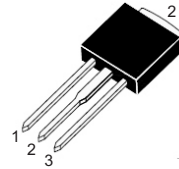


## TRIACs, 6A

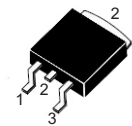
### Snubberless, Logic Level and Standard

#### MAIN FEATURES

SYMBOL	VALUE	UNIT
$I_{T(RMS)}$	6	A
$V_{DRM}/V_{RRM}$	600 to 1000	V
$I_{GT(Q1)}$	5 to 50	mA



TO-251 (I-PAK)  
(6TxxF)



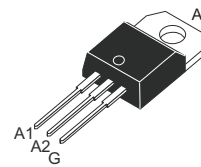
TO-252 (D-PAK)  
(6TxxG)

#### DESCRIPTION

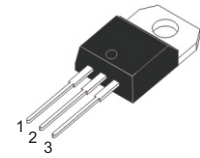
The 6T triac series is suitable for general purpose AC switching. They can be used as an ON/OFF function in applications such as static relays, heating regulation, induction motor starting circuits... or for phase control operation in light dimmers, motor speed controllers,...

The snubberless and logic level versions are specially recommended for use on inductive loads, thanks to their high commutation performances.

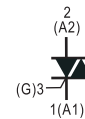
By using an internal ceramic pad, the 6T series provides voltage insulated tab (rated at 2500VRMS) complying with UL standards (File ref. :E320098)



TO-220AB (non-Insulated)  
(6TxxA)



TO-220AB (Insulated)  
(6TxxAI)



ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
RMS on-state current (full sine wave)	$I_{T(RMS)}$	TO-251/TO-252/TO-220AB	$T_c = 110^\circ\text{C}$	6	A
		TO-220AB insulated	$T_c = 105^\circ\text{C}$		
Non repetitive surge peak on-state current (full cycle, $T_j$ initial = $25^\circ\text{C}$ )	$I_{TSM}$	F = 50 Hz	t = 20 ms	60	A
		F = 60 Hz	t = 16.7 ms	63	
$I^2t$ Value for fusing	$I^2t$	$t_p = 10$ ms		21	$\text{A}^2\text{s}$
Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$ , $t_r \leq 100\text{ns}$	di/dt	F = 100 Hz	$T_j = 125^\circ\text{C}$	50	$\text{A}/\mu\text{s}$
Peak gate current	$I_{GM}$	$T_p = 20 \mu\text{s}$	$T_j = 125^\circ\text{C}$	4	A
Average gate power dissipation	$P_{G(AV)}$	$T_j = 125^\circ\text{C}$		1	W
Storage temperature range	$T_{stg}$			- 40 to + 150	°C
Operating junction temperature range	$T_j$			- 40 to + 125	

© ELECTRICAL CHARACTERISTICS (T<sub>j</sub>= 25 °C unless otherwise specified)

SNUBBERLESS and Logic level (3 quadrants)								
SYMBOL	TEST CONDITIONS	QUADRANT		6Txxxx				Unit
				TW	SW	CW	BW	
I <sub>GT</sub> <sup>(1)</sup>	V <sub>D</sub> = 12 V, R <sub>L</sub> = 30Ω	I - II - III	MAX.	05	10	35	50	mA
V <sub>GT</sub>		I - II - III	MAX.	1.3				V
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub> , R <sub>L</sub> = 3.3KΩ T <sub>j</sub> = 125°C	I - II - III	MIN.	0.2				V
I <sub>H</sub> <sup>(2)</sup>	I <sub>T</sub> = 200 mA		MAX.	10	15	40	55	mA
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>	I - III	MAX.	10	25	50	70	mA
		II		15	30	60	80	
dV/dt <sup>(2)</sup>	V <sub>D</sub> = 67% V <sub>DRM</sub> , gate open, T <sub>j</sub> = 125°C		MIN.	20	40	400	1000	V/μs
(dI/dt) <sub>c</sub> <sup>(2)</sup>	(dV/dt) <sub>c</sub> = 0.1 V/μs	T <sub>j</sub> = 125°C	MIN.	2.7	3.5	-	-	A/ms
	(dV/dt) <sub>c</sub> = 10 V/μs	T <sub>j</sub> = 125°C		1.2	2.4	-	-	
	Without snubber	T <sub>j</sub> = 125°C		-	-	3.5	5.3	

© ELECTRICAL CHARACTERISTICS (T<sub>j</sub>= 25 °C unless otherwise specified)

Standard (4 quadrants)						
SYMBOL	TEST CONDITIONS	QUADRANT		6Txxxx		UNIT
				C	B	
I <sub>GT</sub> <sup>(1)</sup>	V <sub>D</sub> = 12 V, R <sub>L</sub> = 30Ω	I - II - III	MAX.	25	50	mA
V <sub>GT</sub>		IV		50	100	
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub> , R <sub>L</sub> = 3.3KΩ, T <sub>j</sub> = 125°C	ALL		1.3		V
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub> , R <sub>L</sub> = 3.3KΩ, T <sub>j</sub> = 125°C	ALL		0.2		V
I <sub>H</sub> <sup>(2)</sup>	I <sub>T</sub> = 200 mA		MAX.	25	50	mA
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>	I - III - IV	MAX.	40	50	mA
		II		80	100	
dV/dt <sup>(2)</sup>	V <sub>D</sub> = 67% V <sub>DRM</sub> , gate open, T <sub>j</sub> = 125°C		MIN.	200	400	V/μs
(dV/dt) <sub>c</sub> <sup>(2)</sup>	(dI/dt) <sub>c</sub> = 2.7 A/ms, T <sub>j</sub> = 125°C		MIN.	5	10	V/μs

STATIC CHARACTERISTICS					
SYMBOL	TEST CONDITIONS			VALUE	UNIT
V <sub>TM</sub> <sup>(2)</sup>	I <sub>TM</sub> = 8.5 A, t <sub>p</sub> = 380 μs	T <sub>j</sub> = 25°C	MAX.	1.55	V
V <sub>I0</sub> <sup>(2)</sup>	Threshold voltage	T <sub>j</sub> = 125°C	MAX.	0.85	V
R <sub>d</sub> <sup>(2)</sup>	Dynamic resistance	T <sub>j</sub> = 125°C	MAX.	60	mΩ
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>DRM</sub> = V <sub>RRM</sub>	T <sub>j</sub> = 25°C	MAX.	5	μA
		T <sub>j</sub> = 125°C		1	mA

Note 1: Minimum I<sub>GT</sub> is guaranteed at 5% of I<sub>GT</sub> max.

Note 2: For both polarities of A2 referenced to A1.

THERMAL RESISTANCE				
SYMBOL			VALUE	UNIT
R <sub>th(j-c)</sub>	Junction to case (AC)	TO-220AB, TO-251, TO-252	1.8	°C/W
		TO-220AB Insulated	2.7	
R <sub>th(j-a)</sub>	Junction to ambient	TO-220AB, TO-251, TO-252	60	°C/W
		TO-220AB Insulated		

PRODUCT SELECTOR						
PART NUMBER	VOLTAGE (xx)			SENSITIVITY	TYPE	PACKAGE
	600 V	800 V	1000 V			
6TxxA-B/6TxxAI-B	V	V	V	50 mA	Standard	TO-220AB
6TxxA-BW/6TxxAI-BW	V	V	V	50 mA	Snubberless	TO-220AB
6TxxA-C/6TxxAI-C	V	V	V	25 mA	Standard	TO-220AB
6TxxA-CW/6TxxAI-CW	V	V	V	35 mA	Snubberless	TO-220AB
6TxxA-SW/6TxxAI-SW	V	V	V	10 mA	Logic level	TO-220AB
6TxxA-TW/6TxxAI-TW	V	V	V	5 mA	Logic level	TO-220AB
6TxxF-BW	V	V	V	50 mA	Snubberless	I-PAK
6TxxG-BW	V	V	V	50 mA	Snubberless	D-PAK
6TxxF-CW	V	V	V	35 mA	Snubberless	I-PAK
6TxxG-CW	V	V	V	35 mA	Snubberless	D-PAK
6TxxF-SW	V	V	V	10 mA	Logic level	I-PAK
6TxxG-SW	V	V	V	10 mA	Logic level	D-PAK
6TxxF-B	V	V	V	50 mA	Standard	I-PAK
6TxxG-B	V	V	V	50 mA	Standard	D-PAK
6TxxF-C	V	V	V	25 mA	Standard	I-PAK
6TxxG-C	V	V	V	25 mA	Standard	D-PAK

ORDERING INFORMATION					
ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
6TxxA-yy	6TxxA-yy	TO-220AB	2.0g	50	Tube
6TxxAI-yy	6TxxAI-yy	TO-220AB (insulated)	2.3g	50	Tube
6TxxF-yy	6TxxF-yy	TO-251(I-PAK)	0.40g	80	Tube
6TxxG-yy	6TxxG-yy	TO-252(D-PAK)	0.38g	80	Tube

**Note:** xx = voltage, yy = sensitivity

## ORDERING INFORMATION SCHEME

**6 T 06 A - BW**

**Current**

6 = 6A

**Triac series**

**Voltage**

06 = 600V

08 = 800V

10 = 1000V

**Package type**

A = TO-220AB (non-insulated)

AI = TO-220AB (insulated)

AF = TO-220F (ISOWAT TO-220AB, insulated)

F = TO-251 (I-PAK)

G = TO-252 (D-PAK)

**I<sub>GT</sub> Sensitivity**

B = 50mA Standard

BW = 50mA Snubberless

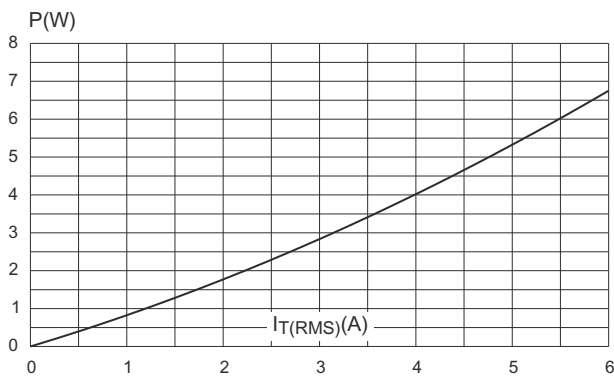
C = 25mA Standard

CW = 35mA Snubberless

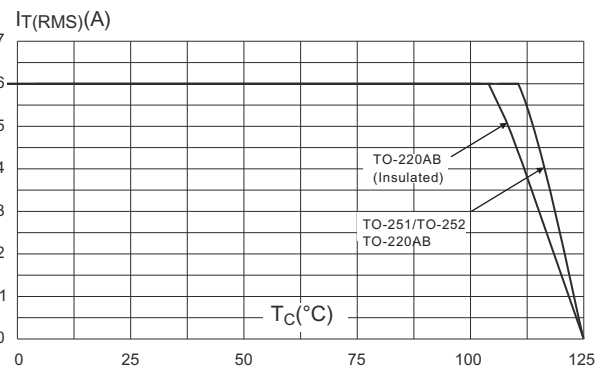
SW = 10mA Logic Level

TW = 5mA Logic Level

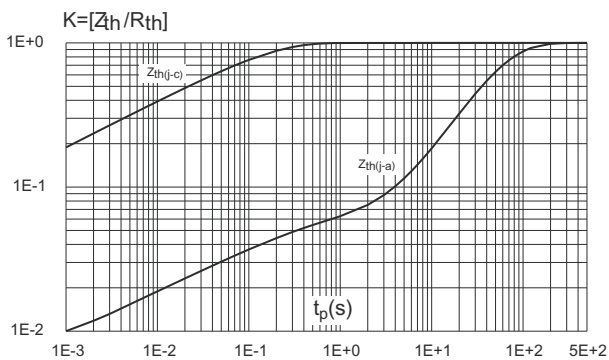
**Fig.1 Maximum power dissipation versus RMS on-state current (full cycle)**



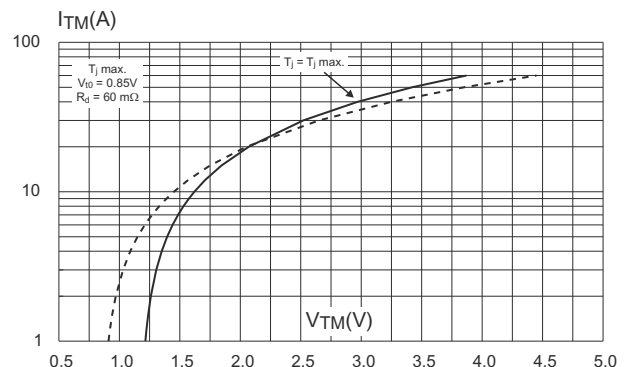
**Fig.2 RMS on-state current versus case temperature (full cycle)**



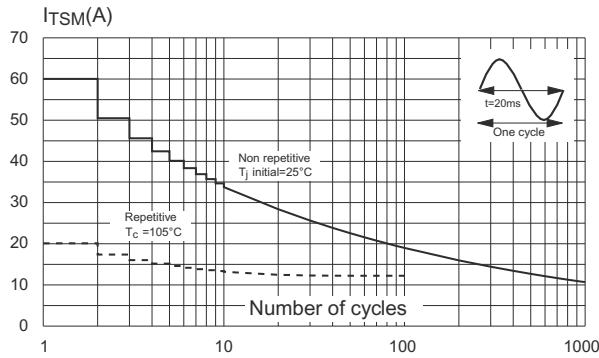
**Fig.3 Relative variation of thermal impedance versus pulse duration.**



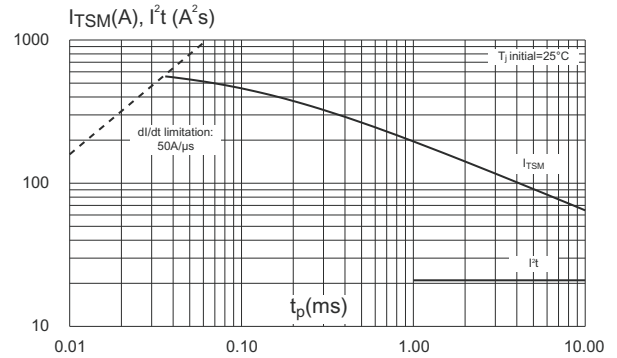
**Fig.4 On-state characteristics (maximum values).**



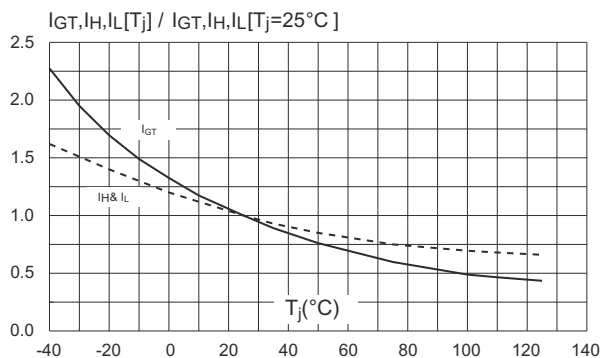
**Fig.5 Surge peak on-state current versus number of cycles.**



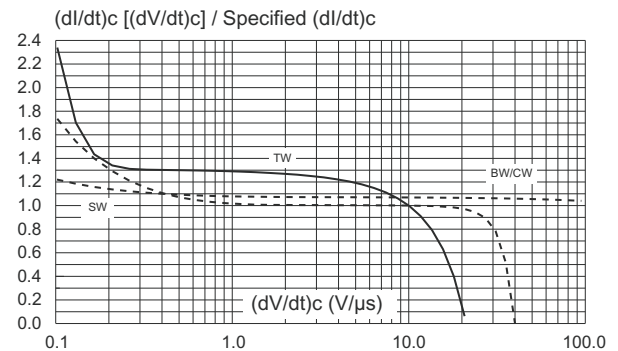
**Fig.6 Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10ms$ . and corresponding value of  $I^2t$ .**



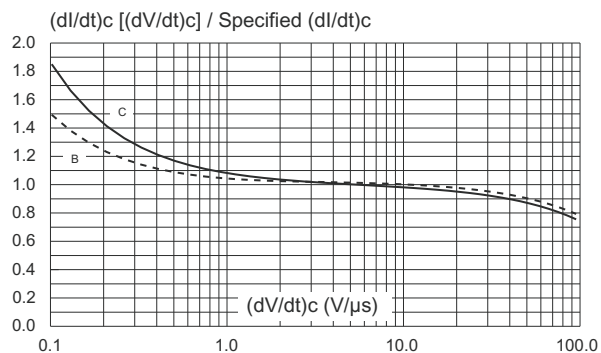
**Fig.7 Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).**



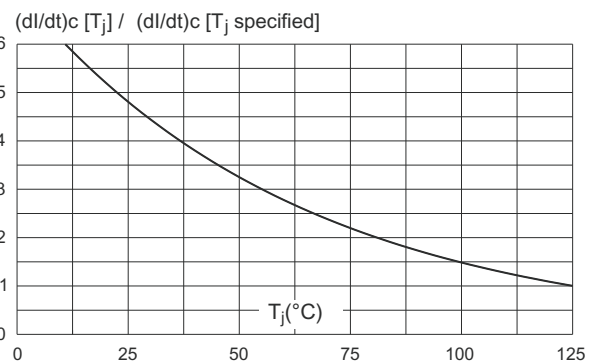
**Fig.8 Relative variation of critical rate of decrease of main current versus  $(dV/dt)_c$  (typical values). Snubberless & Logic Level Types**



**Fig.9 Relative variation of critical rate of decrease of main current versus  $(dV/dt)_c$  (typical values) (Standard types).**

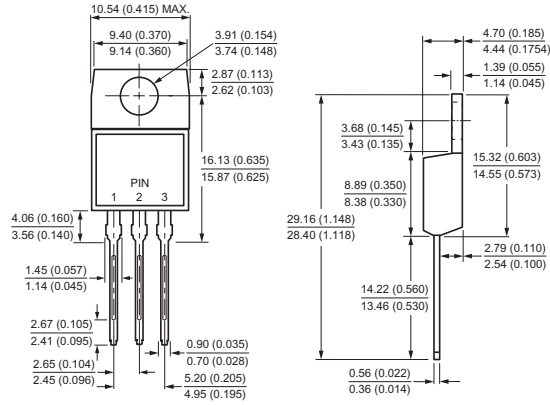


**Fig.10 Relative variation of critical rate decrease of main current versus junction temperature .**

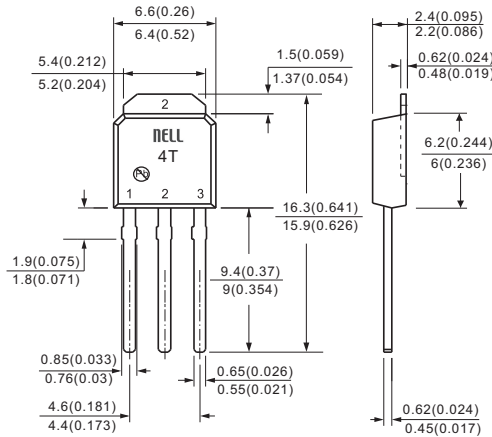


## Case Style

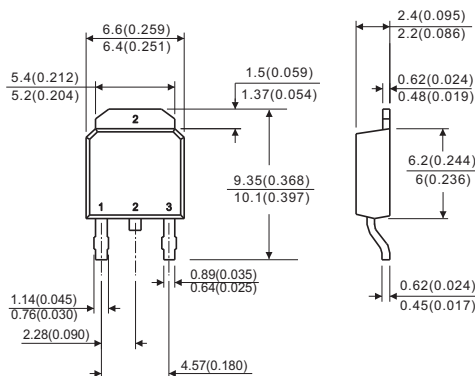
**TO-220AB**



**TO-251  
(I-PAK)**



**TO-252  
(D-PAK)**



All dimensions in millimeters(inches)

