

## Standard SCRs, 25A

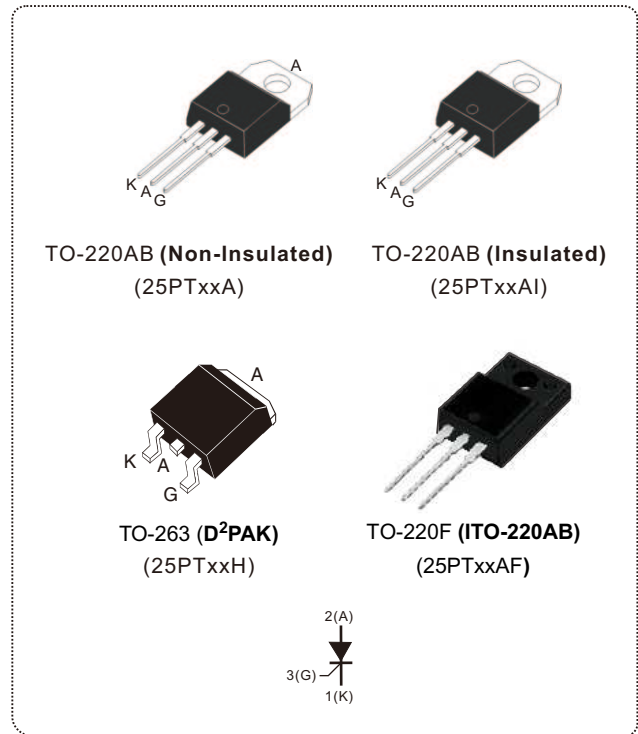
### Main Features

Symbol	Value	Unit
$I_{T(RMS)}$	25	A
$V_{DRM}/V_{RRM}$	600 to 1200	V
$I_{GT}$	4 to 40	mA

### DESCRIPTION

The 25PT series of silicon controlled rectifiers are high performance glass passivated technology, and are suitable for general purpose applications.

Using clip assembly technology, they provide a superior performance in surge current capabilities.



### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
RMS on-state current full sine wave (180° conduction angle)	$I_{T(RMS)}$	TO-263/TO-220AB	$T_c=100^\circ\text{C}$	25	A
		TO-220AB insulated/TO-220F	$T_c=85^\circ\text{C}$		
Average on-state current (180° conduction angle)	$I_{T(AV)}$	TO-263/TO-220AB	$T_c=100^\circ\text{C}$	16	A
		TO-220AB insulated/TO-220F	$T_c=85^\circ\text{C}$		
Non repetitive surge peak on-state current (full cycle, $T_j$ initial = 25°C)	$I_{TSM}$	F = 50 Hz	t = 20 ms	300	A
		F = 60 Hz	t = 16.7 ms	314	
$I^2t$ Value for fusing	$I^2t$	$t_p = 10 \text{ ms}$		450	$\text{A}^2\text{s}$
Critical rate of rise of on-state current $I_G = 2xI_{GT}$ , $t_r \leq 100\text{ns}$	$di/dt$	F = 60 Hz	$T_j = 125^\circ\text{C}$	150	$\text{A}/\mu\text{s}$
Peak gate current	$I_{GM}$	$T_p = 20 \mu\text{s}$	$T_j = 125^\circ\text{C}$	4	A
Maximum gate power	$P_{GM}$	$T_p = 20 \mu\text{s}$	$T_j = 125^\circ\text{C}$	10	W
Average gate power dissipation	$P_{G(AV)}$	$T_j = 125^\circ\text{C}$		1	W
Repetitive peak off-state voltage	$V_{DRM}$	$T_j = 125^\circ\text{C}$		600 to 1200	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			25PTxxxx		Unit	
				D	-		
I <sub>GT</sub>	V <sub>D</sub> = 12V, R <sub>L</sub> = 33Ω			Min.	4	4	mA
				Max.	10	40	
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> = 125°C		Min.	0.2		V
I <sub>H</sub>	I <sub>T</sub> = 500mA, Gate open			Max.	40	100	mA
I <sub>L</sub>	I <sub>G</sub> = 1.2×I <sub>GT</sub>			Max.	60	150	mA
dV/dt	V <sub>D</sub> = 67% V <sub>DRM</sub> , Gate open	T <sub>J</sub> = 125°C		Min.	500		V/μs
V <sub>TM</sub>	I <sub>T</sub> = 50A, t <sub>p</sub> = 380μs	T <sub>J</sub> = 25°C		Max.	1.6		V
I <sub>DRM</sub> I <sub>RRM</sub>	V <sub>D</sub> =V <sub>DRM</sub> , V <sub>R</sub> =V <sub>RRM</sub>	T <sub>J</sub> = 25°C		Max.	5		μA
	R <sub>GK</sub> = 220Ω	T <sub>J</sub> = 125°C		Max.	2		mA
V <sub>to</sub>	Threshold Voltage			Max.	0.77		V
R <sub>d</sub>	Dynamic Resistance			Max.	14		mΩ

DYNAMIC CHARACTERISTICS						
SYMBOL	PARAMETER	TEST CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
t <sub>gt</sub>	Gate-controlled turn-on time	I <sub>TM</sub> = 40A, V <sub>D</sub> = V <sub>DRM</sub> (Max.), I <sub>G</sub> = 0.1A, dI <sub>G</sub> /dt = 5A/μs, T <sub>J</sub> = 25°C	-	1.0	-	μS
t <sub>q</sub>	Commutated turn-off time	V <sub>D</sub> = 67% V <sub>DRM</sub> , I <sub>TM</sub> = 50A, V <sub>R</sub> = 25V, R <sub>GK</sub> = 100Ω, dI <sub>TM</sub> /dt = 30A/μs, dV <sub>D</sub> /dt = 50V/μs, T <sub>J</sub> = 125°C	-	100	-	μS

THERMAL RESISTANCE					
SYMBOL	Parameter			VALUE	UNIT
R <sub>th(j-c)</sub>	Junction to case (DC)		D <sup>2</sup> PAK/TO-220AB	1.0	°C/W
			TO-220AB insulated/TO-220F	1.5	
R <sub>th(j-a)</sub>	Junction to ambient		S = 1 cm <sup>2</sup> TO-263(D <sup>2</sup> PAK)	45	°C/W
			TO-220AB/TO-220AB insulated/TO-220F	60	

S=Copper surface under tab

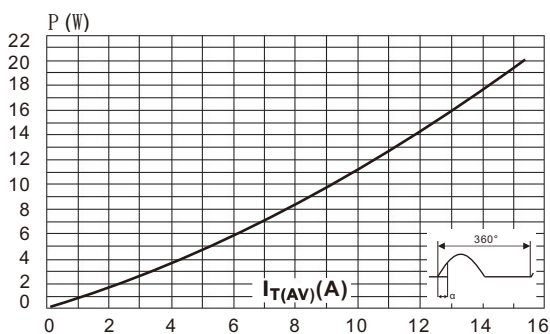
PRODUCT SELECTOR						
PART NUMBER	VOLTAGE (xx)				SENSITIVITY	PACKAGE
	600 V	800 V	1000 V	1200 V		
25PTxxA/25PTxxAI	V	V	V	V	40 mA	TO-220AB
25PTxxAF	V	V	V	V	40 mA	TO-220F
25PTxxH	V	V	V	V	40 mA	D <sup>2</sup> PAK
25PTxxA-D/25PTxxAI-D	V	V	V	V	4~10 mA	TO-220AB
25PTxxH-D	V	V	V	V	4~10 mA	D <sup>2</sup> PAK
25PTxxAF-D	V	V	V	V	4~10 mA	TO-220F

ORDERING INFORMATION					
ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
25PTxxA-y	25PTxxA-y	TO-220AB	2.0g	50	Tube
25PTxxAI-y	25PTxxAI-y	TO-220AB (insulated)	2.3g	50	Tube
25PTxxAF-y	25PTxxAF-y	TO-220F	2.0g	50	Tube
25PTxxH-y	25PTxxH-y	TO-263(D <sup>2</sup> PAK)	2.0g	50	Tube

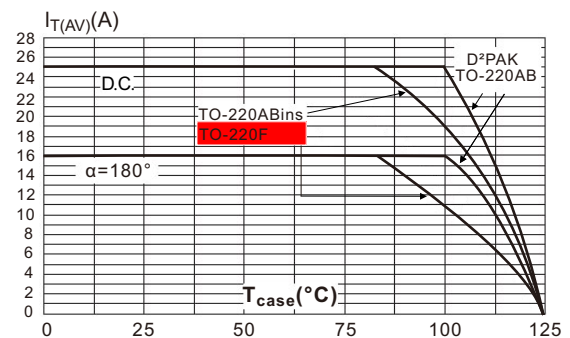
**Note:** xx = voltage , y = sensitivity

ORDERING INFORMATION SCHEME	
<p><b>Current</b> 25 = 25A, <math>I_{T(RMS)}</math></p> <p><b>SCR series</b></p> <p><b>Voltage Code</b> 06 = 600V 08 = 800V 10 = 1000V 12 = 1200V</p> <p><b>Package type</b> A = TO-220AB (non-insulated) AI = TO-220AB (insulated) AF = TO-220F ( ITO-220AB) H = TO-263 (D<sup>2</sup>PAK)</p> <p><b><math>I_{GT}</math> Sensitivity</b> D = 4~10mA Blank = 4~40mA</p>	<p><b>25 PT 06 AI - D</b></p>

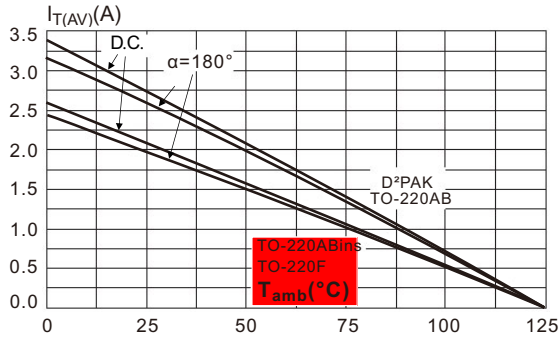
**Fig.1 Maximum average power dissipation versus average on-state current.**



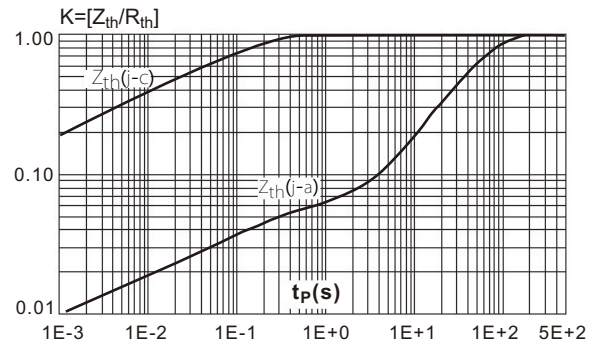
**Fig.2 Average and DC on-state current versus case temperature.**



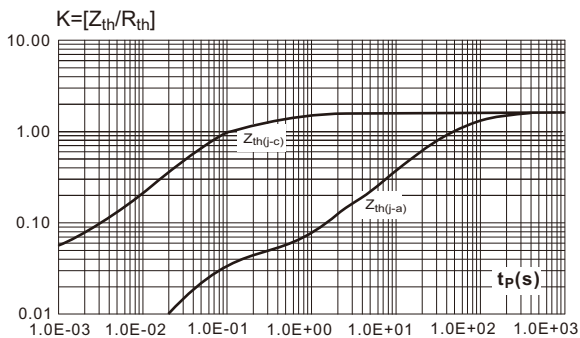
**Fig.3 Average and DC on-state current versus ambient temperature.**



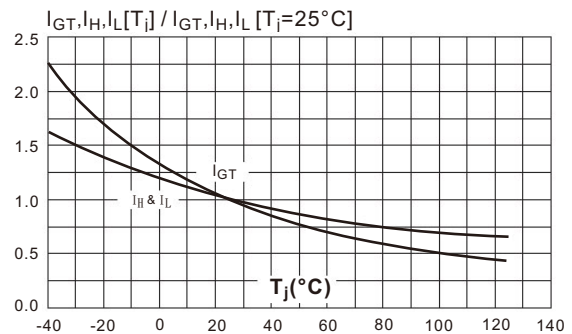
**Fig.4 Relative variation of thermal impedance versus pulse duration.(D<sup>2</sup>PAK, and TO-220AB)**



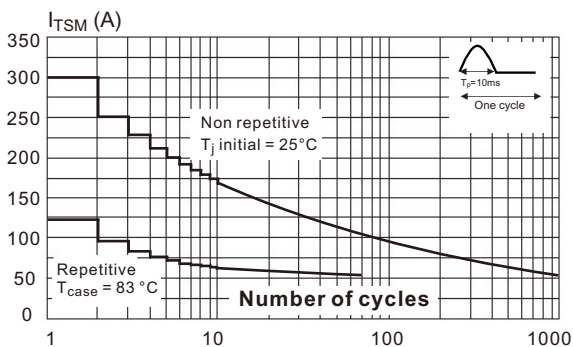
**Fig.5 Relative variation of thermal impedance versus pulse duration. (TO-220AB ins / TO-220F)**



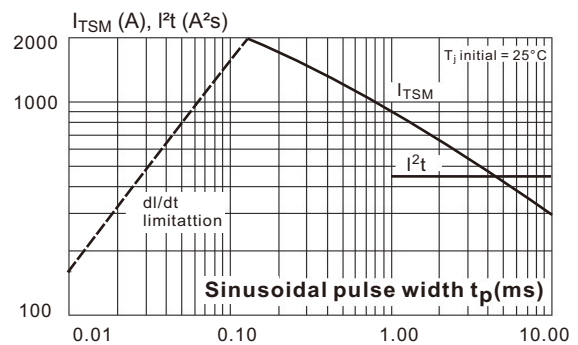
**Fig.6 Relative variation of gate trigger holding, and latching currents versus junction temperature.**



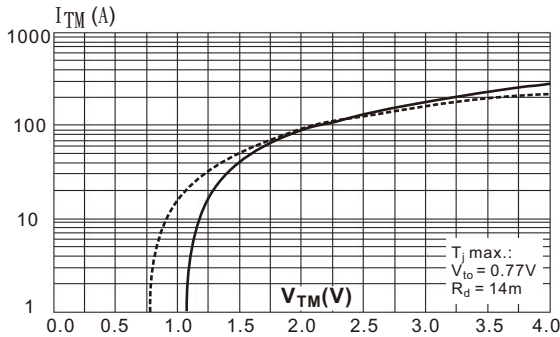
**Fig.7 Surge peak on-state current versus number of cycles.**



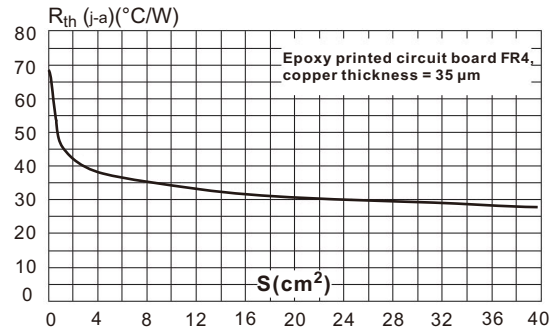
**Fig.8 Non-repetitive surge peak on-state current, and corresponding values of I<sup>2</sup>t**



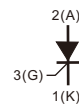
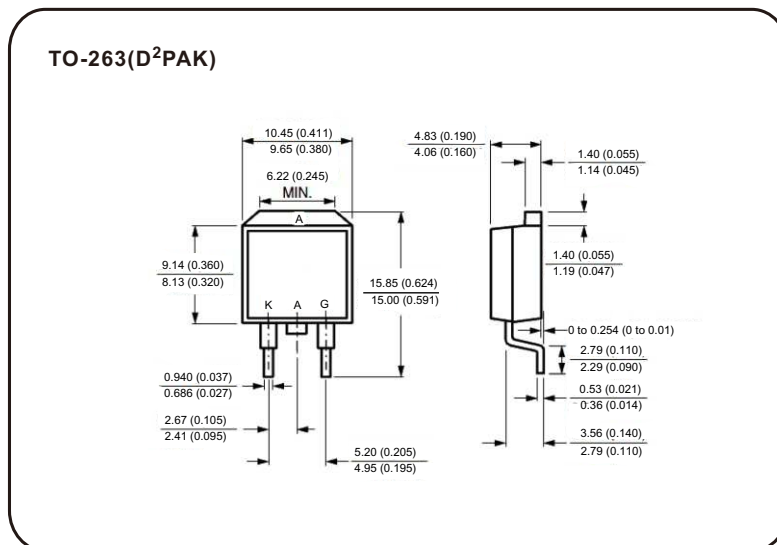
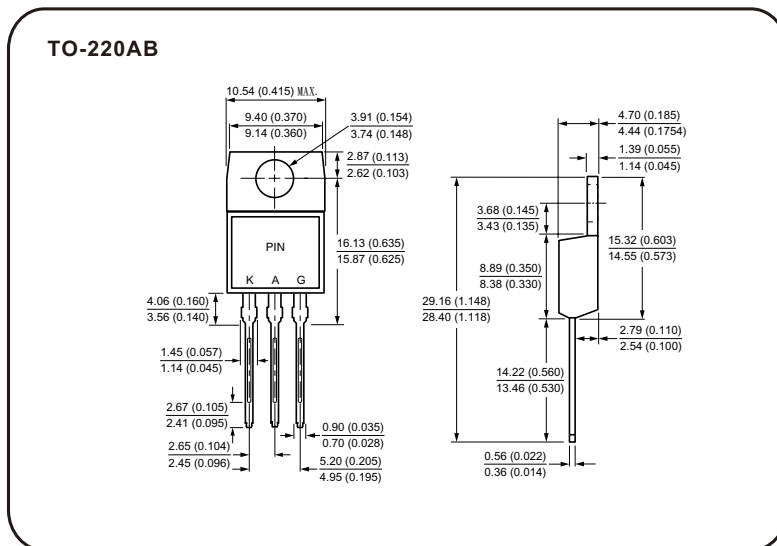
**Fig.9 On-state characteristics (maximum values)**



**Fig.10 Thermal resistance junction to ambient versus copper surface under tab (D<sup>2</sup>PAK)**



## Case Style



All dimensions in millimeters(inches)

### Case Style

