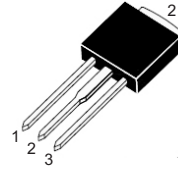


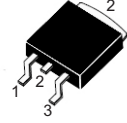
## Standard SCRs, 6A

### Main Features

Symbol	Value	Unit
$I_{T(RMS)}$	6	A
$V_{DRM}/V_{RRM}$	600 to 1000	V
$I_{GT}$	15	mA



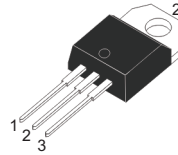
TO-251 (I-PAK)  
(6PTxxF)



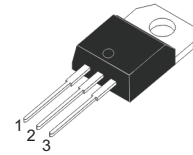
TO-252 (D-PAK)  
(6PTxxG)

### DESCRIPTION

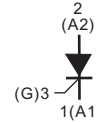
The 6PT series of silicon controlled rectifiers are high performance glass passivated technology, and are designed for power supply up to 400Hz on resistive or inductive load.



TO-220AB (Non-Insulated)  
(6PTxxA)



TO-220AB (Insulated)  
(6PTxxAI)



ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
RMS on-state current full sine wave (180° conduction angle)	$I_{T(RMS)}$	TO-251/TO-252/TO-220AB	$T_c=110^{\circ}C$	6	A
		TO-220AB insulated	$T_c=105^{\circ}C$		
Average on-state current (180° conduction angle)	$I_{T(AV)}$	TO-251/TO-252/TO-220AB	$T_c=110^{\circ}C$	3.8	A
		TO-220AB insulated	$T_c=105^{\circ}C$		
Non repetitive surge peak on-state current (full cycle, $T_j$ initial = 25°C)	$I_{TSM}$	F = 50 Hz	t = 20 ms	70	A
		F = 60 Hz	t = 16.7 ms	73	
$I^2t$ Value for fusing	$I^2t$	$t_p = 10$ ms		24.5	$A^2s$
Critical rate of rise of on-state current $I_G = 2xI_{GT}$ , $t_r \leq 100ns$	$di/dt$	F = 60 Hz	$T_j = 125^{\circ}C$	50	$A/\mu s$
Peak gate current	$I_{GM}$	$T_p = 20 \mu s$	$T_j = 125^{\circ}C$	4	A
Maximum gate power	$P_{GM}$	$T_p = 20 \mu s$	$T_j = 125^{\circ}C$	10	W
Average gate power dissipation	$P_{G(AV)}$	$T_j = 125^{\circ}C$		1	W
Repetitive peak off-state voltage	$V_{DRM}$	$T_j = 125^{\circ}C$		600 to 1000	V
Repetitive peak reverse voltage	$V_{RRM}$				
Storage temperature range	$T_{stg}$			- 40 to + 150	°C
Operating junction temperature range	$T_j$			- 40 to + 125	

ELECTRICAL SPECIFICATIONS (T <sub>J</sub> = 25 °C unless otherwise specified)					
SYMBOL	TEST CONDITIONS		6PTxxxx	Unit	
I <sub>GT</sub>	V <sub>D</sub> = 12V, R <sub>L</sub> = 30Ω	Max.	15	mA	
V <sub>GT</sub>		Max.	1.3	V	
V <sub>GD</sub>	V <sub>D</sub> = V <sub>DRM</sub> , R <sub>L</sub> = 3.3KΩ R <sub>GK</sub> = 220Ω, T <sub>J</sub> = 110°C	Min.	0.2	V	
I <sub>H</sub>	I <sub>T</sub> = 100mA, Gate open	Max.	30	mA	
I <sub>L</sub>	I <sub>G</sub> = 1.2 I <sub>GT</sub>	Min.	50	mA	
dV/dt	V <sub>D</sub> = 67% V <sub>DRM</sub> , Gate open, T <sub>J</sub> = 110°C	Min.	200	V/μs	
V <sub>TM</sub>	I <sub>T</sub> = 12A, t <sub>p</sub> = 380 μs	T <sub>J</sub> = 25°C	Max.	1.6	V
I <sub>DRM</sub>	V <sub>D</sub> = V <sub>DRM</sub> , V <sub>R</sub> = V <sub>R<sub>RRM</sub></sub>	T <sub>J</sub> = 25°C	Max.	5	μA
I <sub>R<sub>RRM</sub></sub>	R <sub>GK</sub> = 220Ω	T <sub>J</sub> = 110°C	Max.	2	mA
t <sub>q</sub>	V <sub>D</sub> = 67% V <sub>DRM</sub> , I <sub>TM</sub> = 12A, V <sub>R</sub> = 25V dI <sub>TM</sub> = 30A/μs, dV <sub>D</sub> /dt = 50V/μs	T <sub>J</sub> = 110°C	TYP.	70	μS

THERMAL RESISTANCE					
SYMBOL	Parameter		VALUE	UNIT	
R <sub>th(j-c)</sub>	Junction to case (DC)		IPAK/DPAK/TO-220AB	2.5	°C/W
R <sub>th(j-a)</sub>	Junction to ambient	S = 0.5 cm <sup>2</sup>	TO-252(D-PAK)	70	°C/W
			TO-220AB	60	
			TO-251(I-PAK)	100	

PRODUCT SELECTOR					
PART NUMBER	VOLTAGE (xx)			SENSITIVITY	PACKAGE
	600 V	800 V	1000 V		
6PTxxA/6PTxxAI	V	V	V	15 mA	TO-220AB
6PTxxF	V	V	V	15 mA	I-PAK
6PTxxG	V	V	V	15 mA	D-PAK

ORDERING INFORMATION					
ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
6PTxxA	6PTxxA	TO-220AB	2.0g	50	Tube
6PTxxAI	6PTxxAI	TO-220AB (insulated)	2.3g	50	Tube
6PTxxF	6PTxxF	TO-251(I-PAK)	0.40g	80	Tube
6PTxxG	6PTxxG	TO-252(D-PAK)	0.38g	80	Tube

Note: xx = voltage

## ORDERING INFORMATION SCHEME

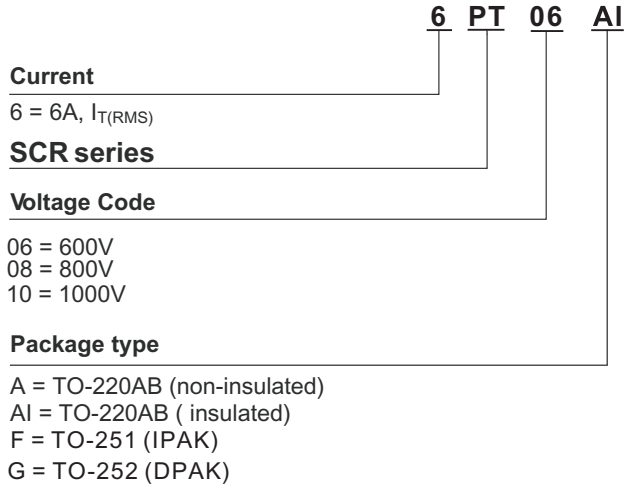


Fig.1 Maximum average power dissipation versus average on-state current

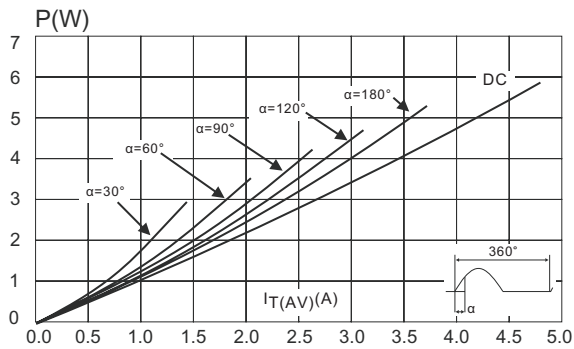


Fig.2 Correlation between maximum average power dissipation and maximum allowable temperature ( $T_{amb}$  and  $T_{lead}$ )

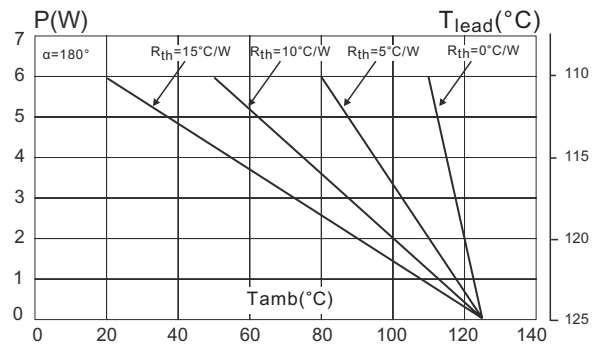


Fig.3 Average on-state current versus case temperature

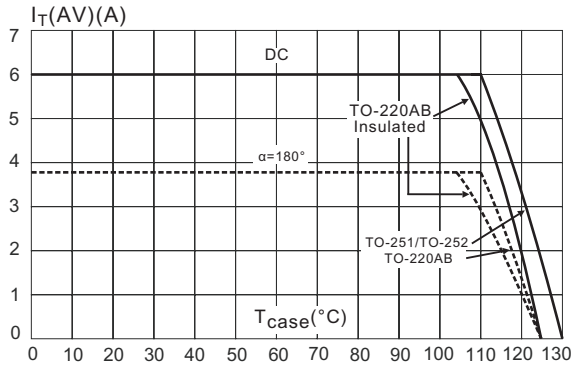


Fig.4 Relative variation of thermal impedance versus pulse duration

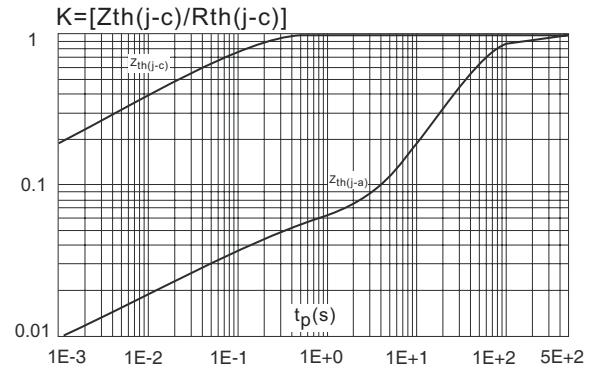


Fig.5 Relative variation of gate trigger current versus junction temperature

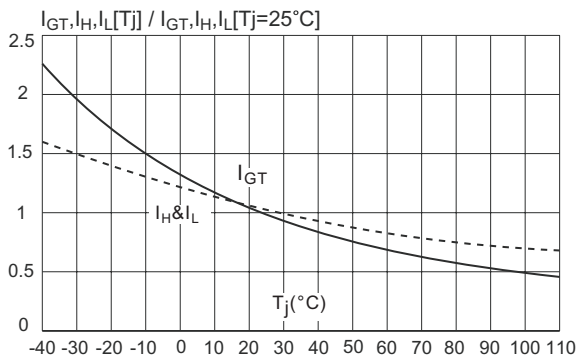


Fig.6 Surge peak on-state current versus number of cycles

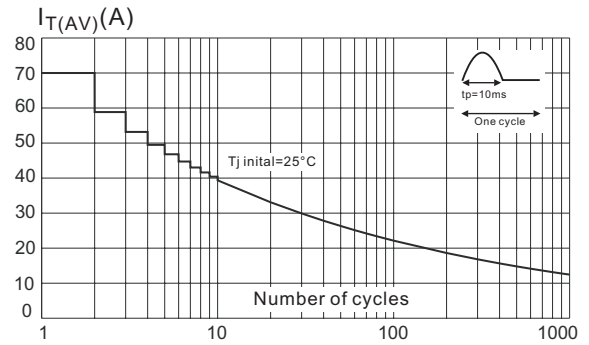


Fig.7 Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10$  ms, and corresponding values of  $I^2t$

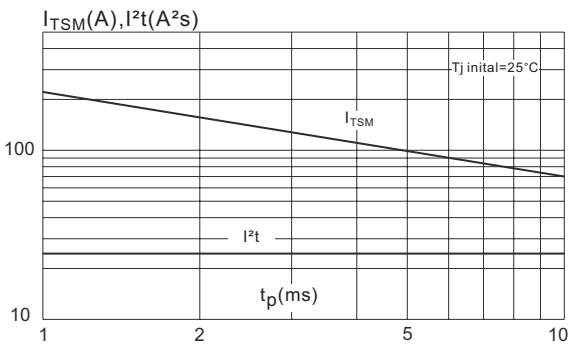
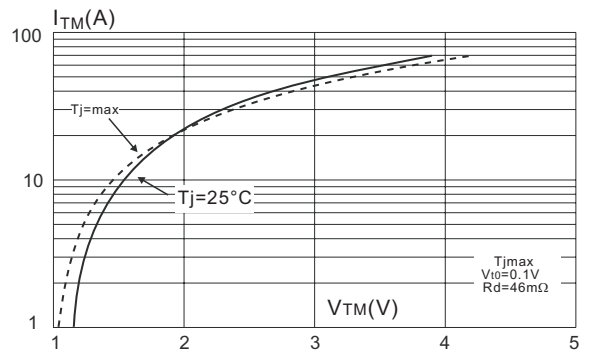
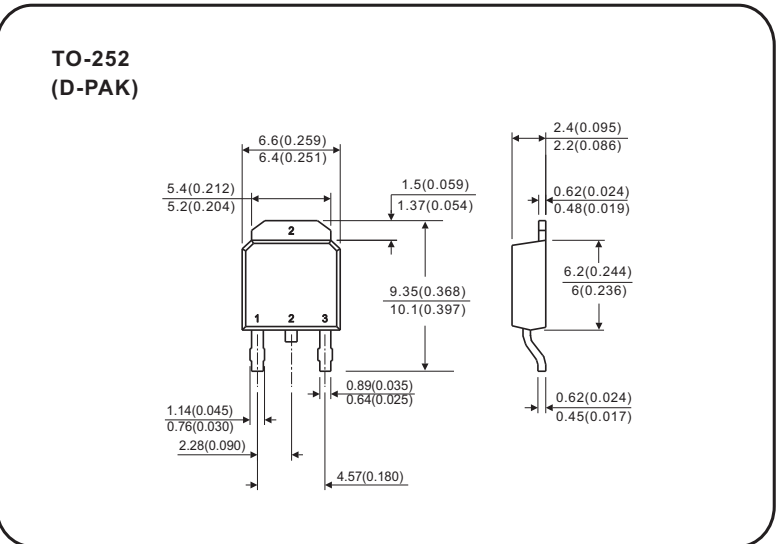
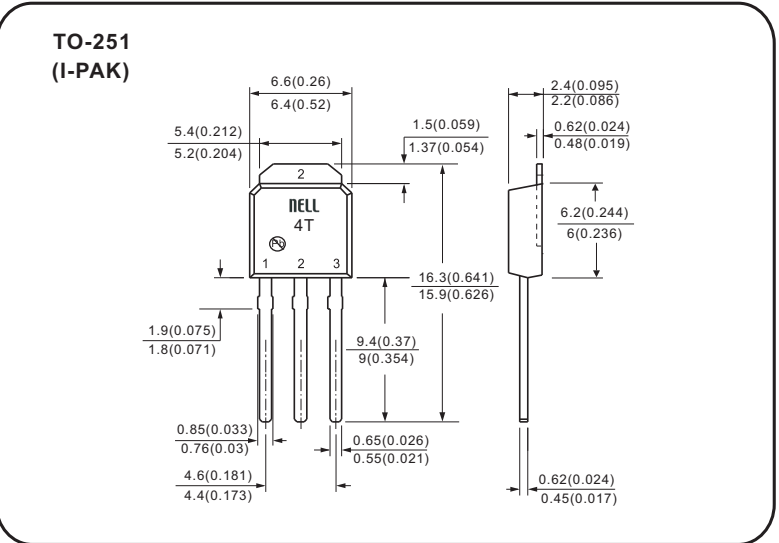
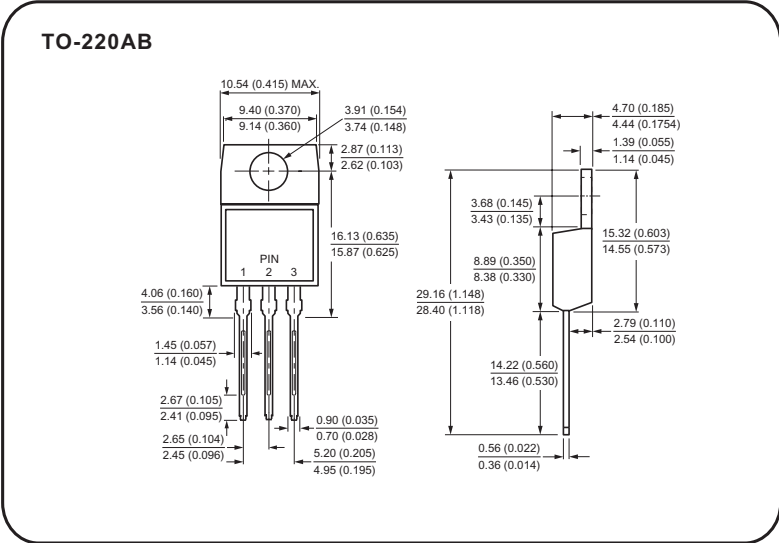


Fig.8 On-state characteristics (maximum values)



**Case Style**



All dimensions in millimeters(inches)

