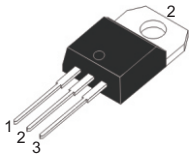
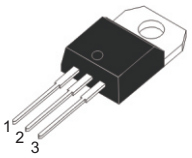
Stansard SCRs, 20A

Main Features

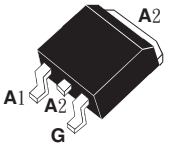
Symbol	Value	Unit
$I_{T(RMS)}$	20	A
V_{DRM}/V_{RRM}	600 to 1000	V
I_{GT}	3 to 25	mA



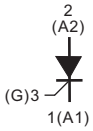
TO-220AB **(Non-Insulated)**
(20PTxxA)



TO-220AB **(Insulated)**
(20PTxxAI)



TO-263 (**D^2PAK**)
(20PTxxH)



DESCRIPTION

The 20PT 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	Tc=100°C	20	A
		TO-220AB insulated	Tc=80°C		
Average on-state current (180° conduction angle)	$I_{T(AV)}$	TO-263/TO-220AB	Tc=100°C	13	A
		TO-220AB insulated	Tc=80°C		
Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	I_{TSM}	F =50 Hz	t = 20 ms	200	A
		F =60 Hz	t = 16.7 ms	220	
I^2t Value for fusing	I^2t	t_p = 10 ms		200	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°C	50	A/µs
Peak gate current	I_{GM}	T_p = 20 µs	T_j = 125°C	4	A
Maximum gate power	P_{GM}	T_p =20µs	T_j = 125°C	10	W
Average gate power dissipation	$P_{G(AV)}$	T_j =125°C		1	W
Repetitive peak off-state voltage	V_{DRM}	T_j =125°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_J = 25 ºC unless otherwise specified)

SYMBOL	TEST CONDITIONS			20PTxxxx	Unit
I_{GT}	V_D = 12V, R_L = 33Ω		Min.	3	mA
			Max.	25	
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	mA
I_L	$I_G = 1.2 \times I_{GT}$		Min.	60	mA
dV/dt	V_D = 67% V_{DRM}, Gate open	T_j = 125°C	Min.	500	V/μs
V_{TM}	I_T = 40A, t_P = 380μs	T_j = 25°C	Max.	1.6	V
I_{DRM} I_{RRM}	$V_D = V_{DRM}$, $V_R = V_{RRM}$ R_{GK} = 220Ω	T_j = 25°C	Max.	5	μA
		T_j = 125°C	Max.	2	mA
V_{to}	Threshold Voltage	T_j = 125°C	Max.	0.77	V
R_d	Dynamic Resistance	T_j = 125°C	Max.	23	mΩ

THERMAL RESISTANCE

SYMBOL	Parameter			VALUE	UNIT
$R_{th(j-c)}$	Junction to case (DC)		D^2PAK/TO-220AB	1.05	°C/W
			TO-220AB insulated	2.1	°C/W
$R_{th(j-a)}$	Junction to ambient	S = 1 cm^2	TO-263(D^2PAK)	45	
			TO-220AB/TO-220AB insulated	60	

S=Copper surface under tab

PRODUCT SELECTOR

PART NUMBER	VOLTAGE (xx)			SENSITIVITY	PACKAGE
	600 V	800 V	1000 V		
20PTxxA/20PTxxAI	V	V	V	25 mA	TO-220AB
20PTxxH	V	V	V	25 mA	D^2PAK

ORDERING INFORMATION

ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
20PTxxA	20PTxxA	TO-220AB	2.0g	50	Tube
20PTxxAI	20PTxxAI	TO-220AB (insulated)	2.3g	50	Tube
20PTxxH	20PTxxH	TO-263(D^2PAK)	2.0g	50	Tube

Note: xx = voltage

ORDERING INFORMATION SCHEME

20 PT 06 AI

Current
20 = 20A, $I_{T(RMS)}$

SCR series

Voltage Code
06 = 600V
08 = 800V
10 = 1000V

Package type
A = TO-220AB (non-insulated)
AI = TO-220AB (insulated)
H = TO-263 (D^2PAK)

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

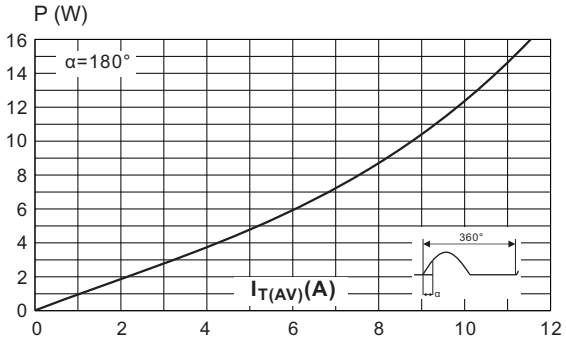


Fig.2 Average and D.C. on-state current versus case temperature.

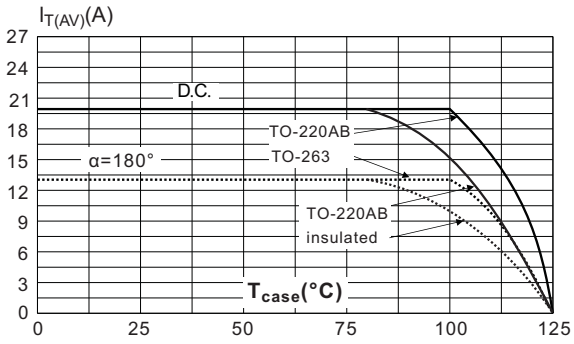


Fig.3 Average and D.C. on-state current versus ambient temperature. (copper surface under tab: S=1cm^2) (D^2PAK)

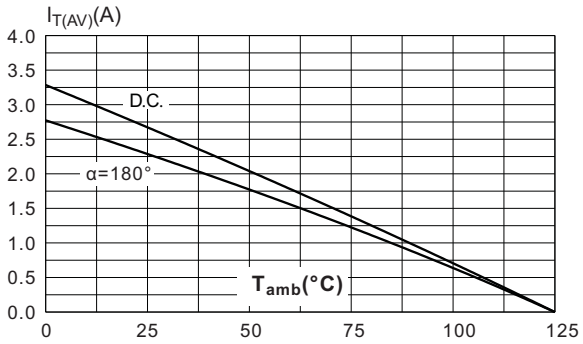


Fig.4 Relative variation of thermal impedance versus pulse duration.

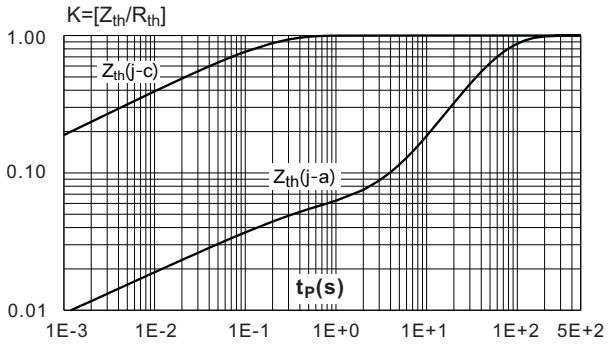


Fig.5 Relative variation of gate trigger current, holding current and latching current and latching current versus junction temperature.

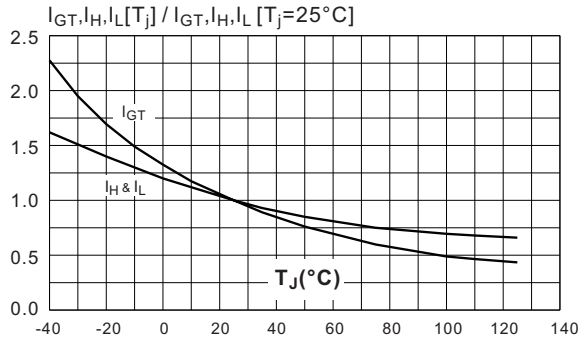


Fig.6 Surge peak on-state current versus number of cycles.

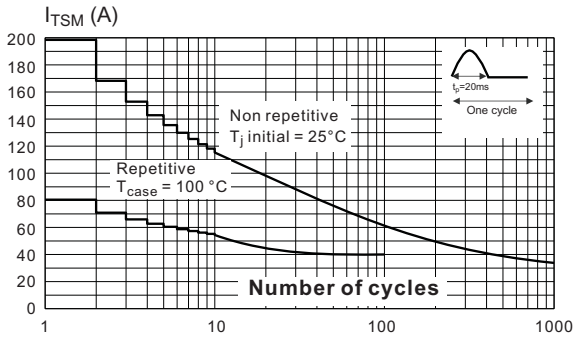


Fig.7 Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10 ms, and corresponding values of I^2t

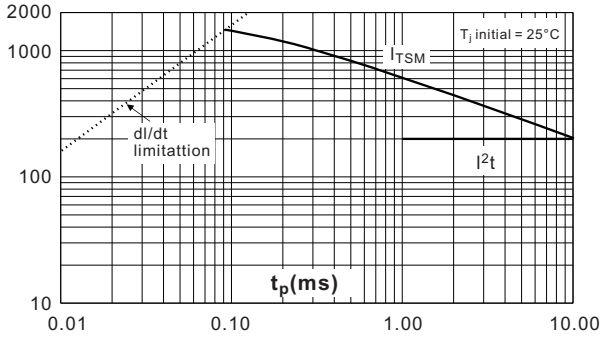


Fig.8 On-state characteristics (maximum values)

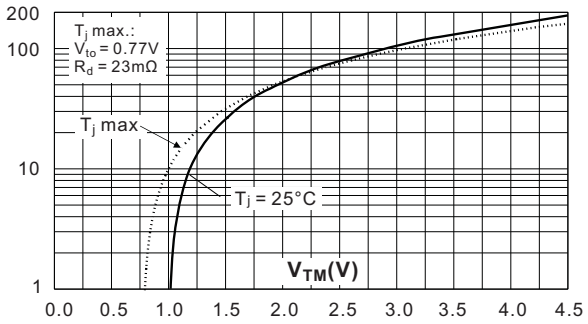
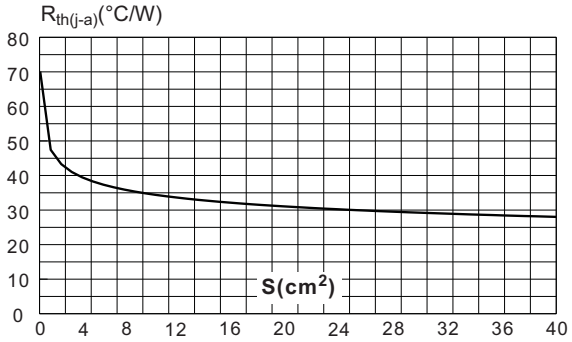
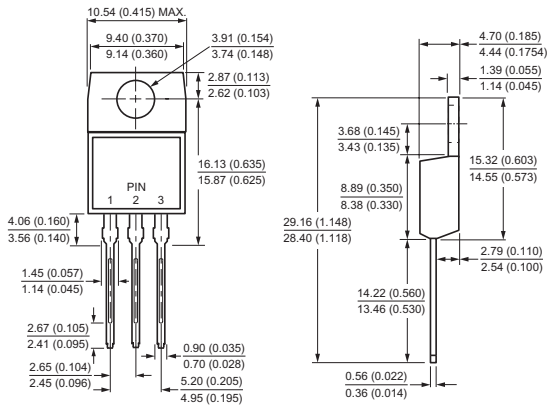


Fig.9 Thermal resistance junction to ambient versus copper surface under tab (epoxy printed circuit board Fr4, copper thickness:35 µm)(D^2PAK)

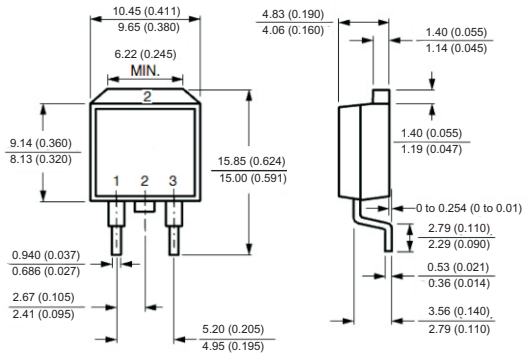


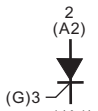
Case Style

TO-220AB



TO-263(D^2PAK)





All dimensions in millimeters(inches)