

## PST KP180

### HIGH POWER STUD THYRISTOR FOR PHASE CONTROL APPLICATIONS

#### Features :

- Blocking Capability up to 1800 V
- High dV/dt Capability
- Amplifying Gate Configuration
- Ceramic housing

#### ELECTRICAL CHARACTERISTICS AND RATINGS

##### Blocking

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Repetitive peak reverse voltage	$V_{RRM}$		1800		V	$T_j = -40\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$
Repetitive peak off-state voltage	$V_{DRM}$		1800		V	$T_j = -40\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$
Non repetitive peak reverse voltage	$V_{RSM}$		1900		V	$T_j = -40\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$
Repetitive peak reverse current	$I_{RRM}$		30		mA	$T_j = T_{jmax}$ , $V = V_{RRM}$
Repetitive peak off-state current	$I_{DRM}$		30		mA	$T_j = T_{jmax}$ , $V = V_{DRM}$

##### Conducting

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Average value of on-state current	$I_{T(AV)}$		200		A	50 Hz sine wave, $180^{\circ}$ conduction, $T_c = 85\text{ }^{\circ}\text{C}$
RMS value of on-state current	$I_{T(RMS)}$		314		A	50 Hz sine wave, $180^{\circ}$ conduction, $T_c = 85\text{ }^{\circ}\text{C}$
Surge non repetitive current	$I_{TSM}$		4.2		kA	50 Hz sine wave Half cycle
I square t	$I^2 t$		88		$\text{kA}^2\text{s}$	$V_R = 0$ $T_j = T_{jmax}$
Peak on-state voltage	$V_{TM}$		1.44		V	On-state current 250 A, $T_j = T_{jmax}$
Threshold voltage	$V_{T(TO)}$		1.14		V	$T_j = T_{jmax}$
On-state slope resistance	$r_T$		1.18		$\text{m}\Omega$	$T_j = T_{jmax}$
Holding current	$I_H$			600	mA	$V_D = 12\text{ V}$ ; $I_T = 2.5\text{ A}$
Latching current	$I_L$			1000	mA	$V_D = 12\text{ V}$ ; $R_L = 12\text{ }\Omega$

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### Triggering

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Gate current	$I_{GT}$		200		mA	$V_D = 6\text{ V}, R_L = 3\ \Omega, T_j = -40\ ^\circ\text{C}$
			150		mA	$V_D = 6\text{ V}, R_L = 3\ \Omega, T_j = 25\ ^\circ\text{C}$
			50		mA	$V_D = 6\text{ V}, R_L = 3\ \Omega, T_j = 125\ ^\circ\text{C}$
Gate voltage	$V_{GT}$		4		V	$V_D = 6\text{ V}, R_L = 3\ \Omega, T_j = -40\ ^\circ\text{C}$
			3		V	$V_D = 6\text{ V}, R_L = 3\ \Omega, T_j = 0 \div 125\ ^\circ\text{C}$
		0.3			V	$V_D = V_{DRM}, R_L = 1\ \text{k}\Omega, T_j = 125\ ^\circ\text{C}$
Peak gate current	$I_{GM}$		3		A	
Peak reverse gate voltage	$V_{RGM}$		5		V	
Peak gate power dissipation	$P_{GM}$		10		W	
Average gate power dissipation	$P_{G(AV)}$		2		W	

### Switching

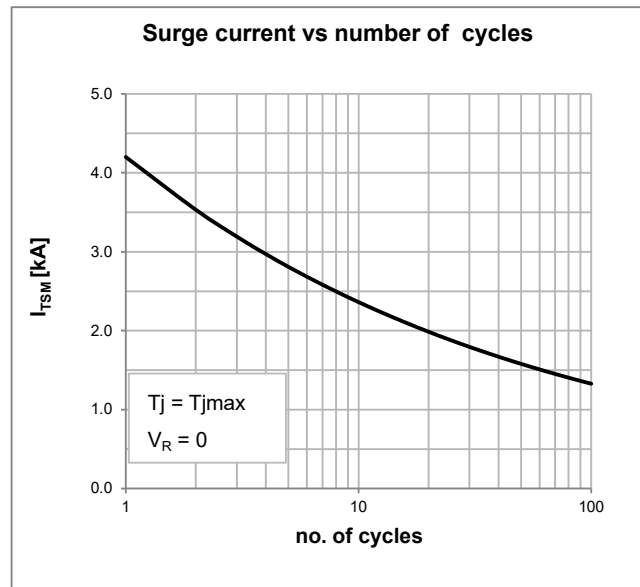
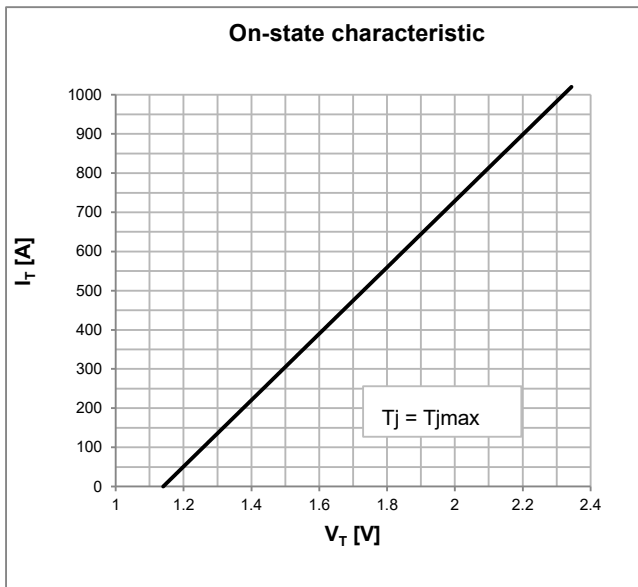
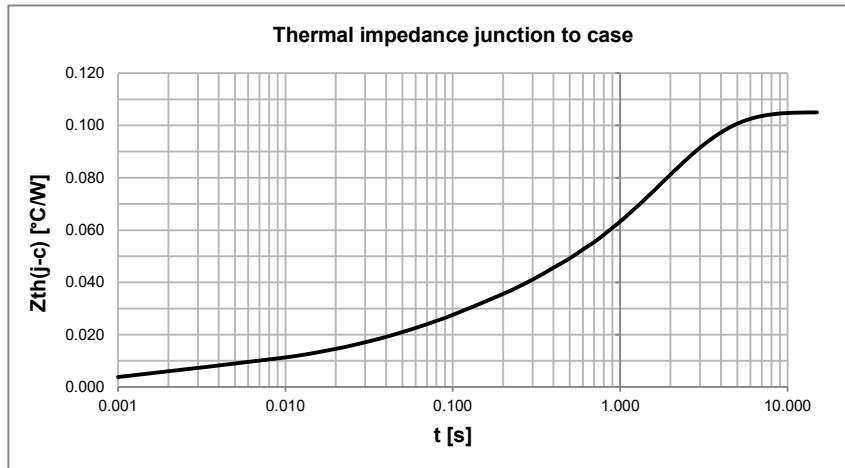
Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Critical rate of rise of on-state current	$di/dt$		1000		A/ $\mu\text{s}$	$I_G = 8 \cdot I_{GT}, t_r = 1\ \mu\text{s}, V_D \leq 80\% V_{DRM}, T_j = T_{jmax}$ - non repetitive -
Critical rate of rise of on-state voltage	$dv/dt$		500		V/ $\mu\text{s}$	Linear ramp up to 80% of $V_{DRM}$
Gate controlled delay time	$t_d$			1	$\mu\text{s}$	$I_{TM} = 50\text{ A}, V_D = 67\% V_{DRM}, V_G = 20\text{ V}, R_G = 20\ \Omega, t_r = 0.1\ \mu\text{s}, t_p = 20\ \mu\text{s}$
Turn-off time	$t_q$			120	$\mu\text{s}$	$I_{TM} = 300\text{ A}; di/dt = 20\text{ A}/\mu\text{s}; V_R \geq 100\text{ V}; dv/dt = 20\text{ V}/\mu\text{s}$ linear to 67% $V_{DRM}, V_G = 0\text{ V}; T_j = T_{jmax}$
Reverse recovery charge	$Q_{rr}$				$\mu\text{C}$	$I_T = 300\text{ A}, di/dt = 20\text{ A}/\mu\text{s}$
Reverse recovery current	$I_{rr}$				A/ $\mu\text{s}$	$V_R \geq 50\text{ V}, T_j = T_{jmax}$

### Thermal and mechanical

Parameter	Symbol	Min	Max	Typ	Unit	Conditions
Operating temperature	$T_j$	-40	125		$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-40	150		$^\circ\text{C}$	
Thermal resistance junction to case	$R_{th(j-c)}$		0.105		$^\circ\text{C}/\text{W}$	180° SIN
Thermal resistance case to sink	$R_{th(c-s)}$		0.040		$^\circ\text{C}/\text{W}$	Mounting surfaces smooth, flat and greased
Mounting torque	<b>M</b>	24.5	31		N·m	
Weight	<b>W</b>			280	g	

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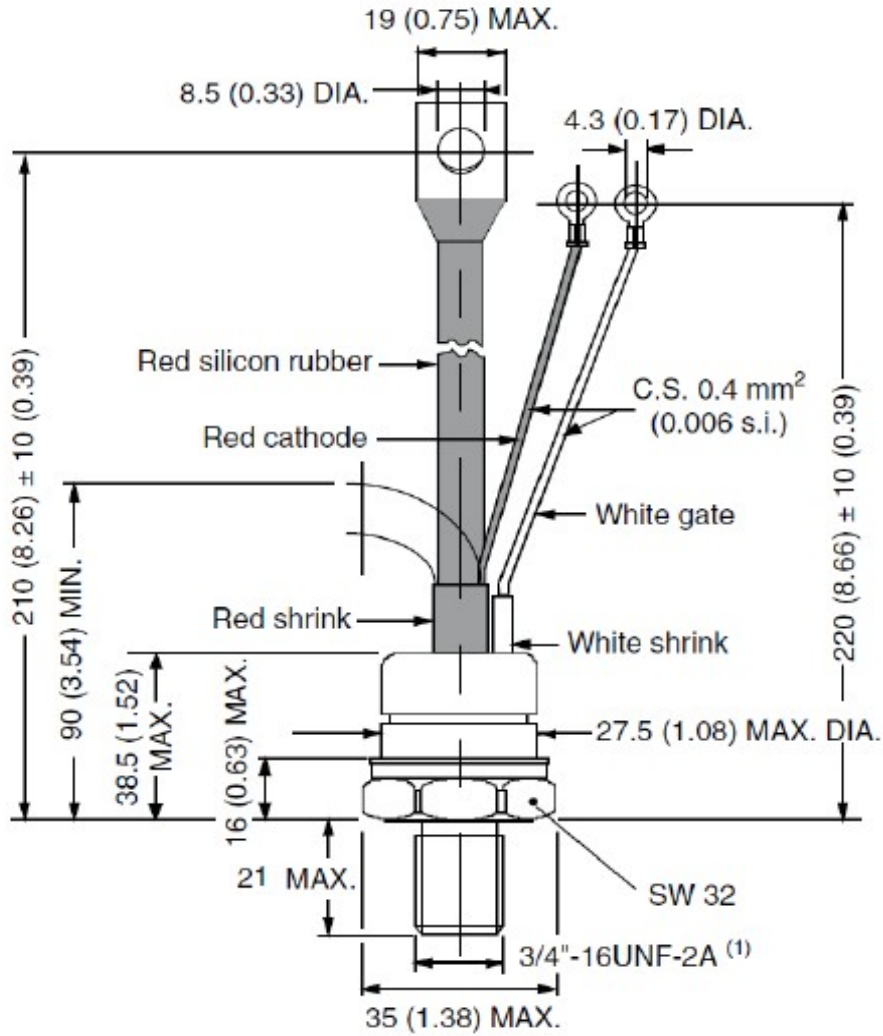
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### OUTLINE AND DIMENSIONS



dimension in mm (inch)