



Ruttonsha International Rectifier Ltd.

PHASE CONTROL THYRISTORS

HOCKEY PUCK VERSION

Type : 1500 PK 200 To 300

Features

- Center amplifying gate
- Metal case with ceramic insulator
- International standard case (K-PUK)
- High profile hockey-puk

Typical Applications

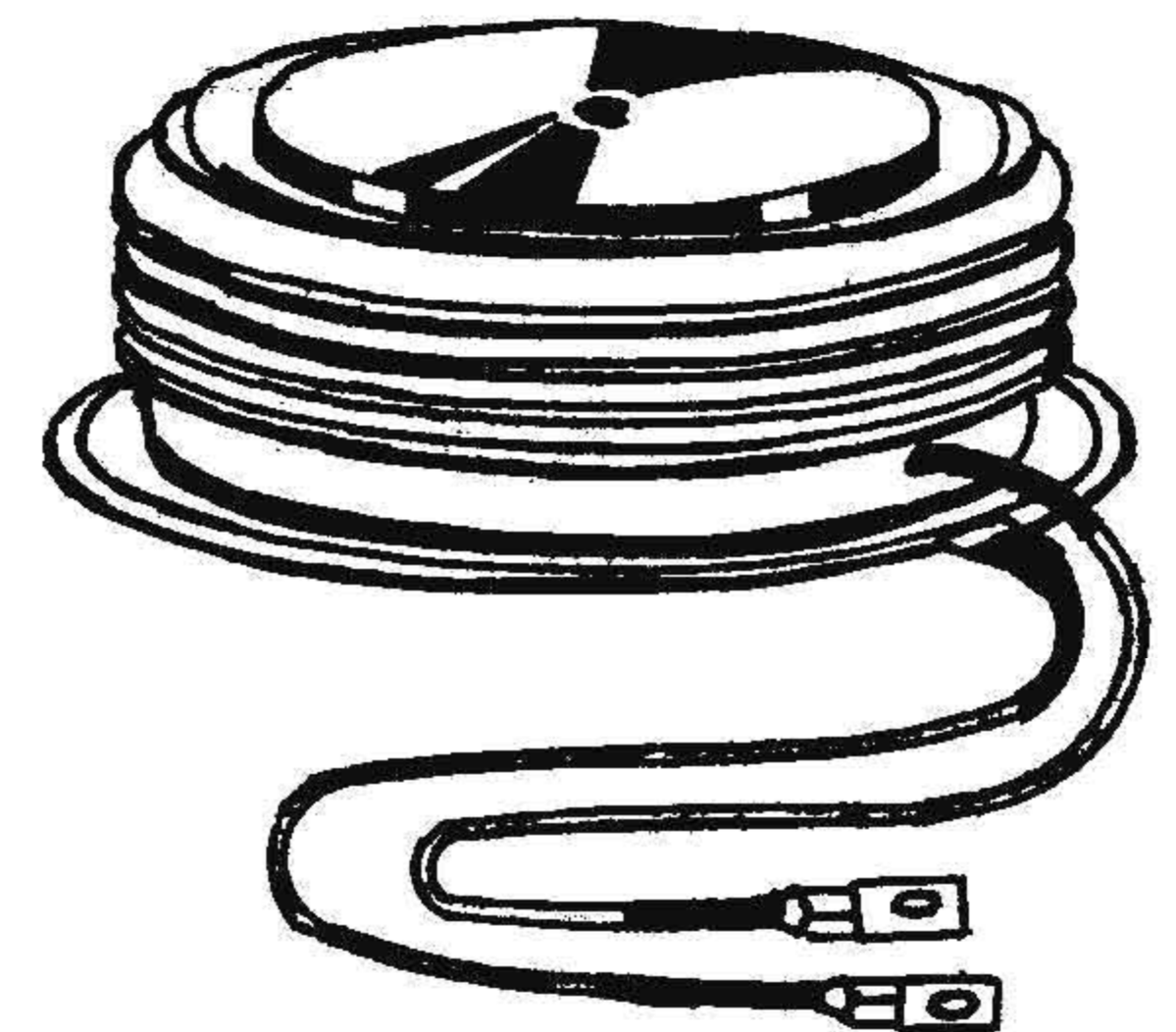
- D C motor controls
- Controlled D C power supplies
- A C controllers

Major Ratings and Characteristics :-

PARAMETERS	1500 PK	UNITS
$I_{T(AV)}$	1500	A
@ T_{hs}	55	°C
$I_{T(RMS)}$	2355	A
@ T_{hs}	55	°C
I_{TSM} @50Hz	23600	A
I^2t @50Hz	2790	KA ² s
V_{DRM} / V_{RRM}	2000 to 3000	V
T_q typical	250	μs
T_J	- 40 to 125	°C

1500A

1500PK (K - PUK)



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ELECTRICAL SPECIFICATIONS

1500PK Series

Voltage Ratings

Type number	Voltage Code	V_{DRM}/V_{RRM} , max repetitive peak and off-state voltage V	V_{RSM} , maximum non-repetitive peak voltage V	I_{DRM}/I_{RRM} max. @ $T_J = T_J$ max. mA
1500PK	200	2000	2100	100
	220	2200	2300	
	240	2400	2500	
	260	2600	2700	
	280	2800	2900	
	300	3000	3100	

On - state Conduction

Parameter	1500PK	Units	Conditions
$I_{T(AV)}$ Max. average on-state current @ Heatsink temperature	1500	A	180° conduction, half sine wave
	55	°C	double side cooled
$I_{T(RMS)}$ Max RMS on-state current	2355	A	DC@55°C heatsink temperature double side cooled
I_{TSM} Max. peak, one-cycle non-repetitive surge current	23.6	KA	t = 10 ms
			Sinusoidal half wave, Initial $T_J = T_J$ max.
I^2t Maximum I^2t for fusing	2790	KA ² s	t = 10 ms
$V_{T(TO)}$ Threshold voltage	1.02	V	$T_J = T_J$ max.
r_t On-state slope resistance	0.25	mΩ	$T_J = T_J$ max.
V_{TM} Max. on state voltage drop	1.30	V	$I_{PK} = 1000$ A, $T_J = 125^\circ$ C, $t_p = 10$ ms sine pulse
I_H Maximum holding current	600	mA	$T_J = 25^\circ$ C , anode supply 12 V resistive load
I_L Typical latching current	1000		

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Switching

Parameter	1500PK	Units	Conditions
di/dt Max. non-repetitive rate of rise of turned-on current	100	A/μs	Gate drive 20V, 20Ω, $t_r \leq 1\mu s$ $T_J = T_J \text{ max. anode voltage} \leq 80\% V_{DRM}$
t_d Typical delay time	1.9	μs	Gate current 1A, $di_g/dt = 1A/\mu s$ $V_d = 0.67\% V_{DRM}$, $T_J = 25^\circ C$
t_q Typical turn-off time	250	A/μs	

Blocking

Parameter	1500PK	Units	Conditions
dv/dt Maximum critical rate of rise of off-state voltage	500	V/μs	$T_J = T_J \text{ max. linear to } 60\% \text{ rated } V_{DRM}$
I_{RRM} Max. peak reverse and off-state leakage current	100	μs	$T_J = T_J \text{ max. rated } V_{DRM} / V_{RRM} \text{ applied}$

Triggering

Parameter	1500PK	Units	Conditions
P_{GM} Maximum peak gate power	16	W	$T_J = T_J \text{ max.}, t_p \leq 5 \text{ ms}$
$P_{G(AV)}$ Maximum average gate power	3	W	$T_J = T_J \text{ max.}, f = 50\text{Hz}, d\% = 50$
I_{GM} Max. peak positive gate current	3.0	A	$T_J = T_J \text{ max.}, t_p \leq 5 \text{ ms}$
$+V_{GM}$ Maximum peak positive gate voltage	20	V	$T_J = T_J \text{ max.}, t_p \leq 5 \text{ ms}$
$-V_{GM}$ Maximum peak negative gate voltage	5.0		
I_{GT} DC gate voltage required to trigger	250	mA	$T_J = 25^\circ C$ Max.required gate trigger/ current/voltage are the lowest value which will trigger all units 12 V anode-to-cathode applied
V_{GT} DC gate voltage required to trigger	3.0	V	$T_J = 25^\circ C$
I_{GD} DC gate current not to trigger	10	mA	$T_J = T_J \text{ max.}$ Max. gate current/voltage not to trigger is the max. value which will not trigger any unit with rated V_{DRM} anode-to-cathode applied
V_{GD} DC gate voltage not to trigger	0.25	V	

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Thermal and Mechanical Specifications

Parameter	1500PK	Units	Conditions
T _J Max. operating temperature range	- 40 to 125	°C	
T _{stg} Max. storage temperature range	- 40 to 150		
R _{thJ-hs} Max. thermal resistance, junction to case	0.024	°C/W	DC operation double side cooled
R _{thC-hs} Max. thermal resistance, case to heatsink	0.003	°C/W	DC operation double side cooled
F Mounting force, ± 10%	24500 (2500)	N (Kg.)	
wt Approximate weight	425	g	
Case style	A-24(K-PUK)		See Outline Table

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1500PK Series

Outline Table

