

## Standard SCRs, 70A

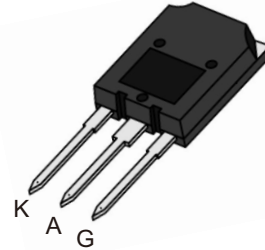
### Main Features

Symbol	Value	Unit
$I_{T(AV)}$	70	A
$V_{DRM}/V_{RRM}$	800 to 1800	V
$I_{GT}$	100	mA

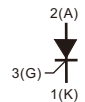
### DESCRIPTION

The 70PT series of silicon controlled rectifiers are high performance glass passivated technology, and are suitable for general purpose applications, where power handling and power dissipation are critical, such as solid state relay, welding equipment high power motor control, high power switching and phase control applications.

Base on a clip assembly technology, they offer a superior performance in surge current capabilities. Thanks to their internal ceramic pad, they provide high voltage insulation(2500V<sub>RMS</sub>).



**TO-247S (non-Insulated)**  
(70PTxxDS)



### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
RMS on-state current full sine wave (180° conduction angle) Lead current limitation	$I_{T(RMS)}$	TO-247S	$T_c=80^{\circ}C$	75	A
Average on-state current (180° conduction angle)	$I_{T(AV)}$	TO-247S	$T_c=80^{\circ}C$	70	A
Non repetitive surge peak on-state current (full cycle, $T_j$ initial = 25°C)	$I_{TSM}$	F = 50 Hz	t = 20 ms	1300	A
		F = 60 Hz	t = 16.7 ms	1500	
$I^2t$ Value for fusing	$I^2t$	$t_p = 10$ ms		8450	A <sup>2</sup> s
Critical rate of rise of on-state current $V_D = 67\% V_{DRM}$ , $t_p = 200\mu s$ , $I_G = 0.3A$ $dI_G/dt = 0.3A/\mu s$	$dI/dt$	F = 60 Hz	$T_j = 125^{\circ}C$	150	A/ $\mu s$
Peak gate current	$I_{GM}$	$T_p = 20 \mu s$	$T_j = 125^{\circ}C$	2.5	A
Maximum gate power	$P_{GM}$	$T_p = 20\mu s$	$T_j = 125^{\circ}C$	10	W
Average gate power dissipation	$P_{G(AV)}$	$T_j = 125^{\circ}C$		2	W
Repetitive peak off-state voltage	$V_{DRM}$	$T_j = 125^{\circ}C$		800 to 1800	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	
Maximum peak reverse gate voltage	$V_{RGM}$			5	V

ELECTRICAL SPECIFICATIONS (T <sub>J</sub> = 25 °C unless otherwise specified)							
SYMBOL	TEST CONDITIONS		70PT08DS	70PT10DS	70PT16DS	Unit	
				70PT12DS	70PT18DS		
I <sub>GT</sub>	V <sub>D</sub> = 12V, R <sub>L</sub> = 33Ω	Max.	50	80	100	mA	
V <sub>GT</sub>		Max.	1.5			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.	120	130	150	mA
I <sub>L</sub>	I <sub>G</sub> = 1.2×I <sub>GT</sub>		Max.	150	180	200	mA
dV/dt	V <sub>D</sub> = 67% V <sub>DRM</sub> , Gate open	T <sub>J</sub> = 125°C	Min.	700	1000	1000	V/μs
V <sub>TM</sub>	I <sub>T</sub> = 100A, t <sub>p</sub> = 380μs	T <sub>J</sub> = 25°C	Max.	1.55		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> R <sub>GK</sub> = 220Ω	T <sub>J</sub> = 25°C	Max.	50		μA	
		T <sub>J</sub> = 125°C	Max.	10		mA	
V <sub>to</sub>	Threshold Voltage		Max.	0.85		V	
R <sub>d</sub>	Dynamic Resistance		Max.	10		mΩ	

THERMAL RESISTANCE				
SYMBOL	Parameter		VALUE	UNIT
R <sub>th(j-c)</sub>	Junction to case (DC)	TO-247S	0.32	°C/W
R <sub>th(j-a)</sub>	Junction to ambient	TO-247S	45	°C/W

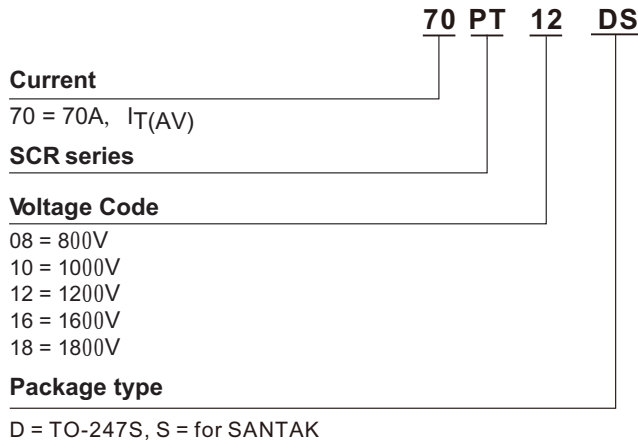
S=Copper surface under tab

PRODUCT SELECTOR							
PART NUMBER	VOLTAGE (xx)					SENSITIVITY	PACKAGE
	800 V	1000 V	1200 V	1600 V	1800 V		
70PTxxDS	V	V	V	V	V	100 mA	TO-247S

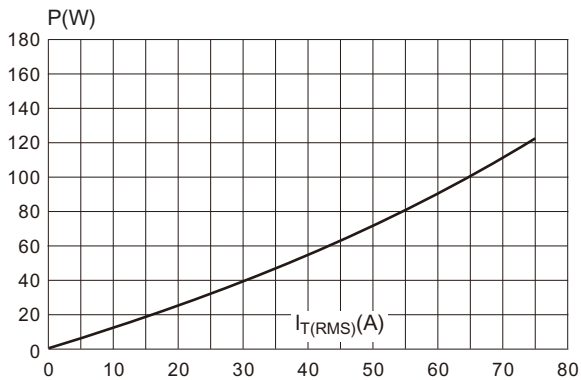
ORDERING INFORMATION					
ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
70PTxxDS	70PTxxDS	TO-247S	6.5g	30	Tube

Note: xx = voltage

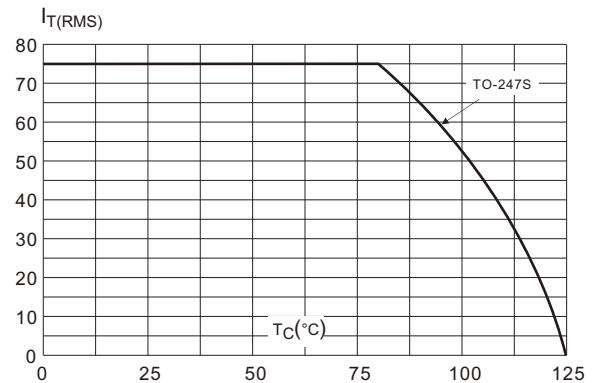
## ORDERING INFORMATION SCHEME



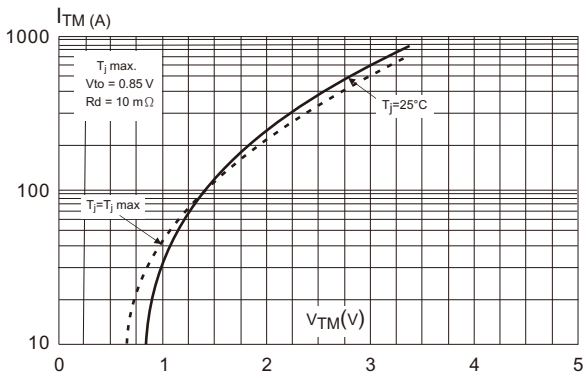
**Fig.1 Maximum power dissipation versus RMS on-state current (full cycle)**



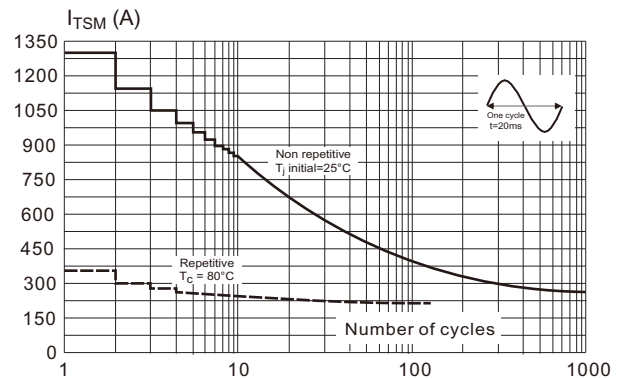
**Fig.2 RMS on-state current versus case temperature (full cycle)**



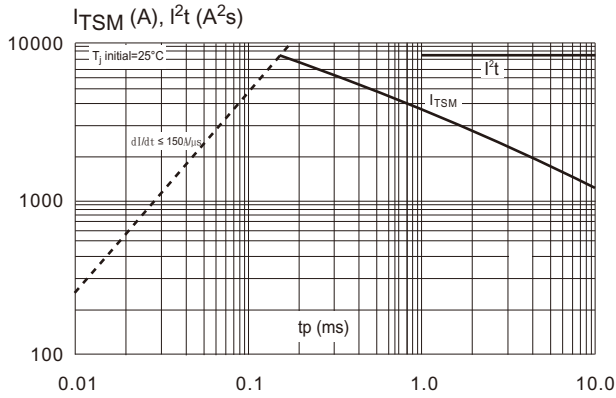
**Fig.3 On-state characteristics (maximum values).**



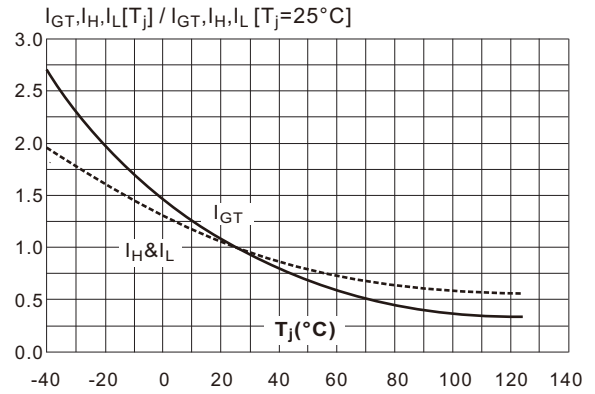
**Fig.4 Surge peak on-state current versus number of cycles.**



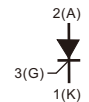
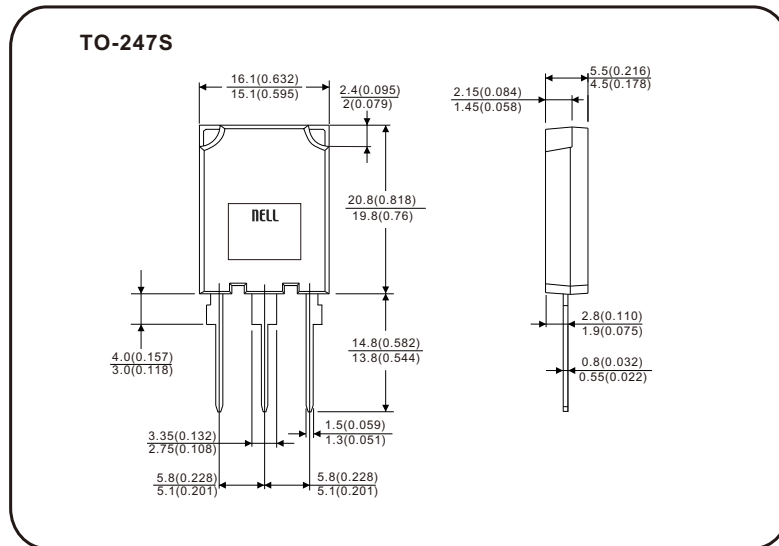
**Fig.5 Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10$  ms, and corresponding value of  $I^2t$ .**



**Fig.6 Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)**



## Case Style



All dimensions in millimeters (inches)