ANTI-PARALLEL SCR module ASSEMBLY-KPX1000A-1600V

HIGH POWER THYRISTOR FOR PHASE CONTROL APPLICATIONS

Features:

- all diffused design
- high current capabilities
- high surge current capabilities
- high rates voltages
- high dv/dt
- low gate current
- dynamic gate
- low thermal impedance
- compact size and small weight

APPLICATION

- High Power Drives
- DC Motor Control
- High Voltage Power Supplies

ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking - Off State

V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
1600	1600	1700

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}	10 mA 100 mA (3)
Critical rate of voltage rise	dV/dt (4)	1000 V/µsec

Notes:
All ratings are specified for Tj=25 ºC unless otherwise stated.
(1) All voltage ratings are specified for an applied 50Hz/60zHz sinusoidal waveform over the temperature range -40 to +125 ºC.
(2) 10 msec. max. pulse width
(3) Maximum value for Tj = 125 ºC.
(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM}. Gate open. Tj = 125 ºC.
(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 ubber circuit,comprising a 0.2 µF capacitor and 20 ohmsresistance in parallel with the thristor under test.

Conducting - on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Max. average value of on-state current	$I_{T(AV)}$		1000		A	Sinewave,180º conduction,T_c=95ºC
R**Conducting - on state** MS value of on-state current	I_{TRMSM}		1570		A	Nominal value
Peak one cPSTCle surge (non repetitive) current	I_{TSM}		- 30		kA kA	8.3 msec (60Hz), sinusoidal wave-shape, 180º conduction, T_j = 125 ºC 10.0 msec (50Hz), sinusoidal wave- shape, 180º conduction, T_j = 125 ºC
I square t	I^2t		$4500x10^3$		A^2s	10 msec
Treshold voltage	$V_{T(T0)}$		0.928		V	
Slope resistance	r_T		0.189		mΩ	
Latching current	I_L		2000		mA	V_D = 12 V; R_L= 12 ohms
Holding current	I_H		500		mA	V_D = 12 V; I = 2.5 A
Peak on-state voltage	V_{TM}		1.75		V	I_{TM} =3000 A(MAX); T_j =1 25 ºC
Critical rate of rise of on-state current (5, 6)	di/dt		200		A/µs	Switching from V_{DRM} ≤ 1000 V, non-repetitive
Critical rate of rise of on-state current (6)	di/dt		-		A/µs	Switching from V_{DRM} ≤ 1000 V

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		30		W	
Average gate power dissipation	$P_{G(AV)}$		4		W	
Peak gate current	I_{GM}		-		A	
Gate current required to trigger all units	I_{GT}		300		mA	V_D = 10 V;I_T=3A;T_j = +25 ºC
Gate voltage required to trigger all units	V_{GT}		3		V	V_D = 10 V;I_T=3A;T_j = +25 ºC
Peak negative voltage	V_{RGM}		5		V	

Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_{gd}		-	-	µs	V_D=67% V_{DRM}, di/dt=10A/us, I_{FG}=2A, t_r=0.5us, T_j=25C
Turn-on time	t_{gt}		-	-		
Turn-off time (with V_R = -5 V)	t_q	-	150		µs	I_{TM}=1000A, di/dt=10A/us, V_r=50V, V_{dr}=80%V_{DRM}, dV_{dr}/dt=20V/us
Reverse recovery current	I_{rm}		-		A	I_{TM}=4000A, t_p=2000us, di/dt=60A/us

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		ºC	
Storage temperature	T_{stg}	-40	+150		ºC	
Thermal resistance - junction to case	$R_{\Theta (j-c)}$		0.018 -		K /W	Double sided cooled Single sided cooled
Thermal resistamce - case to sink	$R_{\Theta (c-s)}$		0.004 -		K /W	Double sided cooled * Single sided cooled *
Thermal resistance - junction to case	$R_{\Theta (j-s)}$		- -		ºC/W	Double sided cooled Single sided cooled
Mounting force	F	24	28	-	kN	
Weight	W				Kg	about

* Mounting surfaces smooth, flat and greased

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