DIGITRON SEMICONDUCTORS

BTC05-()A SERIES
BTC05-()B SERIES

SILICON BIDIRECTIONAL THYRISTORS

Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).
Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak repetitive off-state voltage(1) (T_J = 110°C) BTC05-50A,B BTC05-100A,B BTC05-200A,B BTC05-400A,B BTC05-600A,B	V_{DRM}	 50 100 200 400 600	Volts
RMS on-state current (T_C = 80°C)	$I_{T(RMS)}$	5	Amps
Peak non-repetitive surge current (1 cycle, 60 Hz, T_J = -40 to 110°C)	I_{TSM}	30	Amps
Circuit fusing considerations (T_J = -40 to 110°C , t = 10ms)	I^2t	4.5	A^2s
Peak gate power	P_{GM}	10	Watts
Average gate power	$P_{G(AV)}$	0.5	Watts
Peak gate voltage	V_{GM}	5.0	Volts
Operating junction temperature range	T_J	-40 to +110	°C
Storage temperature range	T_{stg}	-40 to +150	°C

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	$R_{\Theta JC}$	3	°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}	-	-	2.0	mA
Peak on-state voltage (either direction) (I_{TM} = 5.0A peak)	V_{TM}	-	-	1.8	Volts
Peak gate trigger voltage (main terminal voltage = 12V, R_L = 100Ω) MT2(+), G(+); MT2(+), G(-); MT2(-), G(-) MT2(-), G(+) (main terminal voltage = rated V_{DRM}, R_L = 10kΩ, T_J = 110°C) All quadrants	V_{GTM}	 - - 0.2	 - - -	 2.2 2.5 -	Volts
Holding current (either direction) (main terminal voltage= 12V, gate open, initiating current = 1.0A, T_J = 25°C) BTC05-()A SERIES BTC05-()B SERIES	I_H	 - -	 - -	 10 5.0	mA
Turn on time (either direction) (I_{TM} = 14A, I_{GT} = 100mA)	t_{on}	-	1.5	-	µs
Blocking voltage application rate at commutation (@ V_{DRM}, gate open)	dv/dt	-	50	-	V/µs

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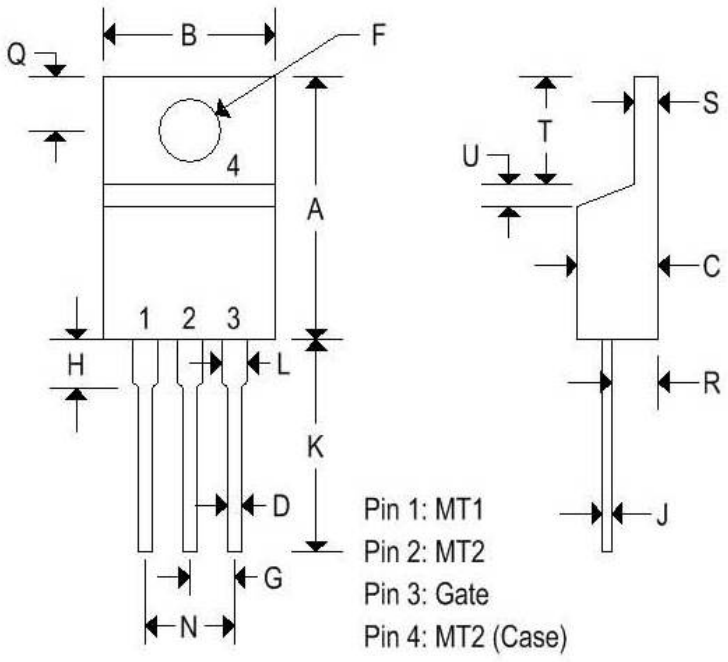
Characteristic	Symbol	QUADRANT			
		I mA	II mA	III mA	IV mA
Peak trigger current (main terminal voltage = 12V, R_L = 100Ω)	I_{GTM}				
BTC05-()A, T_J = 25°C		10	10	10	15
BTC05-()A, T_J = -40°C		25	25	25	40
BTC05-()B, T_J = 25°C		5.0	5.0	5.0	10
BTC05-()B, T_J = -40°C		15	15	15	25

MECHANICAL CHARACTERISTIC

Case	TO-220AB
Marking	Body painted, 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)

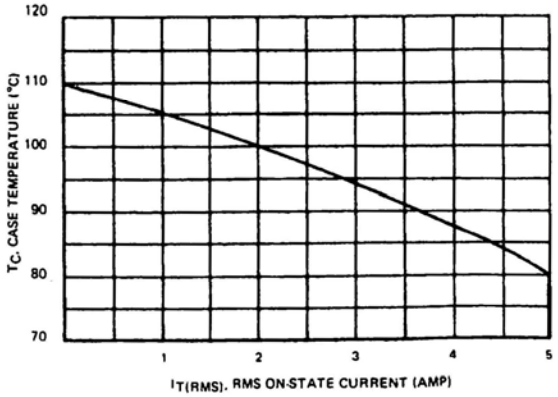

FIGURE 2 – MAXIMUM ON-STATE CHARACTERISTICS

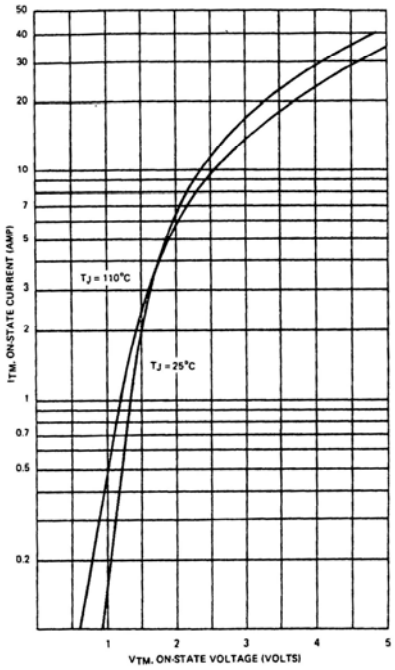

FIGURE 3 – THERMAL RESPONSE

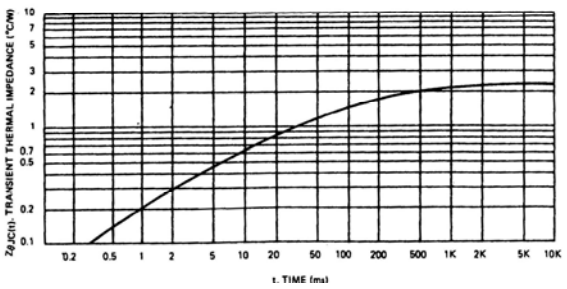

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FIGURE 4 – TYPICAL HOLDING CURRENT

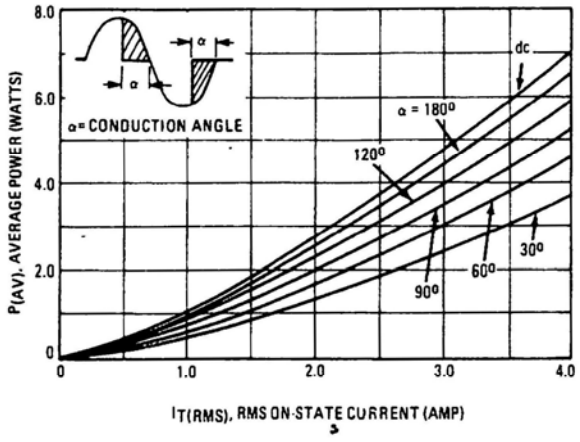


FIGURE 5 – TYPICAL GATE-TRIGGER CURRENT

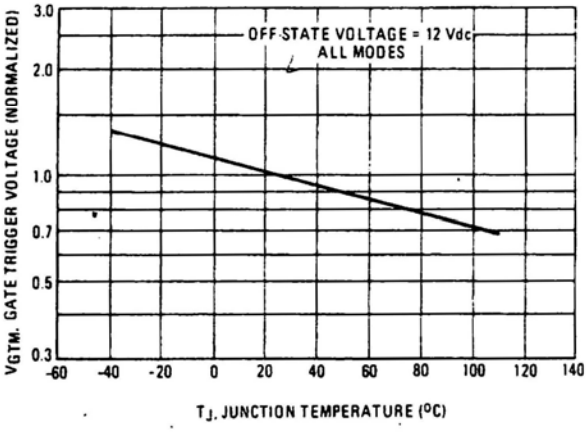
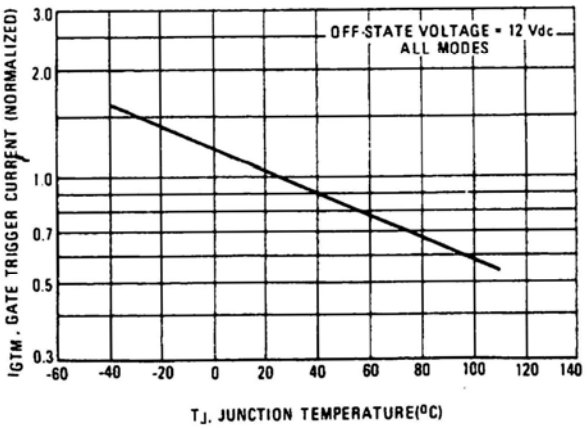


FIGURE 6 – TYPICAL GATE-TRIGGER VOLTAGE



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