC}$ $R_{\theta JA}$	2.13 60	°C/W
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 10 seconds		T_L	260	°C

Electrical Characteristics - OFF (T_J = 25°C unless otherwise noted ; Electricals apply in both directions)

Characteristic		Symbol	Min	Typ	Max	Unit
Peak Repetitive Blocking Current (V_D = V_{DRM} = V_{RRM}; Gate Open)	T_J = 25°C	I_{DRM}, I_{RRM}	-	-	0.005	mA
	T_J = 110°C		-	-	2.0	

Electrical Characteristics - ON (T_J = 25°C unless otherwise noted; Electricals apply in both directions)

Characteristic		Symbol	Min	Typ	Max	Unit
Forward On-State Voltage (Note 2) (I_{TM} = ±22.5 A Peak)		V_{TM}	–	–	1.55	V
Gate Trigger Current (Continuous dc) (V_D = 12 V, R_L = 30 Ω)	MT2(+), G(+)	I_{GT}	2.0	–	10	mA
	MT2(+), G(–)		2.0	–	10	
	MT2(–), G(–)		2.0	–	10	
Holding Current (V_D = 12 V, Gate Open, Initiating Current = ±500 mA)		I_H	–	–	20	mA
Latching Current (V_D = 12 V, I_G = 12 mA)	MT2(+), G(+)	I_L	–	–	25	mA
	MT2(+), G(–)		–	–	30	
	MT2(–), G(–)		–	–	25	
Gate Trigger Voltage (V_D = 12 V, R_L = 30 Ω)	MT2(+), G(+)	V_{GT}	0.5	–	1.3	V
	MT2(+), G(–)		0.5	–	1.3	
	MT2(–), G(–)		0.5	–	1.3	
Gate Non–Trigger Voltage (T_J = 110°C)	MT2(+), G(+)	V_{GD}	0.2	–	–	V
	MT2(+), G(–)		0.2	–	–	
	MT2(–), G(–)		0.2	–	–	

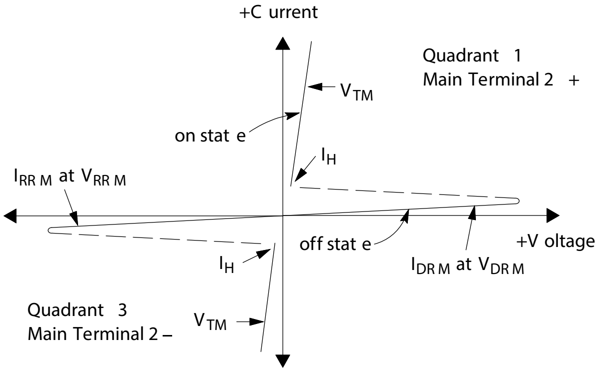
2. Indicates Pulse Test: Pulse Width ≤ 2.0 ms, Duty Cycle ≤ 2%.

Dynamic Characteristics

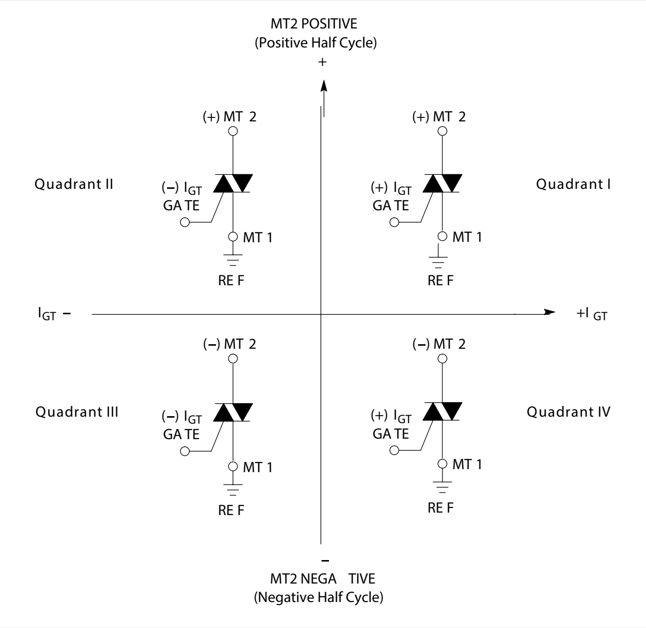
Characteristic	Symbol	Min	Typ	Max	Unit
Rate of Change of Commutating Current, See Figure 10. (Gate Open, T_J = 110°C, No Snubber)	(dI/dt)c	2.0	–	–	A/ms
Critical Rate of Rise of On–State Current (T_J = 110°C, f = 120 Hz, I_G = 20 mA, tr ≤100 ns)	dI/dt	–	–	50	A/µs
Critical Rate of Rise of Off-State Voltage (V_D = 0.66 x V_{DRM}, Exponential Waveform, Gate Open, T_J = 110°C)	dV/dt	250	–	–	V/µs

Voltage Current Characteristic of SCR

Symbol	Parameter
V_{DRM}	Peak Repetitive Forward Off State Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Reverse Off State Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Maximum On State Voltage
I_H	Holding Current



Quadrant Definitions for a Triac



All polarities are referenced to MT1.
With in–phase signals (using standard AC lines) quadrants I and III are used

Figure 1. Typical RMS Current Derating

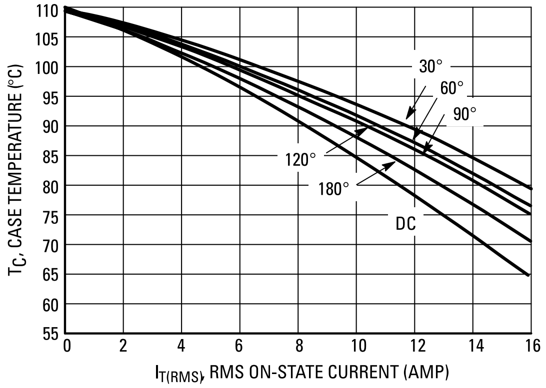


Figure 2. On-State Power Dissipation

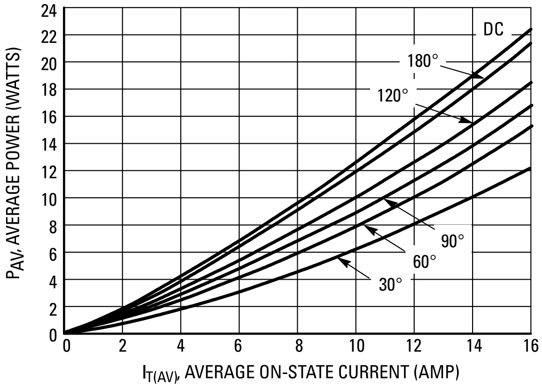


Figure 3. On–State Characteristics

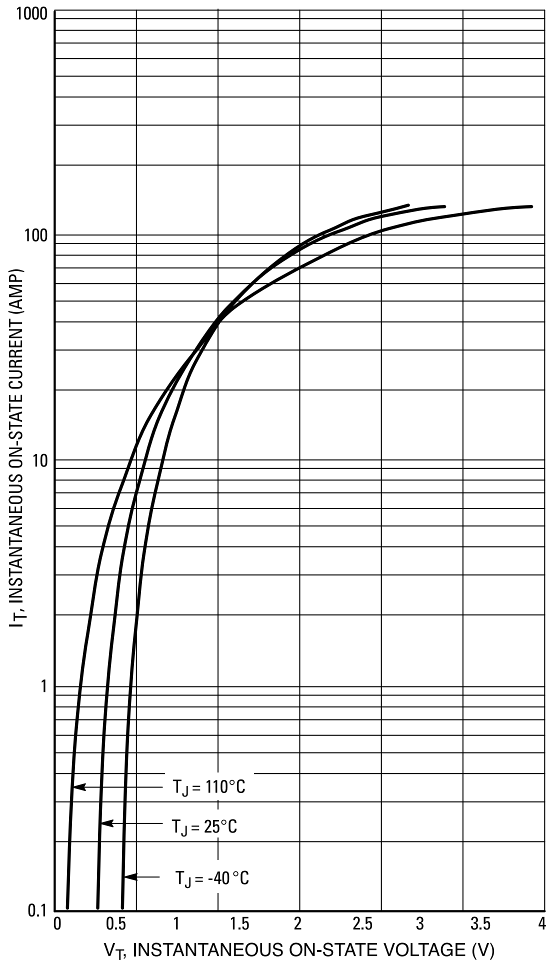


Figure 4. Thermal Response

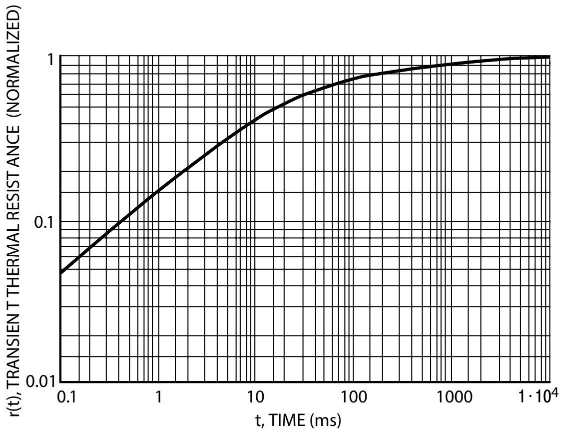


Figure 5. Hold Current Variation

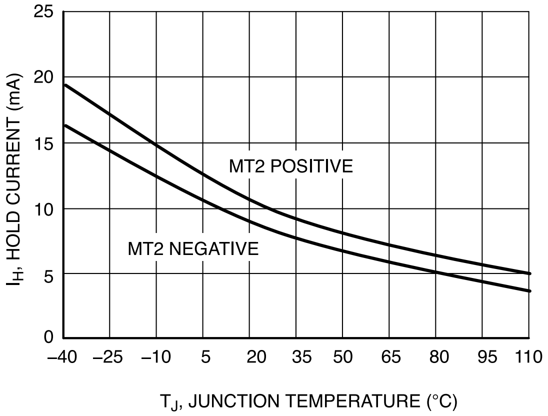


Figure 6. Gate Trigger Current Variation

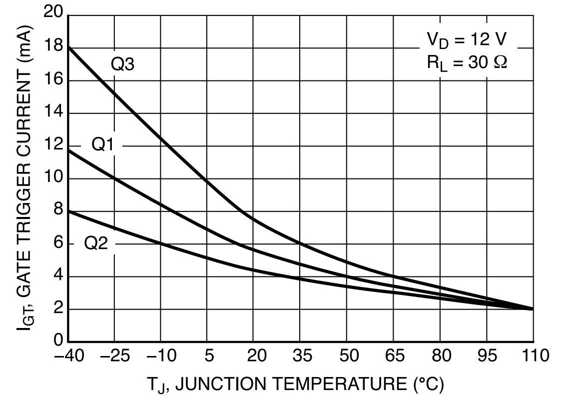


Figure 7. Gate Trigger Voltage Variation

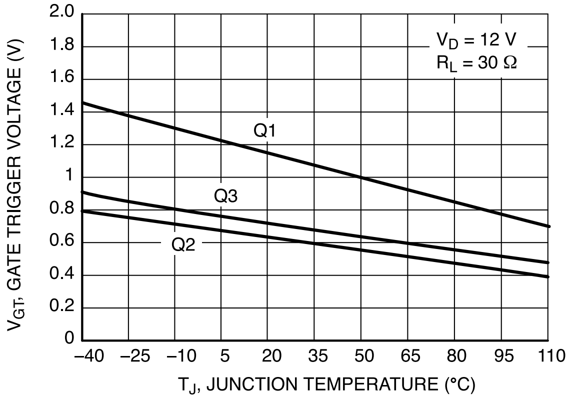


Figure 8. Typical Latching Current Variation

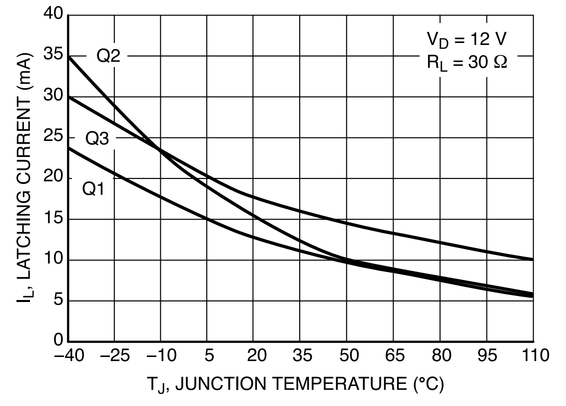
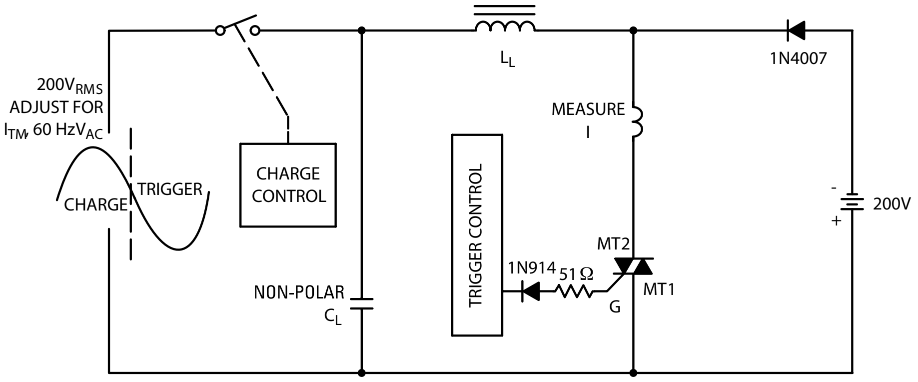


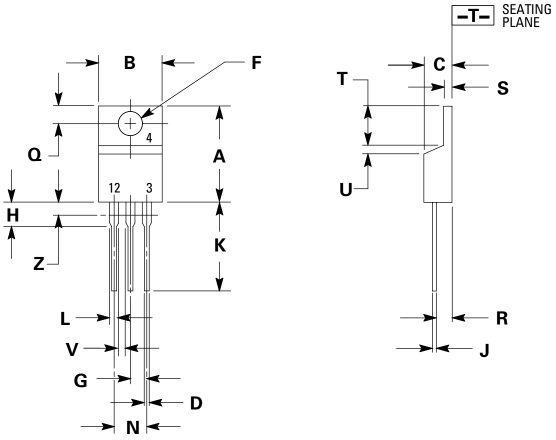
Figure 9. Simplified Test Circuit to Measure the Critical Rate of Rise of Commutating Current (di/dt)



Note: Component values are for verification of rated (di/dt)c. See AN1048 for additional information.

Note: Component values are for verification of rated (di/dt)c. See AN1048 for additional information

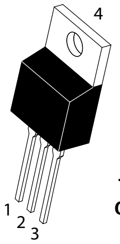
Dimensions



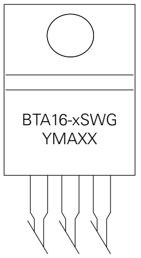
Dim	Inches		Millimeters	
	Min	Max	Min	Max
A	0.590	0.620	14.99	15.75
B	0.380	0.420	9.65	10.67
C	0.178	0.188	4.52	4.78
D	0.025	0.035	0.64	0.89
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.41	2.67
H	0.110	0.130	2.79	3.30
J	0.018	0.024	0.46	0.61
K	0.540	0.575	13.72	14.61
L	0.060	0.075	1.52	1.91
N	0.195	0.205	4.95	5.21
Q	0.105	0.115	2.67	2.92
R	0.085	0.095	2.16	2.41
S	0.045	0.060	1.14	1.52
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

Part Marking System



**TO–220AB
CASE 221A
STYLE 12**



x =6 or 8
Y =Year
M =Month
A =Assembly Site
XX =Lot Serial Code
G =Pb-Free Package

Pin Assignment	
1	Main Terminal 1
2	Main Terminal 2
3	Gate
4	No Connection

Ordering Information

Device	Package	Shipping
BTA16−600SW3G	TO−220AB (Pb−Free)	500 Units / Rail
BTA16−800SW3G	TO−220AB (Pb−Free)	500 Units / Rail

MOSCHIP.RU
ВМЕСТЕ МЫ СОЗДАЕМ БУДУЩЕЕ

ПОСТАВКА
ЭЛЕКТРОННЫХ КОМПОНЕНТОВ

многоканальный
+7 495 668 12 70
info@moschip.ru

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:
moschip.ru
moschip.ru_4
moschip.ru_6
moschip.ru_9