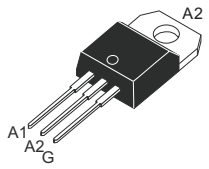
TRIACs, 10A

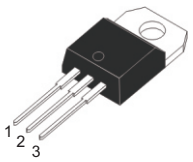
Snubberless and Standard

MAIN FEATURES

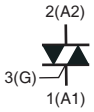
SYMBOL	VALUE	UNIT
$I_{T(RMS)}$	10	A
V_{DRM}/V_{RRM}	600 to 1000	V
$I_{GT(Q1)}$	25 to 50	mA



TO-220AB (**non-Insulated**)
(10TxxA)



TO-220AB **(Insulated)**
(10TxxAI)



DESCRIPTION

The 10T triac series is suitable for general purpose AC switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, induction motor starting circuits... or for phase control operation in light dimmers, motor speed controllers,...

The snubberless version are specially recommended for use on inductive loads, thanks to their high commutation performances.

By using an internal ceramic pad, the 10T series provides voltage insulated tab (rated at 2500V_{RMS}) complying with UL standards (File ref. :E320098)

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
RMS on-state current (full sine wave)	$I_{T(RMS)}$	TO-220AB	T_c = 105°C	10	A
		TO-220AB insulated	T_c = 95°C		
Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	I_{TSM}	F =50 Hz	t = 20 ms	100	A
		F =60 Hz	t = 16.7 ms	105	
I^2t Value for fusing	I^2t	t_p = 10 ms		50	A^2s
Critical rate of rise of on-state current $I_G = 2xI_{GT}$, $t_r \leq 100ns$	dI/dt	F =100 Hz	T_j =125°C	50	A/µs
Peak gate current	I_{GM}	T_p =20 µs	T_j =125°C	4	A
Average gate power dissipation	$P_{G(AV)}$	T_j =125°C		1	W
Storage temperature range	T_{stg}			- 40 to + 150	°C
Operating junction temperature range	T_j			- 40 to + 125	

◎ ELECTRICAL CHARACTERISTICS (T_J= 25 ºC unless otherwise specified)

SNUBBERLESS (3 quadrants)						
SYMBOL	TEST CONDITIONS	QUADRANT		10Txxxx		Unit
				CW	BW	
I_{GT}(1)	V_D = 12 V, R_L = 30Ω	I - II - III	MAX.	35	50	mA
V_{GT}		I - II - III	MAX.	1.3		V
V_{GD}	V_D = V_{DRM}, R_L = 3.3KΩ T_j = 125°C	I - II - III	MIN.	0.2		V
I_H(2)	I_T = 500 mA		MAX.	35	50	mA
I_L	I_G = 1.2 I_{GT}	I - III	MAX.	50	70	mA
		II		60	80	
dV/dt(2)	V_D = 67% V_{DRM}, gate open, T_j = 125°C		MIN.	500	1000	V/µs
(dI/dt)c(2)	Without snubber, T_j = 125°C		MIN.	5.5	9	A/ms

◎ ELECTRICAL CHARACTERISTICS (T_J= 25 ºC unless otherwise specified)

Standard (4 quadrants)						
SYMBOL	TEST CONDITIONS	QUADRANT		10Txxxx		UNIT
				C	B	
I_{GT}(1)	V_D = 12 V, R_L = 30Ω	I - II - III	MAX.	25	50	mA
		IV		50	100	
V_{GT}		ALL		1.3		V
V_{GD}	V_D = V_{DRM}, R_L = 3.3KΩ, T_j = 125°C	ALL		0.2		V
I_H(2)	I_T = 500 mA		MAX.	25	50	mA
I_L	I_G = 1.2 I_{GT}	I - III - IV	MAX.	40	50	mA
		II		80	100	
dV/dt(2)	V_D = 67% V_{DRM}, gate open, T_j = 125°C		MIN.	200	400	V/µs
(dV/dt)c(2)	(dI/dt)c = 4.4 A/ms, T_j = 125°C		MIN.	5	10	V/µs

STATIC CHARACTERISTICS					
SYMBOL	TEST CONDITIONS			VALUE	UNIT
V_{TM}(2)	I_{TM} = 14 A, t_P = 380 µs	T_j = 25°C	MAX.	1.55	V
V_{t0}(2)	Threshold voltage	T_j = 125°C	MAX.	0.85	V
R_d(2)	Dynamic resistance	T_j = 125°C	MAX.	40	mΩ
I_{DRM} I_{RRM}	V_{DRM} = V_{RRM}	T_j = 25°C	MAX.	5	µA
		T_j = 125°C		1	mA

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

THERMAL RESISTANCE

SYMBOL			VALUE	UNIT
$R_{th(j-c)}$	Junction to case (AC)	TO-220AB	1.5	°C/W
		TO-220AB Insulated	2.4	
$R_{th(j-a)}$	Junction to ambient	TO-220AB	60	°C/W
		TO-220AB Insulated		

PRODUCT SELECTOR

PART NUMBER	VOLTAGE (xx)			SENSITIVITY	TYPE	PACKAGE
	600 V	800 V	1000 V			
10TxxA-B/10TxxAI-B	V	V	V	50 mA	Standard	TO-220AB
10TxxA-BW/10TxxAI-BW	V	V	V	50 mA	Snubberless	TO-220AB
10TxxA-C/10TxxAI-C	V	V	V	25 mA	Standard	TO-220AB
10TxxA-CW/10TxxAI-CW	V	V	V	35 mA	Snubberless	TO-220AB

ORDERING INFORMATION

ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
10TxxA-yy	10TxxA-yy	TO-220AB	2.0g	50	Tube
10TxxAI-yy	10TxxAI-yy	TO-220AB (insulated)	2.3g	50	Tube

Note: xx = voltage, yy = sensitivity

ORDERING INFORMATION SCHEME

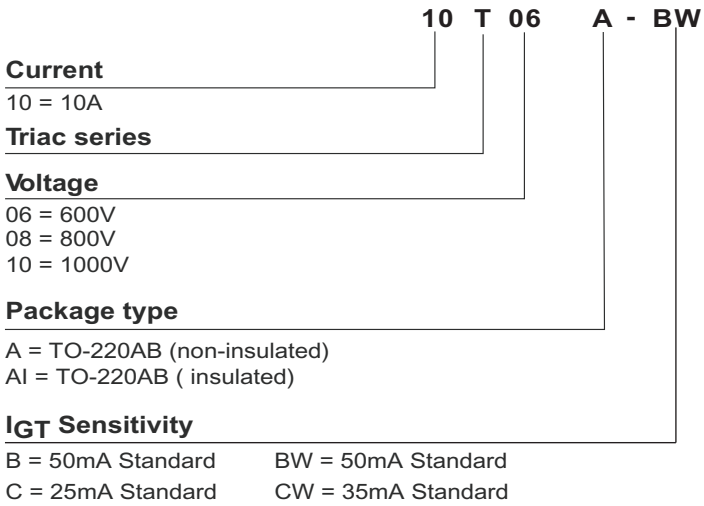


Fig.1 Maximum power dissipation versus RMS on-state current (full cycle)

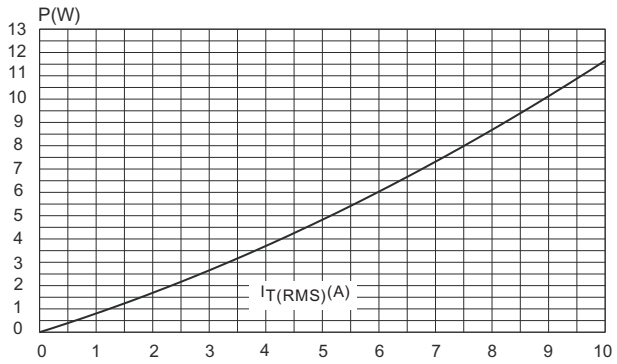


Fig.2 RMS on-state current versus case temperature (full cycle)

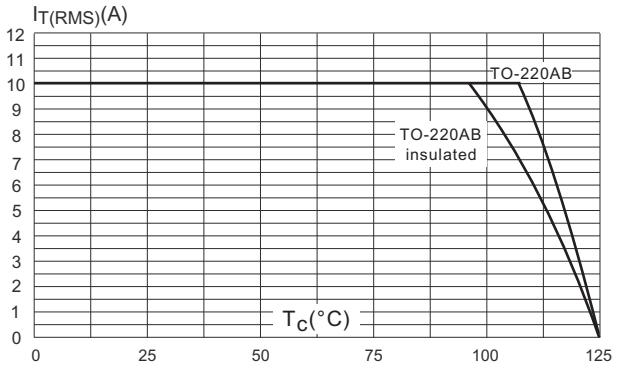


Fig.3 Relative variation of thermal impedance versus pulse duration

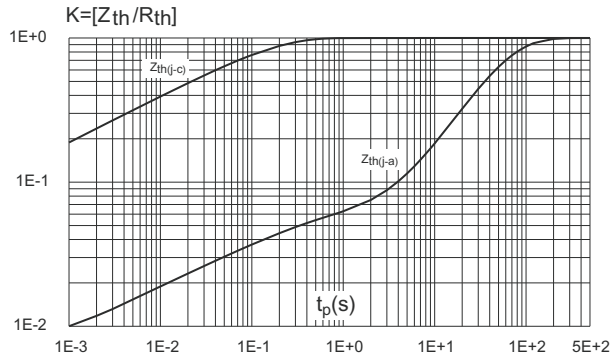


Fig.4 On-state characteristics (maximum values)

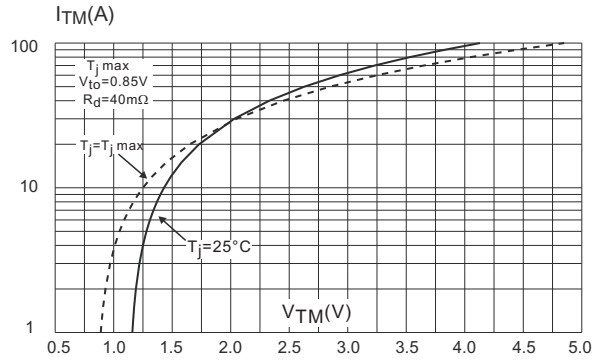


Fig.5 Surge peak on-state current versus number of cycles

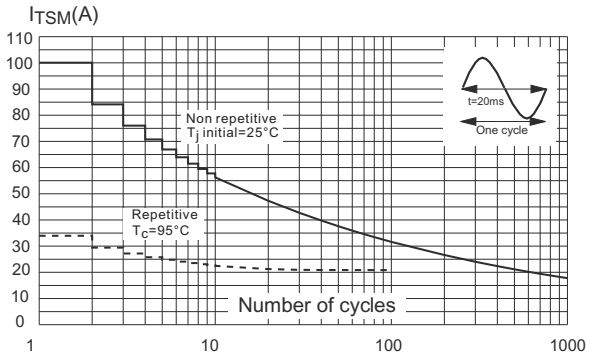


Fig.6 Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10ms. and corresponding value of I^2t

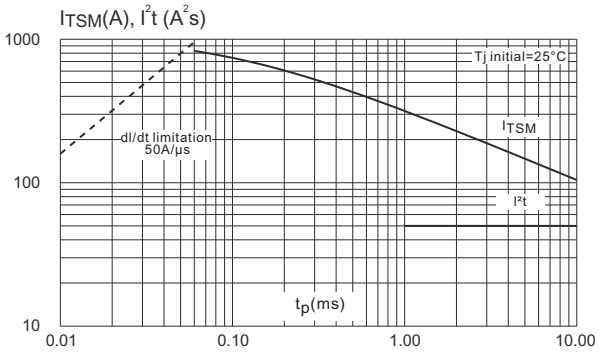


Fig.7 Relative variation of gate trigger current,holding current and latching current versus junction temperature (typical values)

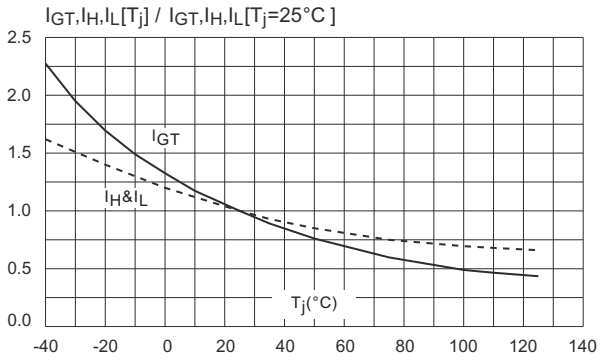


Fig.8 Relative variation of critical rate of decrease of main current versus (dV/dt)c (typical values)

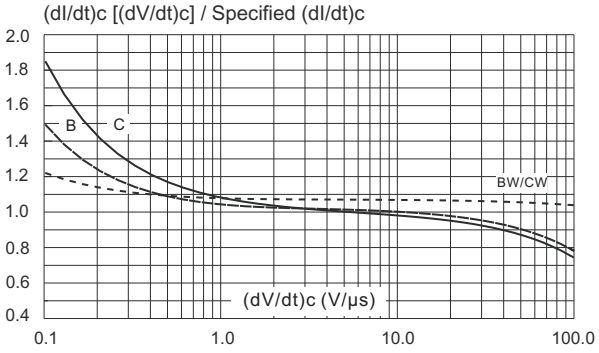
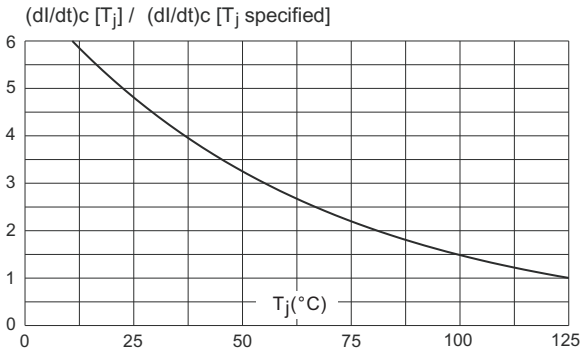
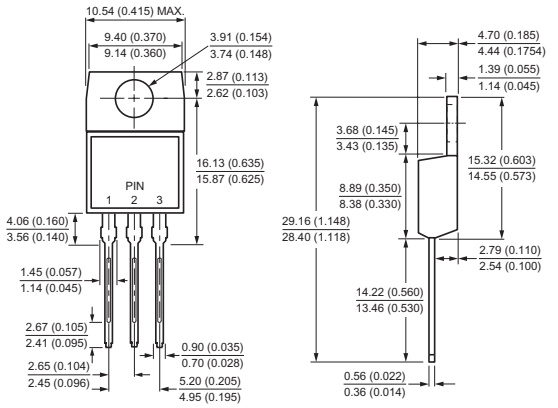


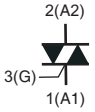
Fig.9 Relative variation of critical rate of decrease of main current versus junction temperature



Case Style

TO-220AB





All dimensions in millimeters(inches)