

Standard SCRs, 70A

Main Features

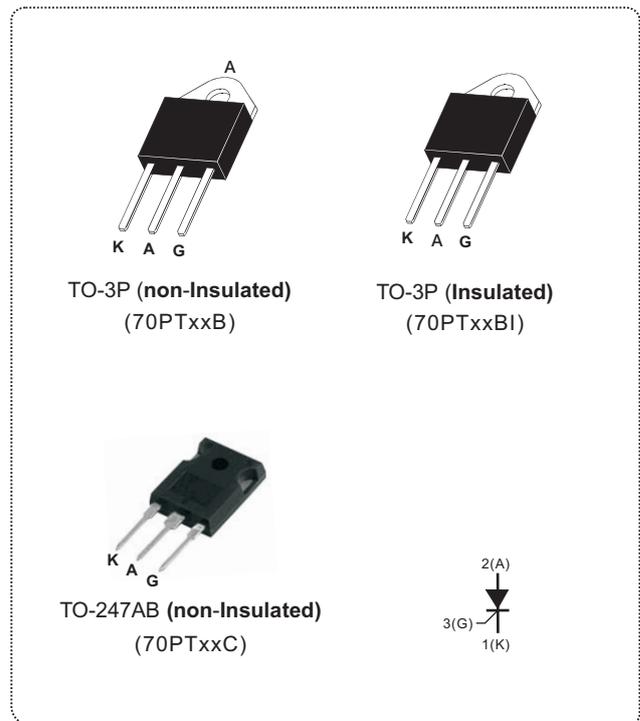
Symbol	Value	Unit
$I_{T(RMS)}$	70	A
V_{DRM}/V_{RRM}	1000 to 1600	V
I_{GT}	40 / 80	mA

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 and high power motor control.

Based 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_{RMS}).



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS		VALUE	UNIT
RMS on-state current full sine wave (180° conduction angle)	$I_{T(RMS)}$	TO-247AB	$T_c=80^\circ\text{C}$	70	A
		TO-3P	$T_c=75^\circ\text{C}$		
		TO-3P insulated	$T_c=65^\circ\text{C}$		
Average on-state current (180° conduction angle)	$I_{T(AV)}$	TO-247AB	$T_c=80^\circ\text{C}$	44	A
		TO-3P	$T_c=75^\circ\text{C}$		
		TO-3P insulated	$T_c=65^\circ\text{C}$		
Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	I_{TSM}	F = 50 Hz	t = 20 ms	550	A
		F = 60 Hz	t = 16.7 ms	575	
I^2t Value for fusing	i^2t	$t_p = 10$ ms		1513	A ² s
Critical rate of rise of on-state current $V_D = 67\% V_{DRM}$, $t_p = 200\mu\text{s}$, $I_G = 0.3\text{A}$ $dI_G/dt = 0.3\text{A}/\mu\text{s}$	dI/dt	F = 60 Hz	$T_j = 125^\circ\text{C}$	150	A/ μs
Peak gate current	I_{GM}	$T_p = 20 \mu\text{s}$	$T_j = 125^\circ\text{C}$	5	A
Maximum gate power	P_{GM}	$T_p = 20\mu\text{s}$	$T_j = 125^\circ\text{C}$	10	W
Average gate power dissipation	$P_{G(AV)}$	$T_j = 125^\circ\text{C}$		2	W
Repetitive peak off-state voltage	V_{DRM}	$T_j = 125^\circ\text{C}$		1000 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			70PT10xx	70PT16xx	Unit	
				70PT12xx			
I _{GT}	V _D = 12V, R _L = 33Ω			Max.	40	80	mA
V _{GT}				Max.	1.5		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.	100	120	mA
I _L	I _G = 1.2×I _{GT}			Max.	130	150	mA
dV/dt	V _D = 67% V _{DRM} , Gate open	T _J = 125°C	Min.	1000	1000	V/μs	
V _{TM}	I _T = 90A, t _p = 380μs		T _J = 25°C	Max.	1.6		V
I _{DRM} I _{RRM}	V _D = V _{DRM} , V _R = V _{R_{RRM}} R _{GK} = 220Ω		T _J = 25°C	Max.	10		μA
			T _J = 125°C	Max.	6		mA
V _{to}	Threshold Voltage		T _J = 125°C	Max.	1.02		V
R _d	Dynamic Resistance		T _J = 125°C	Max.	85		mΩ

THERMAL RESISTANCE					
SYMBOL	Parameter		VALUE	UNIT	
R _{th(j-c)}	Junction to case (DC)		TO-3P/TO-247AB	0.68	°C/W
			TO-3P insulated	0.80	
R _{th(j-a)}	Junction to ambient		TO-3P/TO-247AB/TO-3P insulated	50	°C/W

S=Copper surface under tab

PRODUCT SELECTOR					
PART NUMBER	VOLTAGE (xx)			SENSITIVITY	PACKAGE
	1000 V	1200 V	1600 V		
70PTxxB/70PTxxBI	V	V	V	40mA / 80mA	TO-3P
70PTxxC	V	V	V	40mA / 80mA	TO-247AB

ORDERING INFORMATION					
ORDERING TYPE	MARKING	PACKAGE	WEIGHT	BASE Q'TY	DELIVERY MODE
70PTxxB	70PTxxB	TO-3P	4.3g	30	Tube
70PTxxBI	70PTxxBI	TO-3P insulated	4.8g	30	Tube
70PTxxC	70PTxxC	TO-247AB	5g	30	Tube

Note: xx = voltage

ORDERING INFORMATION SCHEME

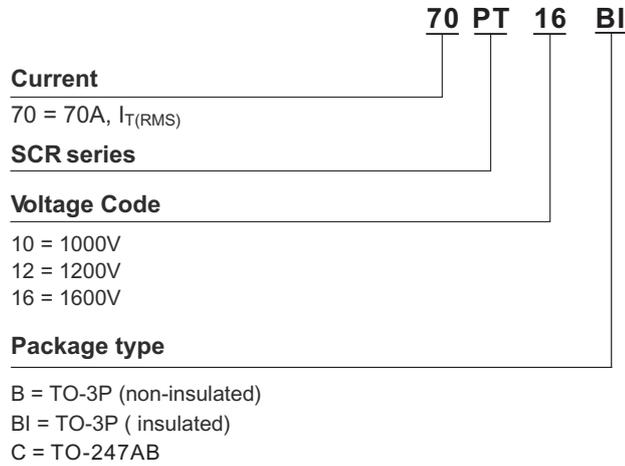


Fig.1 Maximum power dissipation versus average on-state current (half cycle)

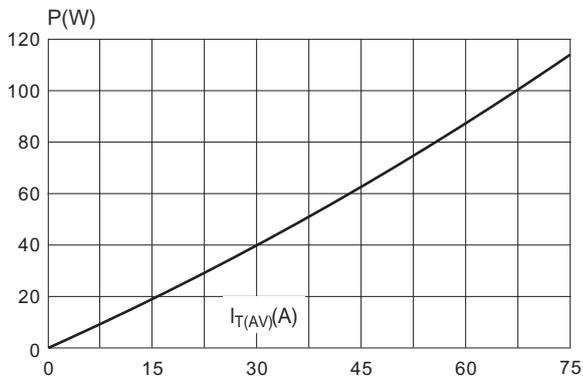


Fig.2 RMS on-state current versus case temperature (full cycle)

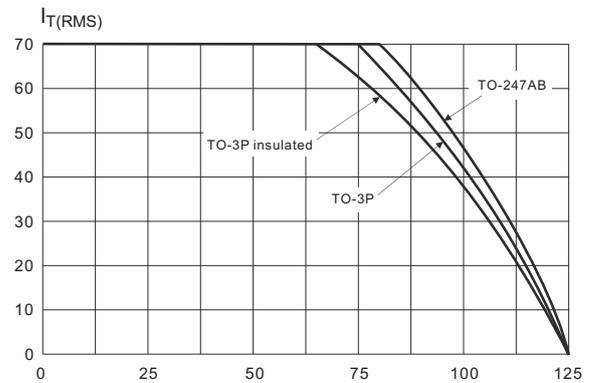


Fig.3 On-state characteristics (maximum values).

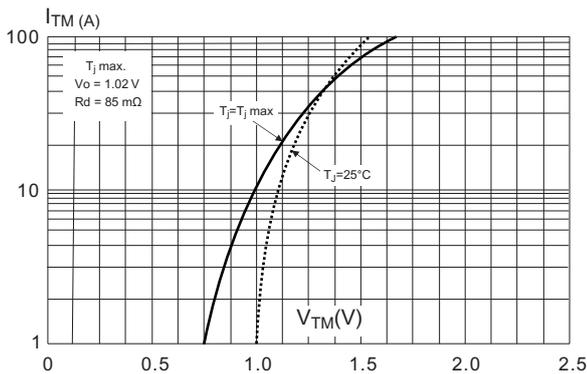


Fig.4 Surge peak on-state current versus number of cycles.

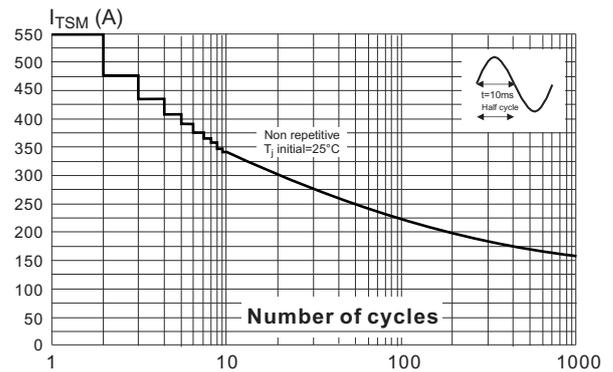


Fig.5 Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10$ ms, and corresponding value of I^2t .

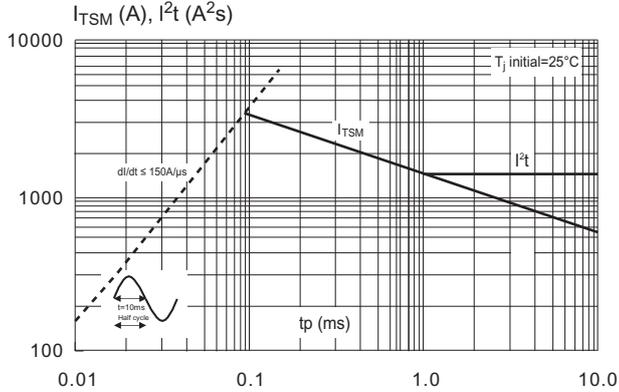
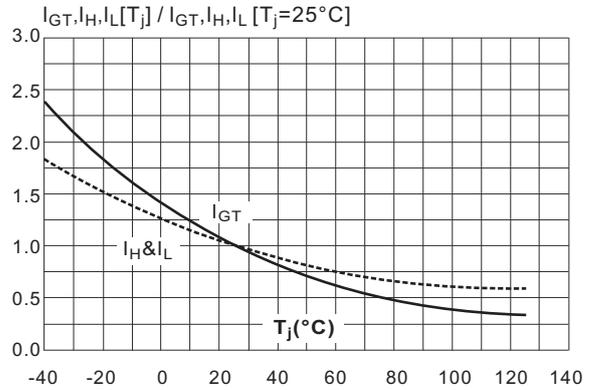
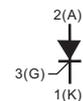
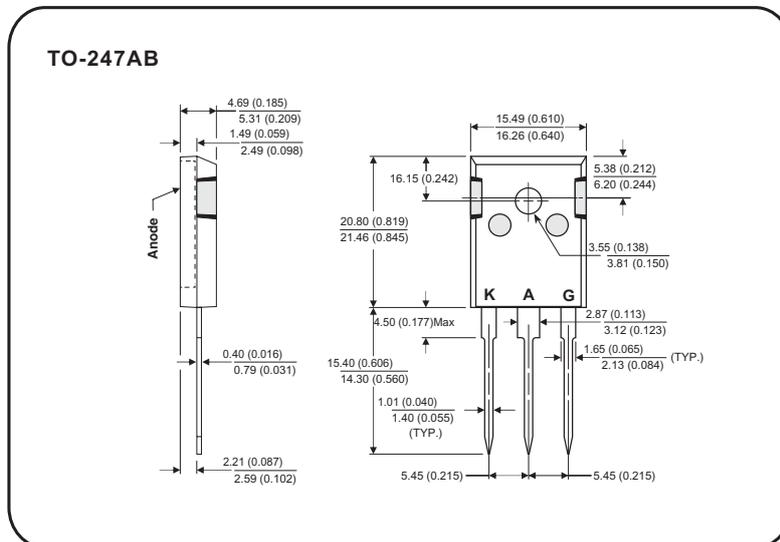
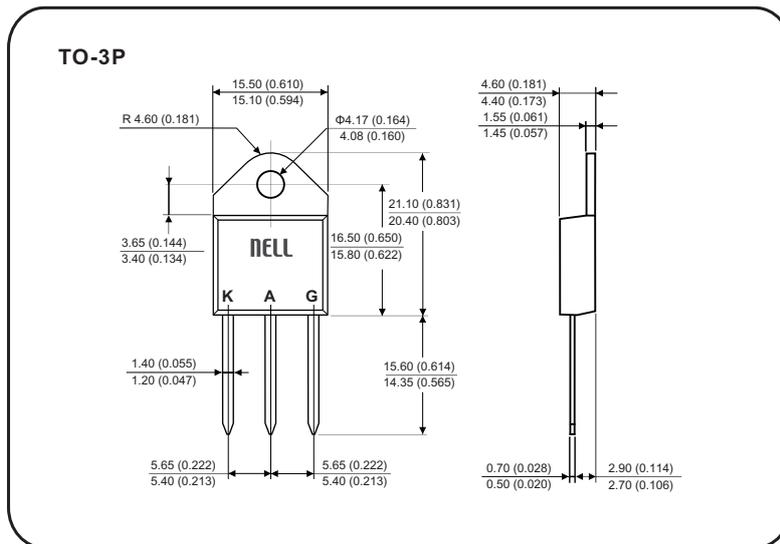


Fig.6 Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



Case Style



All dimensions in millimeters(inches)