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 150°C) BTA30–600CW3G BTA30–800CW3G	V_{DRM}, V_{RRM}	 600 800	V
On-State RMS Current (Full Cycle Sine Wave, 60 Hz, T_C = 95°C)	$I_{T\ (RMS)}$	30	A
Peak Non-Repetitive Surge Current (One Full Cycle Sine Wave, 60 Hz, T_C= 25°C)	I_{TSM}	400	A
Circuit Fusing Consideration (t = 8.3 ms)	I^2t	667	A^2sec
Non–Repetitive Surge Peak Off–State Voltage (T_J = 25°C, t = 8.3 ms)	V_{DSM}/V_{RSM}	V_{DSM}/V_{RSM} +100	V
Peak Gate Current (T_J = 150°C, t ≤ 20µs)	I_{GM}	4.0	W
Average Gate Power (T_J = 150°C)	$P_{G(AV)}$	0.5	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	$R_{\theta JC}$ $R_{\theta JA}$	1.8 60	°C/W
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 10 seconds	T_L	260	°C

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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 = 150°C		-	-	15	

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} = ±42 A Peak)		V_{TM}	–	–	1.55	V
Threshold Voltage, TJ = 150°C (Note 2)		V_{to}	–	–	.85	V
Dynamic Resistance, TJ = 150°C (Note 2)		R_d	–	–	16	mΩ
Gate Trigger Current (Continuous dc) (V_D = 12 V, R_L = 30 Ω)	MT2(+), G(+)	I_{GT}	–	–	35	mA
	MT2(+), G(–)		–	–	35	
	MT2(–), G(–)		–	–	35	
Holding Current (V_D = 12 V, Gate Open, Initiating Current = ±500 mA)		I_H	–	–	50	mA
Latching Current (V_D = 12 V, I_G = 42 mA)	MT2(+), G(+)	I_L	–	–	75	mA
	MT2(+), G(–)		–	–	75	
	MT2(–), G(–)		–	–	75	
Gate Trigger Voltage (V_D = 12 V, R_L = 30 Ω)	MT2(+), G(+)	V_{GT}	–	–	1.3	V
	MT2(+), G(–)		–	–	1.3	
	MT2(–), G(–)		–	–	1.3	
Gate Non–Trigger Voltage (T_J = 150°C)	MT2(+), G(+)	V_{GD}	0.15	–	–	V
	MT2(+), G(–)		0.15	–	–	
	MT2(–), G(–)		0.15	–	–	

2. Indicates Pulse Test: Pulse Width ≤ 2.0 ms, Duty Cycle ≤ 2%.
3. For both polarities.

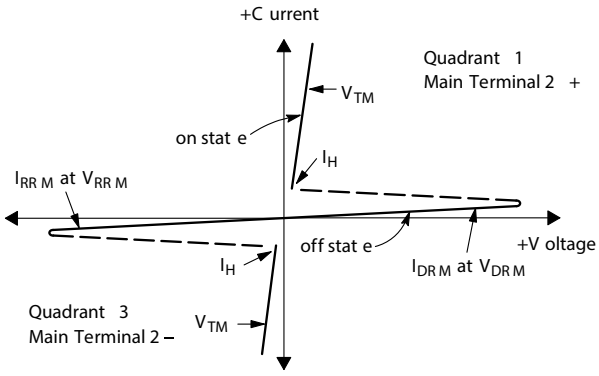
Dynamic Characteristics

Characteristic	Symbol	Min	Typ	Max	Unit
Rate of Change of Commutating Current, See Figure 10. (Gate Open, T_J = 150°C, No Snubber)	(dI/dt)c	4.0	–	–	A/ms
Critical Rate of Rise of On–State Current (T_J = 150°C, f = 120 Hz, I_G = 2 x I_{GT}, 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 = 150°C)	dV/dt	500	–	–	V/µs

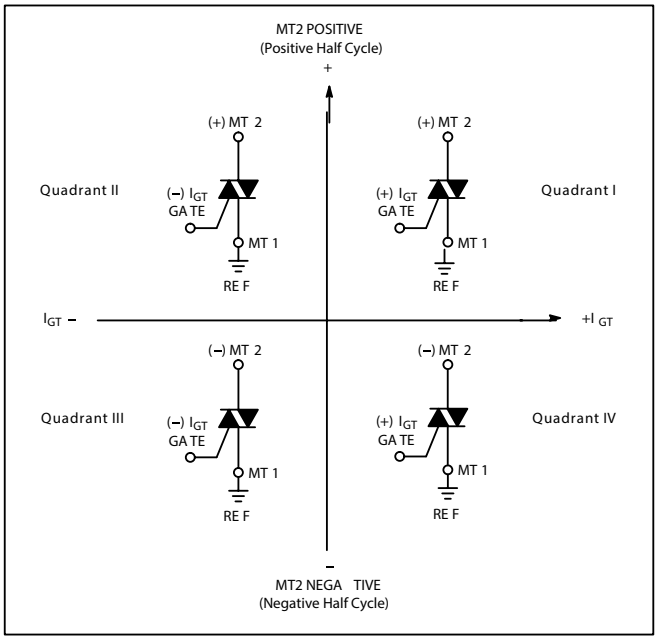
4. dv/dt(c) = 35 V/s (exponential to 200 Vpk)

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 .

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Figure 1. RMS Current Derating

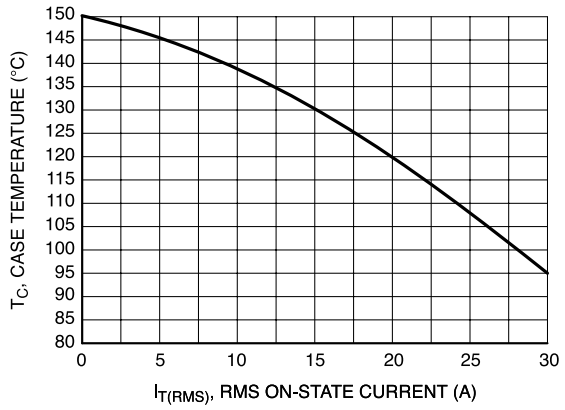

Figure 2. On-State Power Dissipation

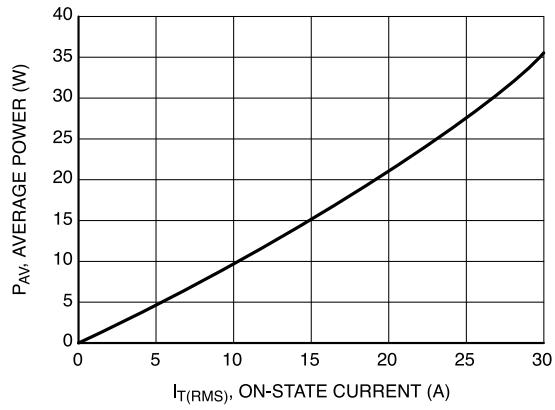

Figure 3. On–State Characteristics

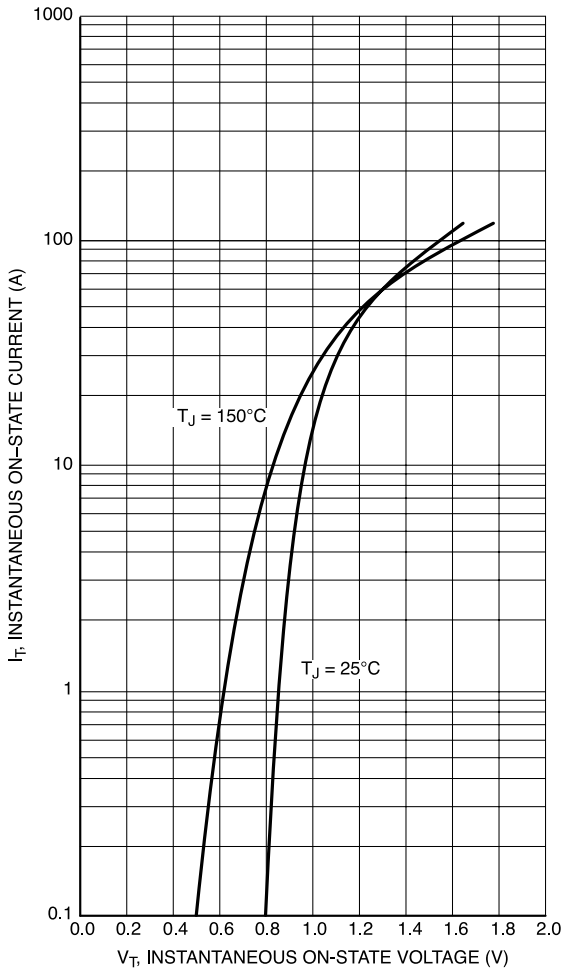

Figure 4. Thermal Response

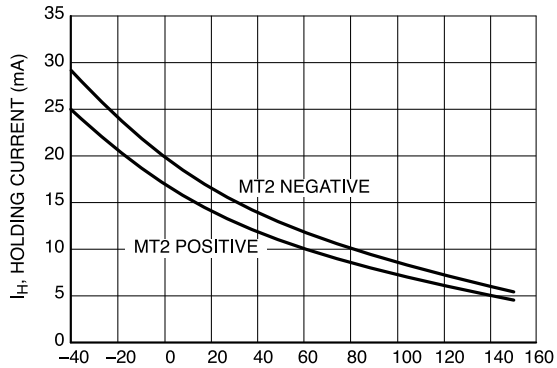

Figure 5. Gate Trigger Current Variation

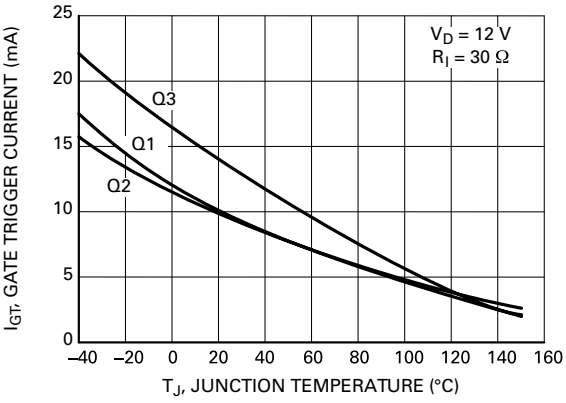

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Figure 6. Gate Trigger Voltage Variation

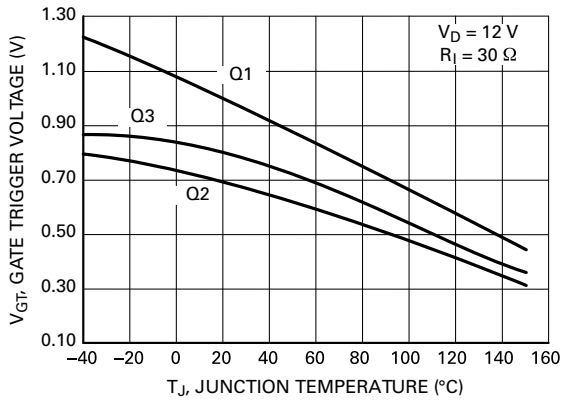


Figure 7. Critical Rate of Rise of Commutating Voltage

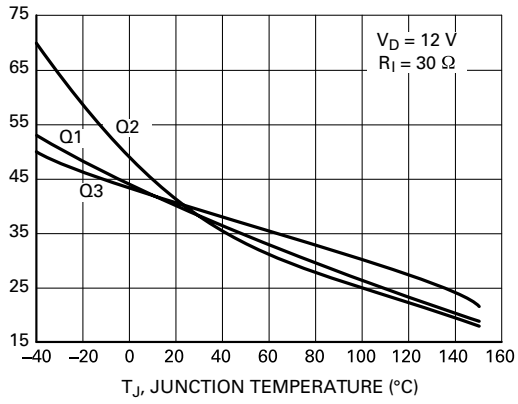
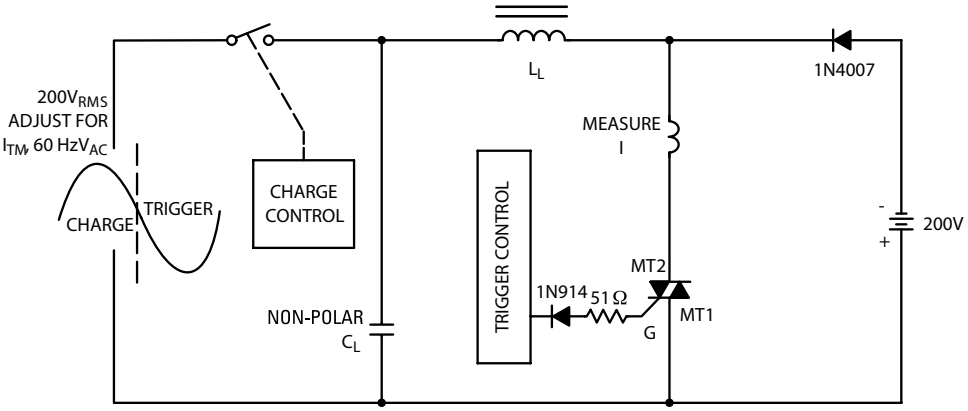
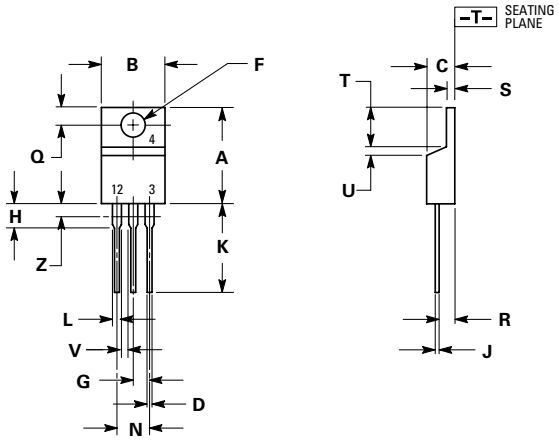


Figure 8. Simplified Test Circuit to Measure the Critical Rate of Rise of Commutating Current (di/dt)



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

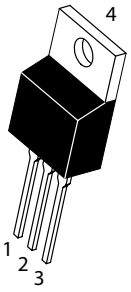
Dimensions



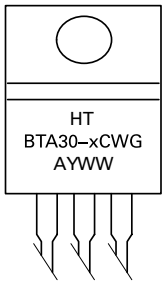
Dim	Inches		Millimeters	
	Min	Max	Min	Max
A	0.590	0.620	14.99	15.75
B	0.380	0.420	9.65	10.67
C	0.178	0.188	4.52	4.78
D	0.025	0.035	0.64	0.89
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.41	2.67
H	0.110	0.130	2.79	3.30
J	0.018	0.024	0.46	0.61
K	0.540	0.575	13.72	14.61
L	0.060	0.075	1.52	1.91
N	0.195	0.205	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–220A B
CASE 221 A
STYLE 12



x=	6 or 8
A=	Assembly Locatio n
Y=	Year
WW	= Wo rk W eek
G=	Pb –Free Package

Pin Assignment

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

Ordering Information

Device	Package	Shipping
BTA30H–600CW3G	TO-220AB (Pb-Free)	500 Units / Rail
BTA30H–800CW3G	TO-220AB (Pb-Free)	500 Units / Rail