

Standard SCRs, 25A

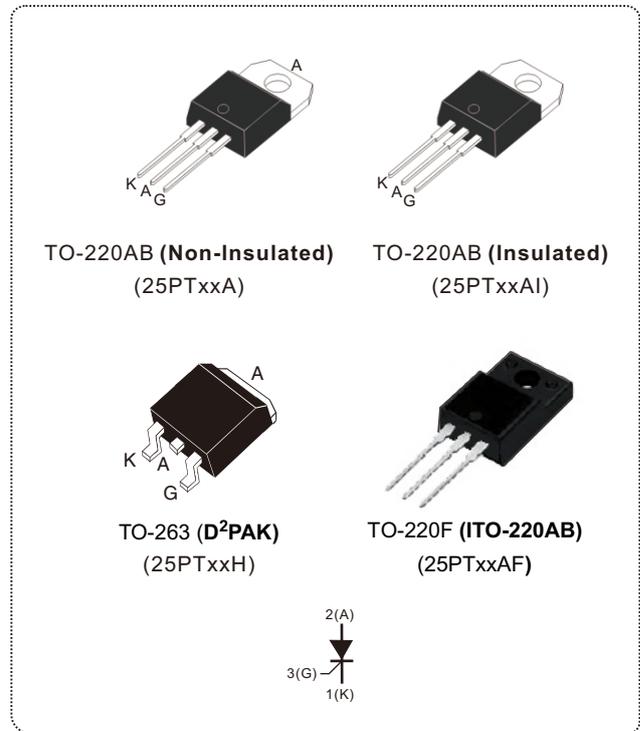
Main Features

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	$T_c=83^\circ\text{C}$		
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	$T_c=83^\circ\text{C}$		
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	A^2s
Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ns}$	di/dt	F = 60 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
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 _J = 25 °C unless otherwise specified)							
SYMBOL	TEST CONDITIONS			25PTxxxx		Unit	
				D	-		
I _{GT}	V _D = 12V, R _L = 33Ω			Min.	4	4	mA
				Max.	10	40	
V _{GT}				Max.	1.3		V
V _{GD}	V _D = V _{DRM} , R _L = 3.3KΩ R _{GK} = 220Ω	T _J = 125°C	Min.	0.2		V	
I _H	I _T = 500mA, Gate open			Max.	40	100	mA
I _L	I _G = 1.2×I _{GT}			Max.	60	150	mA
dV/dt	V _D = 67% V _{DRM} , Gate open	T _J = 125°C	Min.	500		V/μs	
V _{TM}	I _T = 50A, t _p = 380μs	T _J = 25°C	Max.	1.6		V	
I _{DRM} I _{RRM}	V _D =V _{DRM} , V _R =V _{RRM}	T _J = 25°C	Max.	5		μA	
	R _{GK} = 220Ω	T _J = 125°C	Max.	2		mA	
V _{to}	Threshold Voltage			Max.	0.77		V
R _d	Dynamic Resistance			Max.	14		mΩ

DYNAMIC CHARACTERISTICS						
SYMBOL	PARAMETER	TEST CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
t _{gt}	Gate-controlled turn-on time	I _{TM} = 40A, V _D = V _{DRM} (Max.), I _G = 0.1A, dI _G /dt = 5A/μs, T _J = 25°C	-	2.0	-	μS
t _q	Commutated turn-off time	V _D = 67% V _{DRM} , I _{TM} = 50A, V _R = 25V, R _{GK} = 100Ω, dI _{TM} /dt = 30A/μs, dV _D /dt = 50V/μs, T _J = 125°C	-	70	-	μS

THERMAL RESISTANCE						
SYMBOL	Parameter			VALUE	UNIT	
R _{th(j-c)}	Junction to case (DC)			D ² PAK/TO-220AB	1.0	°C/W
				TO-220AB insulated/TO-220F	2.0	
R _{th(j-a)}	Junction to ambient S = 1 cm ²			TO-263(D ² 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 ² PAK
25PTxxA-D/25PTxxAI-D	V	V	V	V	4~10 mA	TO-220AB
25PTxxH-D	V	V	V	V	4~10 mA	D ² 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 ² PAK)	2.0g	50	Tube

Note: xx = voltage , y = sensitivity

ORDERING INFORMATION SCHEME	
<p>25 PT 06 AI - D</p>	<p>Current 25 = 25A, $I_{T(RMS)}$</p> <p>SCR series</p> <p>Voltage Code 06 = 600V 08 = 800V 10 = 1000V 12 = 1200V</p> <p>Package type A = TO-220AB (non-insulated) AI = TO-220AB (insulated) AF = TO-220F (ITO-220AB) H = TO-263 (D²PAK)</p> <p>I_{GT} Sensitivity D = 4~10mA Blank = 4~40mA</p>

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

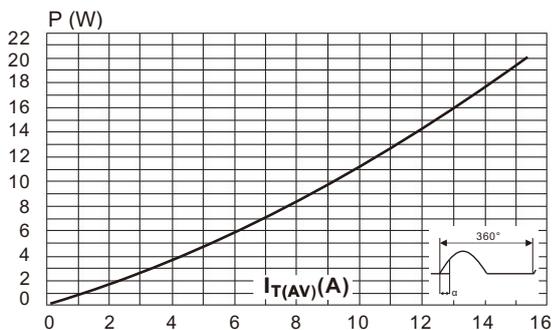


Fig.2 Average and DC on-state current versus case temperature.

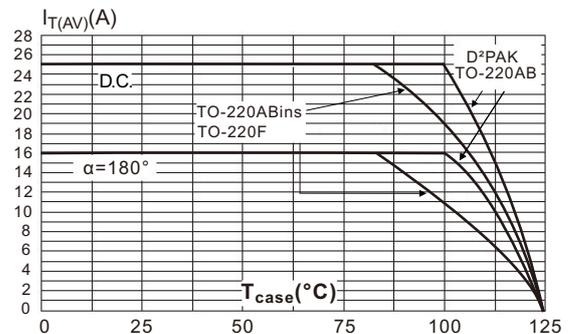


Fig.3 Average and DC on-state current versus ambient temperature.

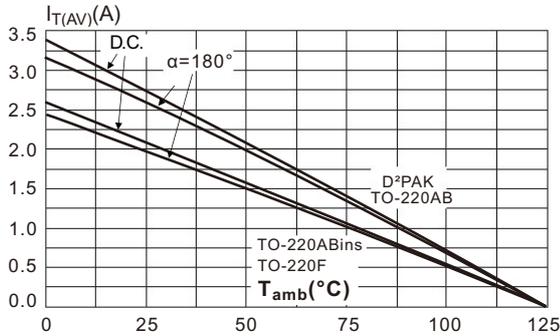


Fig.4 Relative variation of thermal impedance versus pulse duration. (D²PAK, and TO-220AB)

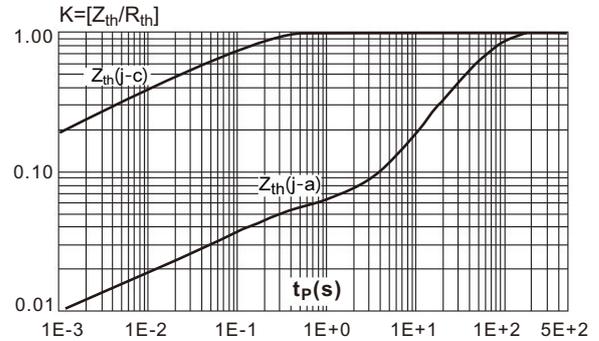


Fig.5 Relative variation of thermal impedance versus pulse duration. (TO-220AB ins)

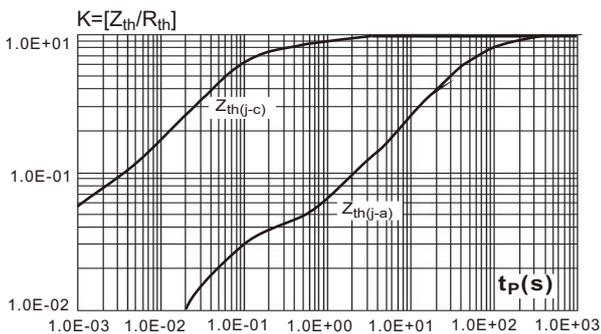


Fig.6 Relative variation of gate trigger holding, and latching currents versus junction temperature.

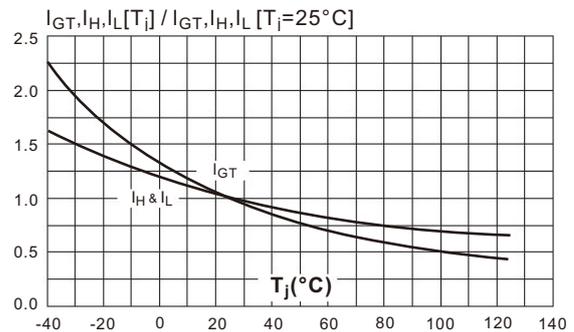


Fig.7 Surge peak on-state current versus number of cycles.

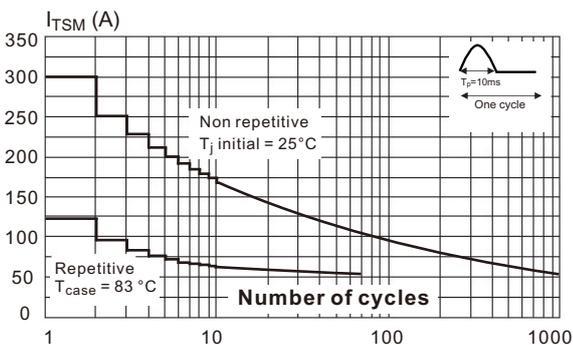


Fig.8 Non-repetitive surge peak on-state current, and corresponding values of I²t

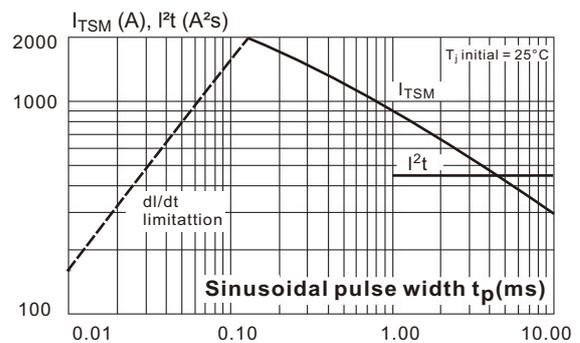


Fig.9 On-state characteristics (maximum values)

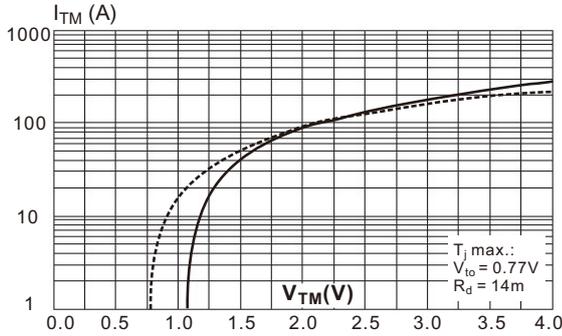
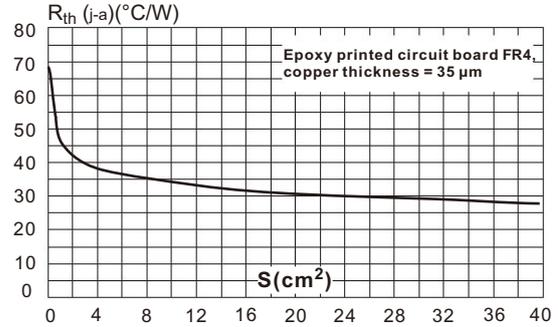
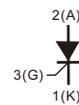
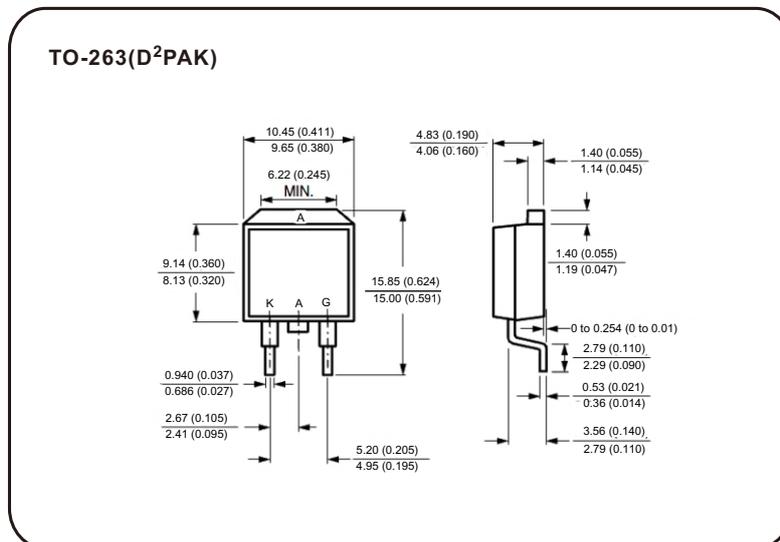
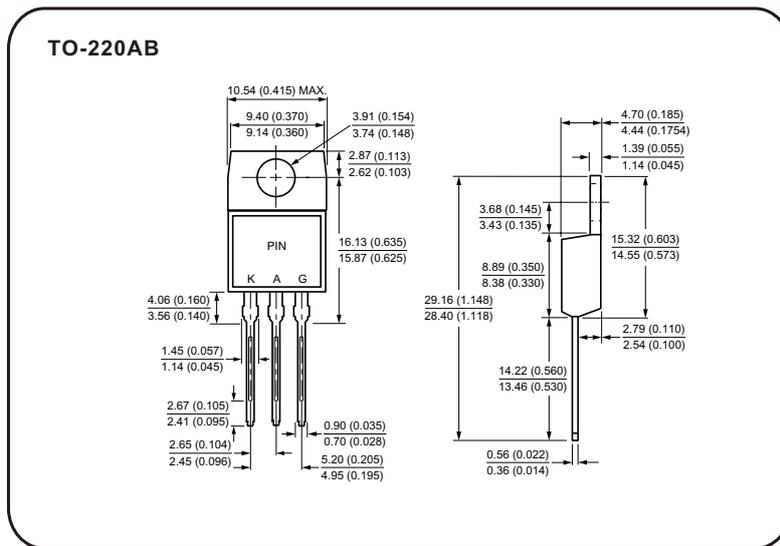


Fig.10 Thermal resistance junction to ambient versus copper surface under tab (D²PAK)



Case Style



All dimensions in millimeters(inches)

Case Style

