

Standard SCRs, 90A

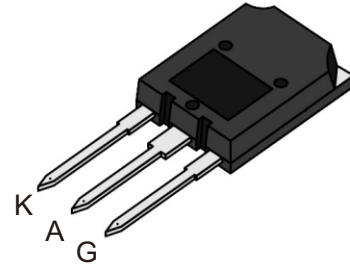
Main Features

Symbol	Value	Unit
$I_{T(AV)}$	70	A
V_{DRM}/V_{RRM}	1200 to 1600	V
I_{GT}	30 to 100	mA

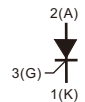
DESCRIPTION

The 90PT 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.



TO-247S (non-insulated)
(90PTxxD)



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	$T_c=80^\circ\text{C}$	110	A
Average on-state current (180° conduction angle)	$I_{T(AV)}$	TO-247S	$T_c=80^\circ\text{C}$	70	A
Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	I_{TSM}	F = 50 Hz	t = 20 ms	1600	A
		F = 60 Hz	t = 16.7 ms	1675	
I^2t Value for fusing	I^2t	$t_p = 10$ ms		12800	A ² s
Critical rate of rise of on-state current $V_D = 67\% V_{DRM}$, $t_p = 200\mu\text{s}$, $I_G = 2 \times I_{GT}$ $dI_G/dt = 0.3\text{A}/\mu\text{s}$	dI/dt	F = 60 Hz	$T_j = 125^\circ\text{C}$	150	A/ μs
Peak gate current	I_{GM}	$T_p = 20 \mu\text{s}$	$T_j = 125^\circ\text{C}$	4	A
Maximum gate power	P_{GM}	$T_p = 20\mu\text{s}$	$T_j = 125^\circ\text{C}$	5	W
Average gate power dissipation	$P_{G(AV)}$	$T_j = 125^\circ\text{C}$		1	W
Repetitive peak off-state voltage	V_{DRM}	$T_j = 125^\circ\text{C}$		1200 to 1600	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 _J = 25 °C unless otherwise specified)						
SYMBOL	TEST CONDITIONS		Value			Unit
			Min.	Typ.	Max.	
I _{GT}	V _D = 12V, R _L = 30Ω		30	-	100	mA
V _{GT}			-	-	1.5	V
V _{GD}	V _D = V _{DRM} , R _L = 3.3KΩ, R _{GK} = 220Ω	T _J = 125°C	0.25	-	-	V
I _H	I _T = 1mA, Gate open		-	-	150	mA
I _L	I _G = 1.2×I _{GT}		-	-	200	mA
dV/dt	V _D = 67% V _{DRM} , Gate open	T _J = 125°C	1000	-	-	V/μs
V _{TM}	I _T = 150A, t _p = 380μs	T _J = 25°C	-	-	1.80	V
I _{DRM} I _{RRM}	V _D = V _{DRM} , V _R = V _{RRM} R _{GK} = 220Ω	T _J = 25°C	-	-	50	μA
		T _J = 125°C	-	-	10	mA

THERMAL RESISTANCE (T _J = 25 °C unless otherwise specified)				
SYMBOL	Parameter		VALUE	UNIT
R _{th(j-c)}	Junction to case (DC)	TO-247S	0.27	°C/W
R _{th(j-a)}	Junction to ambient	TO-247S	45	°C/W

S=Copper surface under tab

PRODUCT SELECTOR				
PART NUMBER	VOLTAGE (xx)		SENSITIVITY	PACKAGE
	1200 V	1600 V		
90PTxxD	V	V	100 mA	TO-247S

ORDERING INFORMATION					
ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
90PTxxD	90PTxxD	TO-247S	6.5g	30	Tube

Note: xx = voltage

ORDERING INFORMATION SCHEME

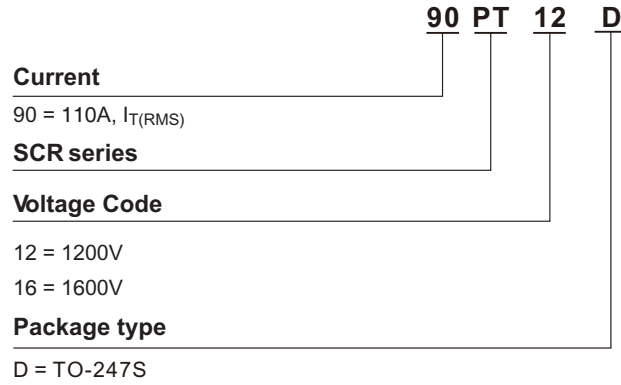


Fig.1 Maximum power dissipation versus RMS on-state current (full cycle)

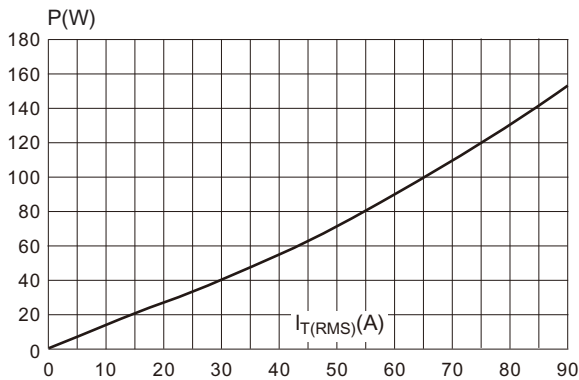


Fig.2 RMS on-state current versus case temperature (full cycle)

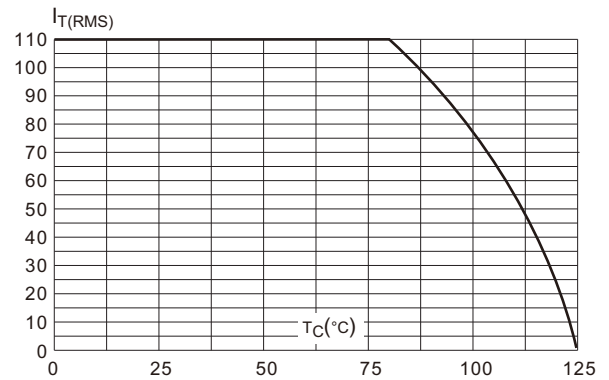


Fig.3 On-state characteristics (maximum values).

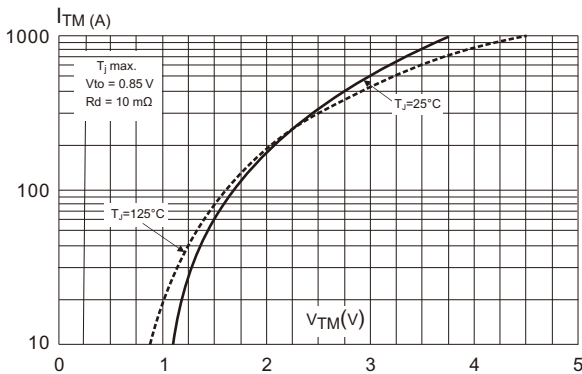


Fig.4 Surge peak on-state current versus number of cycles.

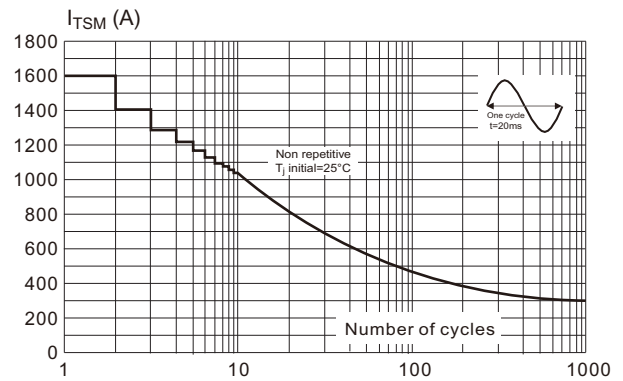


Fig.5 Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms, and corresponding value of I^2t .

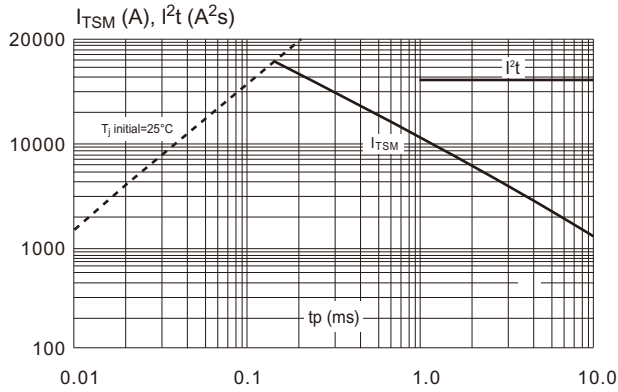
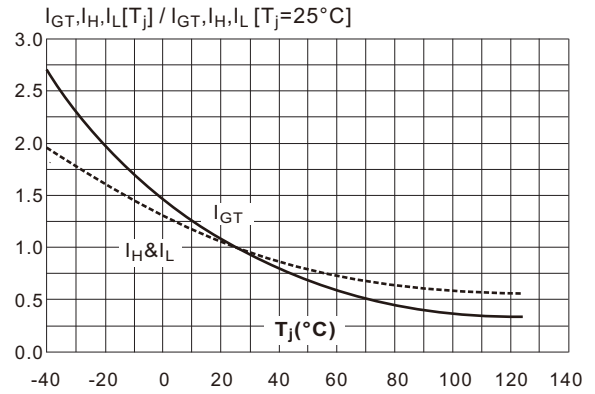
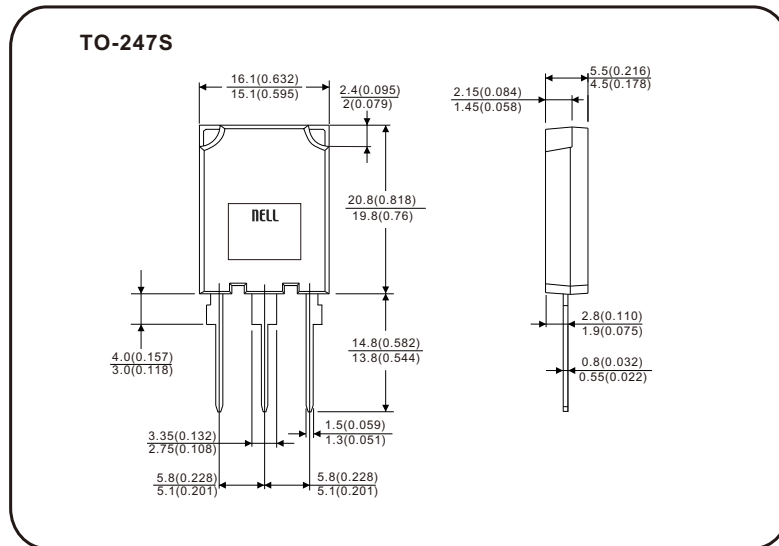


Fig.6 Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



Case Style



All dimensions in millimeters (inches)