DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

BTCO8-(A) SERIES

SILICON BIDIRECTIONAL THYRISTORS

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak repetitive off-state voltage[1] (T_J = 110°C) BTC08-100(A) BTC08-200(A) BTC08-400(A) BTC08-600(A)	V_{DRM}	 100 200 400 600	Volts
RMS on-state current (T_C = 72°C)	$I_{T(RMS)}$	8.0	Amps
Peak surge current (1 cycle, 50Hz, T_J = -40 to +110°C)	I_{TSM}	60	Amps
Circuit fusing considerations (T_J = -40 to 110°C , t = 10ms)	I^2t	18	A^2s
Peak gate power (pulse width = 10µs)	P_{GM}	10	Watts
Average gate power (T_C = 80°C, t = 10ms)	$P_{G(AV)}$	0.5	Watts
Peak gate current (pulse width = 10µs)	I_{GM}	3.5	Amps
Operating junction temperature range	T_J	-40 to +110	°C
Storage temperature range	T_{stg}	-40 to +150	°C
I_{TM} = 12A, I_G = 200mA	di/dt	10	A/µs

Note 1: Ratings apply for open gate conditions. Thyristor devices shall not be tested with a constant current source for blocking capability such that the voltage applied exceeds the rated blocking voltage.
Note 2: Soldering temperatures shall not exceed 200°C for 10 seconds.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
Thermal resistance, junction to case	$R_{\Theta JC}$	2.2	°C/W
Thermal resistance, junction to ambient	$R_{\Theta JA}$	60	°C/W

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ.	Max	Unit
Peak blocking current (either direction) (Rated V_{DRM} @ T_J = 110°C, gate open)	I_{DRM}	-	-	1.0	mA
Peak on-state voltage (either direction) (I_{TM} = 10A peak)	V_{TM}	-	1.5	1.75	Volts
Gate trigger voltage (continuous dc) (main terminal voltage = 12V, R_L = 100Ω) All types, all quadrants (main terminal voltage = rated V_{DRM}, R_L = 10kΩ, T_J = 110°C) All types, all quadrants	V_{GTM}	- 0.2	- -	2.5 -	Volts
Holding current (either direction) (main terminal source voltage= 12V, gate open, initiating current = 1.0A) T_C = -40°C T_C = 25°C	I_H	 - -	 - -	 100 45	mA

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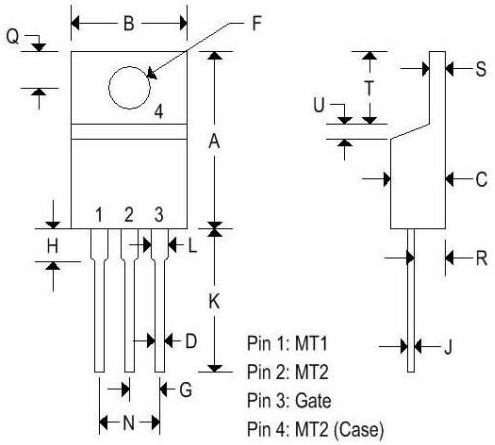
Latching current (main terminal source voltage = 24V, gate trigger source = 15V, 100Ω)					
MT2(+), G(+)	I_L	-	-	100	mA
MT2(-), G(-)		-	-	100	
MT2(+), G(-)		-	-	200	
Critical rate of rise of off-state voltage (Rated V_{DRM}, exponential voltage rise, gate open, T_C = 100°C)	dv/dt	50	100	-	V/µs
Blocking voltage application rate at commutation (@ V_{DRM}, gate open commutating di/dt = 3.2A/ms)	dv/dt(c)	4	-	-	V/µs

Characteristic	**Symbol**	**QUADRANT**			
		I **mA**	**II** **mA**	**III** **mA**	**IV** **mA**
Peak gate trigger current (main terminal voltage = 12V, R_L = 100Ω)					
BTC08 SERIES, T_J = 25°C	I_{GTM}	50	50	50	-
BTC08 SERIES, T_J = -40°C		100	100	100	-
BTC08-()A SERIES, T_J = 25°C		50	50	50	100
BTC08-()A SERIES, T_J = -40°C		100	100	100	200

MECHANICAL CHARACTERISTICS

Case	TO-220AB
Marking	Alpha-numeric
Pin out	See below



	TO-220AB			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.575	0.620	14.600	15.750
B	0.380	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.025	0.035	0.640	0.890
F	0.142	0.147	3.610	3.730
G	0.095	0.105	2.410	2.670
H	0.110	0.155	2.790	3.930
J	0.014	0.022	0.360	0.560
K	0.500	0.562	12.700	14.270
L	0.045	0.055	1.140	1.390
N	0.190	0.210	4.830	5.330
Q	0.100	0.120	2.540	3.040
R	0.080	0.110	2.040	2.790
S	0.045	0.055	1.140	1.390
T	0.235	0.255	5.970	6.480
U	-	0.050	-	1.270
V	0.045	-	1.140	-
Z	-	0.080	-	2.030

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FIGURE 1 – RMS CURRENT DERATING (f = 50 Hz)

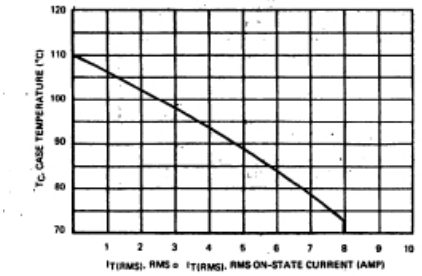

FIGURE 2 – MAXIMUM ON-STATE CHARACTERISTICS

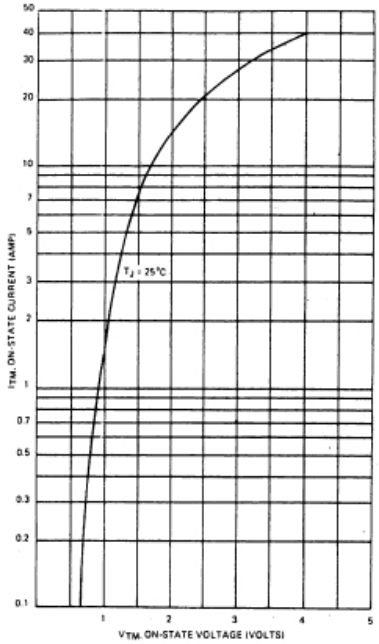

FIGURE 3 – THERMAL RESPONSE

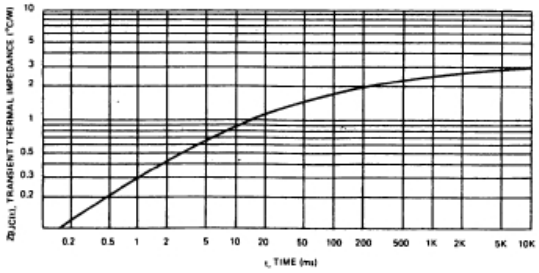

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FIGURE 4 – TYPICAL HOLDING CURRENT

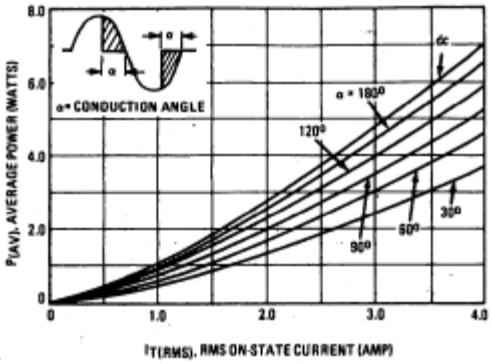

FIGURE 5 – TYPICAL GATE-TRIGGER VOLTAGE

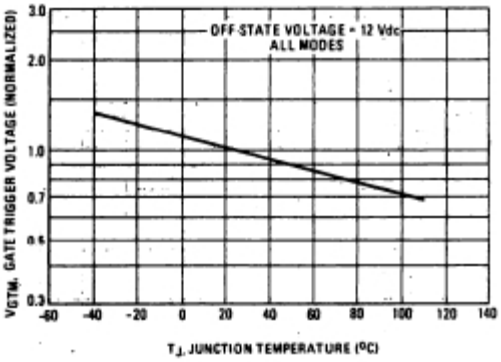

FIGURE 6 – TYPICAL GATE-TRIGGER CURRENT