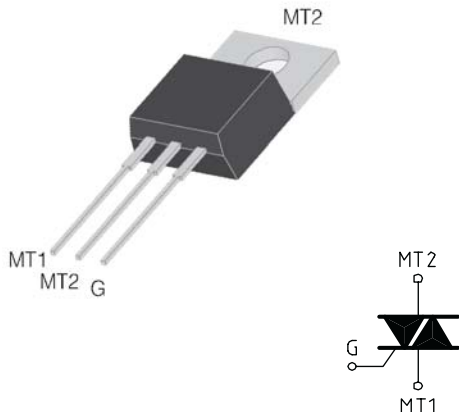


**HIGH COMMUTATION TRIAC**

**T0220-AB**



**On-State Current**

10 Amp

**Gate Trigger Current**

≤ 50 mA

**Off-State Voltage**

200 V ÷ 800 V

This series of TRIACs uses a high performance PNPN technology.

These parts are intended for general purpose AC switching applications with highly inductive loads.

**Absolute Maximum Ratings, according to IEC publication No. 134**

SYMBOL	PARAMETER	CONDITIONS	Value	Unit
$I_{T(RMS)}$	RMS On-state Current (full sine wave)	All Conduction Angle, $T_C = 95\text{ }^\circ\text{C}$	10	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 60 Hz ( $t = 16.7\text{ ms}$ )	105	A
$I_{TSM}$	Non-repetitive On-State Current	Full Cycle, 50 Hz ( $t = 20\text{ ms}$ )	100	A
$I^2t$	Fusing Current	$t_p = 10\text{ ms}$ , Half Cycle	50	$\text{A}^2\text{s}$
$I_{GM}$	Peak Gate Current	$20\text{ }\mu\text{s max.}$ $T_j = 125\text{ }^\circ\text{C}$	4	A
$P_{G(AV)}$	Average Gate Power Dissipation	$T_j = 125\text{ }^\circ\text{C}$	1	W
$di/dt$	Critical rate of rise of on-state current	$I_G = 2x I_{GT}$ , $t_r \leq 100\text{ ns}$ $f = 120\text{ Hz}$ , $T_j = 125\text{ }^\circ\text{C}$	50	$\text{A}/\mu\text{s}$
$T_j$	Operating Temperature		(-40 + 125)	$^\circ\text{C}$
$T_{stg}$	Storage Temperature		(-40 + 150)	$^\circ\text{C}$
$T_{sld}$	Soldering Temperature	10s max	260	$^\circ\text{C}$

SYMBOL	PARAMETER	VOLTAGE					Unit
		B	D	M	S	N	
$V_{DRM}$	Repetitive Peak Off State Voltage	200	400	600	700	800	V
$V_{RRM}$							

# HIGH COMMUTATION TRIAC

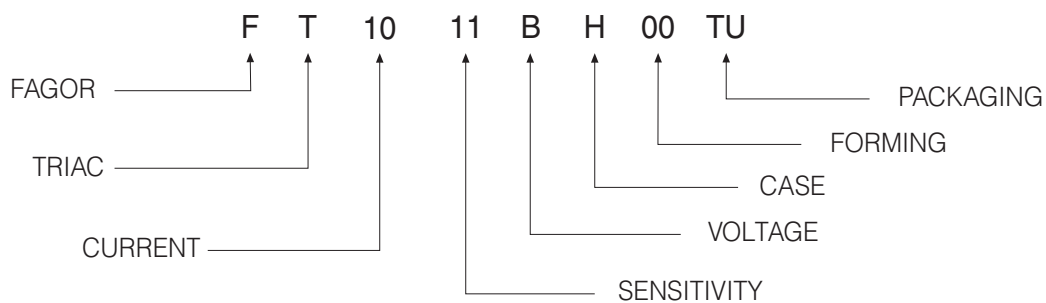
## Electrical Characteristics

SYMBOL	PARAMETER	CONDITIONS	Quadrant		SENSITIVITY			Unit
					11	14	16	
$I_{GT}^{(1)}$	Gate Trigger Current	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25^\circ C$	Q1÷Q3	MAX	25	35	50	mA
$V_{GT}$	Gate Trigger Voltage	$V_D = 12 V_{DC}, R_L = 33\Omega, T_j = 25^\circ C$	Q1÷Q3	MAX	1.3			V
$V_{GD}$	Gate Non Trigger Voltage	$V_D = V_{DRM}, R_L = 3.3 K\Omega, T_j = 125^\circ C$	Q1÷Q3	MIN	0.2			V
$I_H^{(2)}$	Holding Current	$I_T = 100 mA, \text{Gate open}, T_j = 25^\circ C$		MAX	25	35	50	mA
$I_L$	Latching Current	$I_G = 1.2 I_{GT}, T_j = 25^\circ C$	Q1,Q3	MAX	40	50	70	mA
			Q2	MAX	50	60	80	
$dV/dt^{(2)}$	Critical Rate of Voltage Rise	$V_D = 0.67 \times V_{DRM}, \text{Gate open}$ $T_j = 125^\circ C$		MIN	200	500	1000	V/ $\mu s$
$(dI/dt)_c^{(2)}$	Critical Rate of Current Rise	$(dv/dt)_c = 0.1 V/\mu s, T_j = 125^\circ C$ $(dv/dt)_c = 10 V/\mu s, T_j = 125^\circ C$ without snubber $T_j = 125^\circ C$		MIN	-	-	-	A/ms
				MIN	-	-	-	
				MIN	5.0	5.5	9	
$V_{TM}^{(2)}$	On-state Voltage	$I_T = 14 \text{ Amp}, t_p = 380 \mu s, T_j = 25^\circ C$		MAX	1.6			V
$V_{t(o)}^{(2)}$	Threshold Voltage	$T_j = 125^\circ C$		MAX	0.85			V
$r_d^{(2)}$	Dynamic resistance	$T_j = 125^\circ C$		MAX	40			m $\Omega$
$I_{DRM}/I_{RRM}$	Off-State Leakage Current	$V_D = V_{DRM}, T_j = 125^\circ C$ $V_R = V_{RRM}, T_j = 25^\circ C$		MAX	1			mA
				MAX	5			$\mu A$
$R_{th(j-c)}$	Thermal Resistance Junction-Case	for AC 360° conduction angle			1.4			$^\circ C/W$
$R_{th(j-a)}$	Thermal Resistance Junction-Ambient	$S = 1 \text{ cm}^2$			60			$^\circ C/W$

(1) Minimum  $I_{GT}$  is guaranteed at 5% of  $I_{GT}$  max.

(2) For either polarity of electrode MT2 voltage with reference to electrode MT1.

## PART NUMBER INFORMATION



### HIGH COMMUTATION TRIAC

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

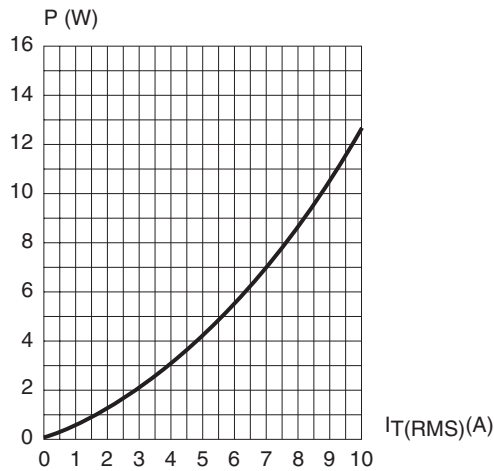


Fig. 2: RMS on-state current versus case temperature (full cycle).

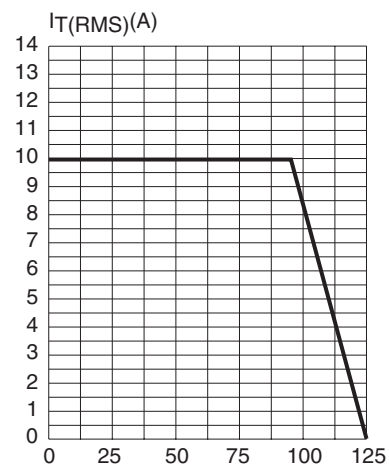


Fig. 3: Relative variation of thermal impedance versus pulse duration.

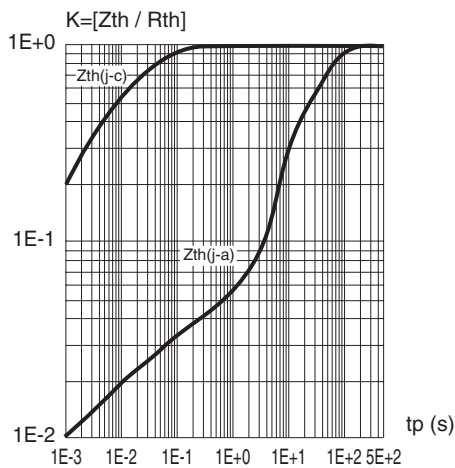


Fig. 4: On-state characteristics (maximum values)

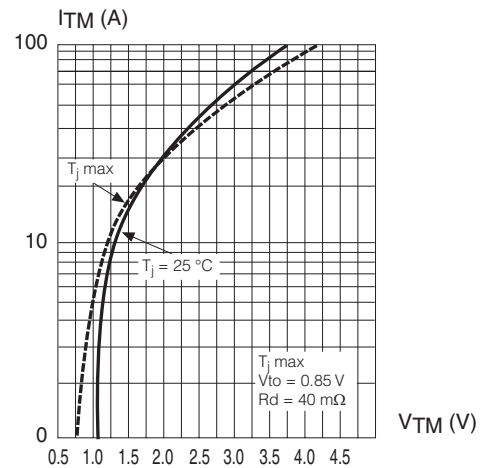


Fig. 5: Surge peak on-state current versus number of cycles

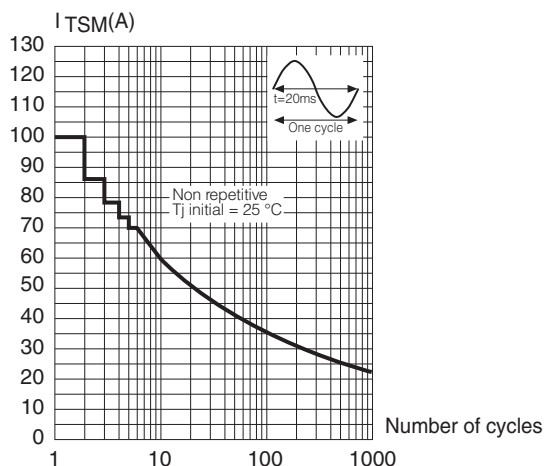
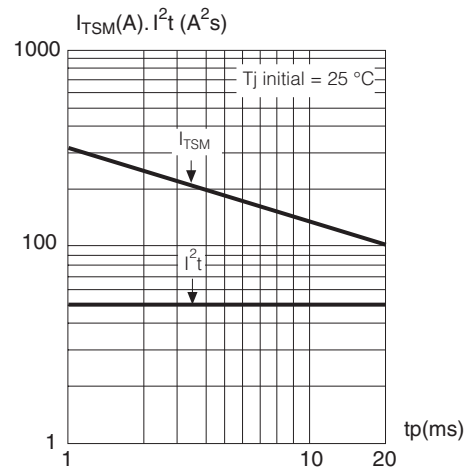


Fig. 6: Non repetitive surge peak on-state current for a sinusoidal pulse with width:  $t_p < 20$  ms, and corresponding value of  $I^2 t$ .



**HIGH COMMUTATION TRIAC**

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

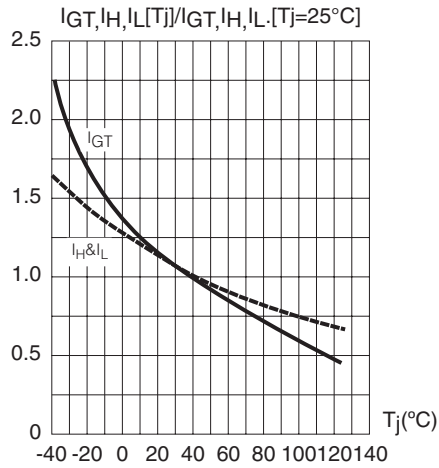
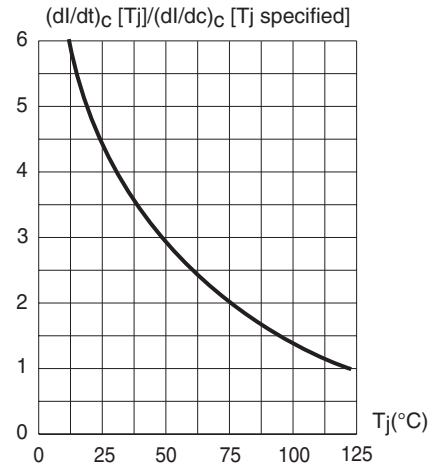
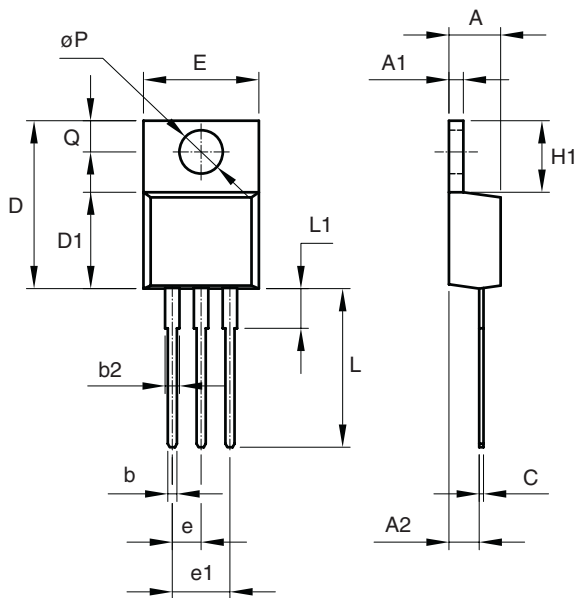


Fig. 8: Relative variation of critical rate of decrease of main current versus junction temperature



**PACKAGE MECHANICAL DATA**

**TO-220AB**



REF.	DIMENSIONS	
	Millimeters	
	Min.	Max.
A	4.47	4.67
A1	1.17	1.37
A2	2.52	2.82
b	0.71	0.91
b2	1.17	1.37
c	0.31	0.53
D	14.65	15.35
D1	8.50	8.90
E	10.01	10.36
e	2.51	2.57
e1	4.98	5.18
H1	6.15	6.45
L	13.40	13.96
L1	3.56	3.96
P	3.735	3.935
Q	2.59	2.89

**Mounting Torque**

**1 N.m**

(\*) Limiting values and life support applications, see Web page.