

5STP24L2800

HIGH POWER THYRISTOR FOR PHASE CONTROL FEATURES AND APPLICATIONS

Features:

- . All Diffused Structure
- . Interdigitated Amplifying Gate Configuration
- . Guaranteed Maximum Turn-Off Time
- . High dV/dt Capability
- . Pressure Assembled Device

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
2800	2800	3000

V_{RRM} = Repetitive peak reverse voltage
 V_{DRM} = Repetitive peak off state voltage
 V_{RSM} = Non repetitive peak reverse voltage (2)

Repetitive peak reverse leakage and off state leakage	I_{RRM} / I_{DRM}	30 mA 250 mA (3)
Critical rate of voltage rise	dV/dt (4)	1000 V/ sec

Notes:

All ratings are specified for $T_j = 25^\circ\text{C}$ unless otherwise stated.

(1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to $+125^\circ\text{C}$.

(2) 10 msec. max. pulse width

(3) Maximum value for $T_j = 125^\circ\text{C}$.

(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM} . Gate open. $T_j = 125^\circ\text{C}$.

(5) Non-repetitive value.

(6) The value of di/dt is established in accordance with EIA/NIMA Standard RS-397, Section 5-2-2-6. The value defined would be in addition to that obtained from aubber circuit, comprising a 0.2 F capacitor and 20 ohms resistance in parallel with the thristor under test.

Conducting - on state

Paramet	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	$I_{T(AV)M}$		2400		A	Sinewave, 180° conduction, $T = 85^\circ\text{C}$
RMS value of on-state current	I_{TRMSM}		4120		A	Nominal value
Peak one cPSTCle surge (non repetitive) current	I_{TSM}		46		kA	8.3 msec (60Hz), sinusoidal wave-shape, 180° conduction, $T = 125^\circ\text{C}$
			43		kA	10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, $T = 125^\circ\text{C}$
I square t	I^2t		8.7×10^6		A^2s	8.3 msec
Latching current	I_L		200		mA	$V_D = 24\text{ V}$; $R_L = 12\text{ ohms}$
Holding current	I_H		75		mA	$V_D = 24\text{ V}$; $I = 2.5\text{ A}$
Peak on-state voltage	V_{TM}		1.35		V	$I_{TM} = 3000\text{ A}$; $T_j = 125^\circ\text{C}$
Threshold vlotage	V_{T0}		0.85		V	
Slope resistance	r_T		0.16		m Ω	
Critical rate of rise of on-state current (5, 6)	di/dt		300		A/ s	Switching from V_{DRM} 1000 V, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		150		A/ s	Switching from V_{DRM} 1000 V

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Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		-		W	
Average gate power dissipation	$P_{G(AV)}$		-		W	
Peak gate current	I_{GM}		-		A	
Gate current required to trigger all units	I_{GT}		400		mA	$V_D = 10 \text{ V}; I_T = 3\text{A}; T_j = +25^\circ\text{C}$
Gate voltage required to trigger all units	V_{GT}		2.6		V	$V_D = 10 \text{ V}; I_T = 3\text{A}; T_j = +25^\circ\text{C}$
Peak negative voltage	V_{RGM}		-		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_{gd}		3	-	s	$V_D = 67\% V_{DRM}, I_T = 2000\text{A},$ $di/dt = 60\text{A/us}, I_{FG} = 2\text{A}, t_r = 0.5\text{us},$ $T_j = 25^\circ\text{C}$
Turn-on time	t_{gt}		-	-		
Turn-off time (with $V_R = -5 \text{ V}$)	t_q	-	-	400	s	$I_{TM} = 1000\text{A}, t_p = 1000\text{us},$ $di/dt = 60\text{A/us}, V_r = 50\text{V},$ $V_{dr} = 80\% V_{DRM}, dV_{dr}/dt = 20\text{V/us}$
Reverse recovery current	I_{rm}		-		A	$I_{TM} = 4000\text{A}, t_p = 2000\text{us},$ $di/dt = 60\text{A/us}$

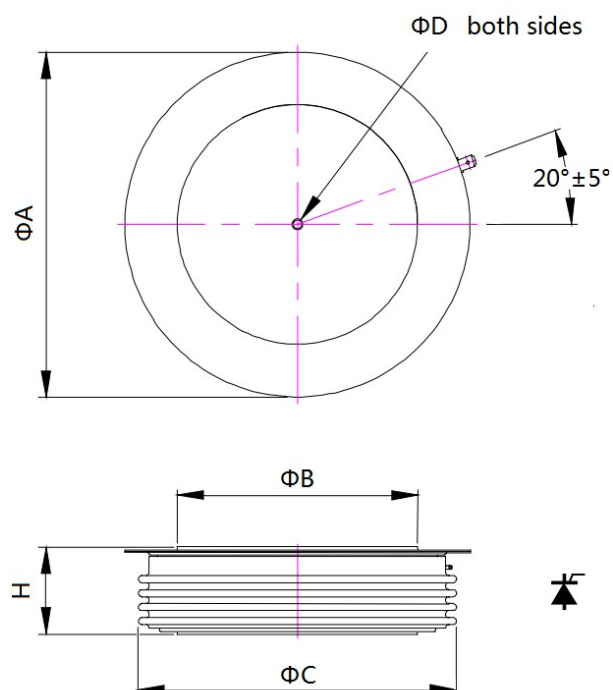
THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		$^\circ\text{C}$	
Storage temperature	T_{stg}	-40	+140		$^\circ\text{C}$	
Thermal resistance - junction to case	$R_{(j-c)}$		10 20		K/kW	Double sided cooled * Single sided cooled *
Thermal resistance - case to sink	$R_{(c-s)}$		2 4		K/kW	Double sided cooled * Single sided cooled *
Thermal resistance - junction to case	$R_{(j-s)}$		- -		K/kW	Double sided cooled * Single sided cooled *
Mounting force	F	45	60	50	kN	
Weight	W			0.9	Kg	about

* Mounting surfaces smooth, flat and greased

Note : for case outline and dimensions, see case outline drawing in last page of this Technical Data

Outline



Sym	A	B	C	D	H
mm	109	73	98	3.5×3	26±1