

YZPST-5STP34N5200

HIGH POWER THYRISTOR FOR PHASE CONTROL APPLICATIONS

Features:

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

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

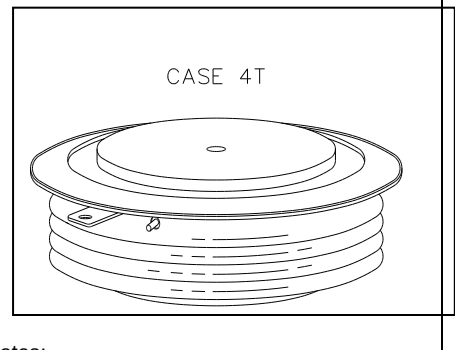
V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
5200	5200	5300

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	I_{RRM} / I_{DRM}	30 mA 95mA (3)
Critical rate of voltage rise	dV/dt (4)	2000 V/μsec



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 a snubber circuit, comprising a $0.2\ \mu\text{F}$ capacitor and 20 ohms resistance in parallel with the thyristor under test.

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Max. Average value of on-state current	$I_{T(AV)M}$		3600		A	Sinewave, 180° conduction $T_c = 70^\circ\text{C}$
RMS value of on-state current	I_{TRMS}		5850		A	Nominal value
Peak one cpstcle surge (non repetitive) current	I_{TSM}		63		kA	10.0 msec (50Hz), sinusoidal waveshape, 180° conduction, $T_j = 125^\circ\text{C}$
I square t	I^2t		19.8×10^3		kA^2s	
Latching current	I_L		500		mA	$V_D = 24\text{ V}$; $R_L = 12\ \text{ohms}$
Holding current	I_H		125		mA	$V_D = 24\text{ V}$; $I = 2.5\text{ A}$
Peak on-state voltage	V_{TM}		1.54		V	$I_{TM} = 3000\text{ A}$; $T_{vj} = 125^\circ\text{C}$
Threshold voltage	V_{TO}		1.03		V	$T_{vj} = 125^\circ\text{C}$
Slope resistance	R_t		0.16		$\text{m}\ \Omega$	$T_{vj} = 125^\circ\text{C}$
Critical rate of rise of on-state current (5, 6)	di/dt		1000		A/μs	Switching from $V_{DRM} \leq 1500\text{ V}$, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		200		A/μs	Switching from $V_{DRM} \leq 1500\text{ V}$

ELECTRICAL CHARACTERISTICS AND RATINGS (cont'd)

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		-		W	$t_p = 40 \mu s$
Average gate power dissipation	$P_{G(AV)}$		7		W	
Peak gate current	I_{GM}		10		A	
Gate current required to trigger all units	I_{GT}		- 400 -		mA mA mA	$V_D = 6 V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$ $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +25^\circ C$ $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = +125^\circ C$
Gate voltage required to trigger all units	V_{GT}		- 2.6 -		V V V	$V_D = 6 V; R_L = 3 \text{ ohms}; T_j = -40^\circ C$ $V_D = 6 V; R_L = 3 \text{ ohms}; T_j = 0-125^\circ C$ $V_D = \text{Rated } V_{DRM}; R_L = 1000 \text{ ohms}; T_j = +125^\circ C$
Peak negative voltage	V_{GRM}		10		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		-		μs	$I_{TM} = 50 A; V_D = \text{Rated } V_{DRM}$ Gate pulse: $V_G = 20 V; R_G = 20 \text{ ohms}; t_r = 0.1 \mu s; t_p = 20 \mu s$
Turn-off time (with $V_R = -50 V$)	t_q		700		μs	$I_{TM} = 2000 A; di/dt = 1.5 A/\mu s;$ $V_R \geq 200 V; \text{Re-applied } dV/dt = 20 V/\mu s \text{ linear to } 67\% V_{DRM}; V_G = 0;$ $T_j = 125^\circ C; \text{Duty cpstcl} \geq 0.01\%$
Reverse recovery charge	Q_{rr}		5200		μAs	$I_{TM} = 2000 A; di/dt = 1.5 A/\mu s;$ $V_R \geq 200 V$

* For guaranteed max. value, contact factory.

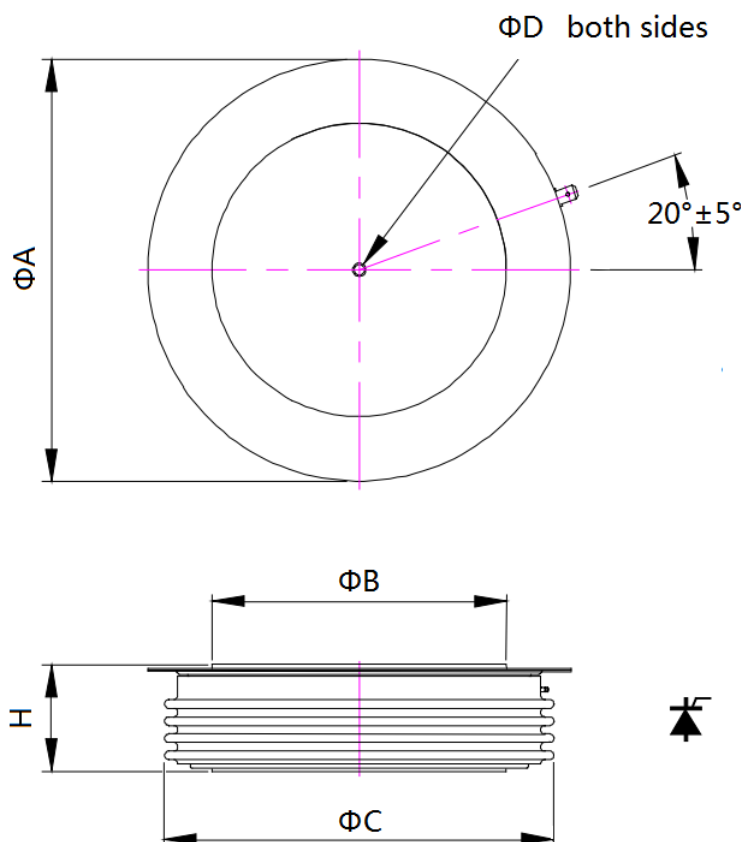
THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		$^\circ C$	
Storage temperature	T_{stg}	-40	+140		$^\circ C$	
Thermal resistance - junction to case	$R_{\Theta(j-c)}$		5.7 11.4		K/kW	Double sided cooled Single sided cooled
Thermal resistance - case to sink	$R_{\Theta(c-s)}$		1 2		K/kW	Double sided cooled * Single sided cooled *
Thermal resistance - junction to heatsink	$R_{\Theta(j-s)}$		- -		K/kW	Double sided cooled * Single sided cooled *
Mounting force	P	81	108	-	kN	
Weight	W	-	-	2.9	Kg	

* Mounting surfaces smooth, flat and greased

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

CASE OUTLINE AND DIMENSIONS.



Sym	A	B	C	D	H
mm	150	100	108	3.5×3	35±1