

HIGH POWER THYRISTOR FOR PHASE CONTROL APPLICATIONS

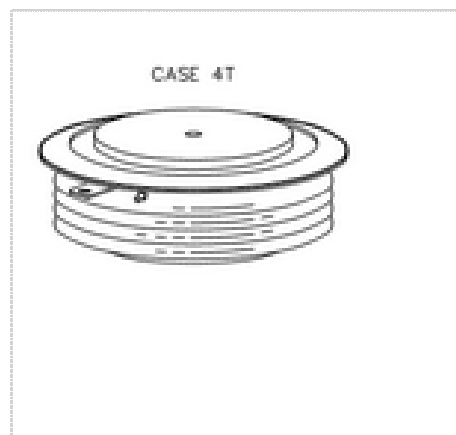
Device Type	VRRM (1)	VDRM (1)	VRSM (1)
PSTKPF1003S20	2000	2000	2100

VRRM = Repetitive peak reverse voltage

VDRM = Repetitive peak off state voltage

VRSM = Non repetitive peak reverse voltage (2)

Repetitive peak reverse leakage and off state leakage	IRRM / IDRM	10 mA 65 mA (3)
Critical rate of voltage rise	dV/dt (4)	500 V/msec



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

Notes:

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

- (1) All voltage ratings are specified for an applied 50Hz/60Hz sinusoidal waveform over the temperature range -40 to $+125\text{ }^{\circ}\text{C}$.
- (2) 10 msec. max. pulse width
- (3) Maximum value for $T_j = 125\text{ }^{\circ}\text{C}$.
- (4) Minimum value for linear and exponential waveshape to 80% rated VDRM. Gate open.
 $T_j = 125\text{ }^{\circ}\text{C}$.
- (5) Non-repetitive value.

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	IT(AV)		1300		A	Tc=93oC
RMS value of on-state current	ITRMS		2000		A	Nominal value
Peak one cPSTC1e surge (non repetitive) current	ITSM		20000 18000		A A	8.3 msec (60Hz), sinusoidal wave-shape, 180o conduction, Tj = 125 oC 10.0 msec (50Hz), sinusoidal wave-shape, 180o conduction, Tj = 125 oC
I square t	I ² t		1.7x10 ⁶		A ² s	8.3 msec and 10.0 msec
Latching current	IL		800		mA	VD = 24 V; RL= 12 ohms
Holding current	IH		400		mA	VD = 24 V; I = 2.5 A
Peak on-state voltage	VTM		1.65		V	ITM = 2900 A; Duty cPSTC1e ≤ 0.01%
Critical rate of rise of on-state current (5)	di/dt		200		A/ms	Switching from VDRM ≤ 1000 V, non-repetitive

PSTKP1003S20 Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	PGM		200		W	tp = 40 us
Average gate power dissipation	PG(AV)		5		W	
Peak gate current	IGM		10		A	
Gate current required to trigger all units	IGT		300 150 125		mA mA mA	VD = 6 V;RL = 3 ohms;Tj = -40 oC VD = 6 V;RL = 3 ohms;Tj = +25 oC VD = 6 V;RL = 3 ohms;Tj = +125oC
Gate voltage required to trigger all units	VGT		5 3		V V	VD = 6 V;RL = 3 ohms;Tj = -40 oC VD = 6 V;RL = 3 ohms;Tj = 0-125oC
		0.30			V	VD = Rated VDRM; RL = 1000 ohms; Tj = + 125 oC
Peak negative voltage	VGRM		5		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	td		1.5	0.7	ms	ITM = 50 A; VD = Rated VDRM Gate pulse: VG = 20 V; RG = 20 ohms; tr = 0.1 ms; tp = 20 ms
Turn-off time (with VR = -50 V)	tq		250	150	ms	ITM = 1000 A; di/dt = 25 A/ms; VR ≤ -50 V; Re-applied dv/dt = 20 V/ms linear to 80% VDRM; VG = 0; Tj = 125 oC; Duty cPSTC1e ≤ 0.01%
Reverse recovery charge	Qrr		*		mC	ITM = 1000 A; di/dt = 25 A/ms; VR ≤ -50 V



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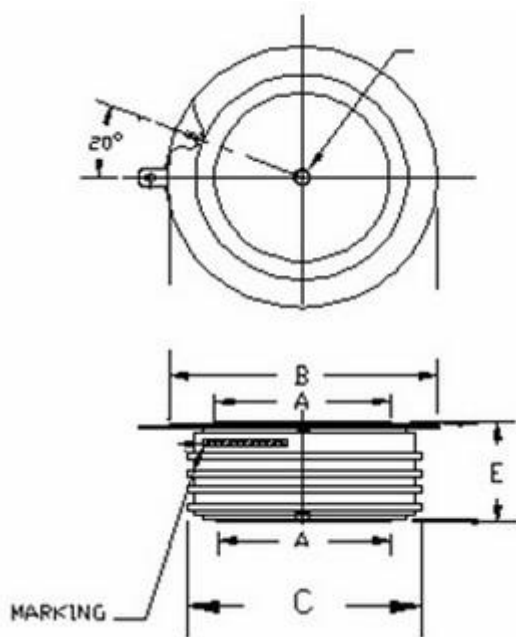
* For guaranteed max. value, contact factory.

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	Tj	-40	+125		°C	
Storage temperature	Tstg	-40	+150		°C	
Thermal resistance - junction to case	R _Q (j-c)		0.025 0.050		°C/W	Double sided cooled Single sided cooled
Thermal resistance - case to sink	R _Q (c-s)		0.010 0.020		°C/W	Double sided cooled * Single sided cooled *
Mounting force	P	20	24		kN	

* Mounting surfaces smooth, flat and greased

Note : for case outline and dimensions, see case outline drawing in page 3 of this Technical Data



A: 47 mm
B: 74 mm
C: 66 mm
E: 26 mm