Ruttonsha International Rectifier Ltd.

PHASE CONTROL THYRISTORS

RUTTONSHA

HOCKEY PUK VERSION

Type : 1450 PK 120 To 240

1450A

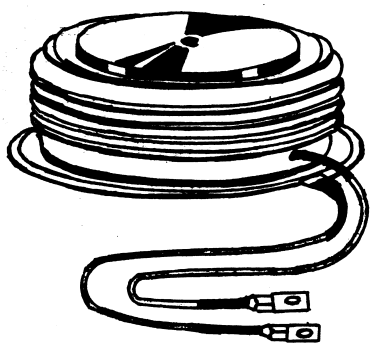
Features

- 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

1450 PK (K - PUK)



Major Ratings and Characteristics :-

PARAMETERS		1450 PK	UNITS
$I_{T(AV)}$		1450	A
	@T_{hs}	55	°C
$I_{T(RMS)}$		2276	A
	@T_{hs}	55	°C
I_{TSM}	@50Hz	19.4	KA
I^2t	@50Hz	1880	KA^2s
$I^2\sqrt{t}$		18800	$KA^2\sqrt{s}$
V_{DRM} / V_{RRM}		UP TO 2400	V
T_q	typical	250	µs
T_J		- 40 to 125	°C

ELECTRICAL SPECIFICATIONS 1450 PK 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
1450 PK	120	1200	1250	100
	160	1600	1650	
	200	2000	2050	
	220	2200	2250	
	240	2400	2450	

On - state Conduction

	Parameter	1450 PK	Units	Conditions		
$I_{T(AV)}$	Max. average on-state current	1450	A	180° conduction, half sine wave		
	@ Heatsink temperature	55	°C	double side cooled		
I_{TSM}	Max. peak, one-cycle non-repetitive surge current	19.4	KA	t = 10 ms	No voltage reapplied	Sinusoidal half wave, Initial $T_J=T_J$ max.
I^2t	Maximum I^2t for fusing	1880	KA^2s	t = 10 ms	No voltage reapplied	
$V_{T(TO)}$	Value of threshold voltage	1.0 max.	V	$T_{VJ} = T_{VJ}$ max.		
r_t	Value of on-state slope resistance	0.28	mΩ	$T_{VJ} = T_{VJ}$ max.		
I_{RM}	Pak reverse recovery current	50 max.	A	Tvj = Tvj max.iTM=ITAVM,-diT/dt=2A/μs,VR=0.5VRRM VRM=0.8VRRM		
V_{TM}	Max. on state voltage drop	1.30	V	I_{PK} = 1000A,T_J= 125°C		
I_H	Maximum holding current	500	mA	T_J = 25°C , V_D = 6 V, R_A = 5Ω		
I_L	Typical latching current	1500	mA	T_J = 25°C , V_D = 6 V, $R_{GK} \geq 10\Omega$ I_{GM} = 3A, di_G/dt = 6A/μs, Tq = 20μs		

Switching

1450 PK Series

	Parameter	1450 PK	Units	Conditions
di/dt	Max. non-repetitive rate of rise of turned-on current	100	A/µs	Gate drive 20V, 20Ω , $t_r \leq 1\mu s$ $T_J = T_J$ max. anode voltage ≤ 80% V_{DRM}
t_d	Typical delay time	1.5	µs	Gate current 1A, di_g/dt = 1A/µs V_d = 0.67% V_{DRM} , T_J = 25° C
t_q	Typical turn-off time	250	µs	Tvj = Tvj max.1000A , iTM = ITAVM vRM = 100 V , v DM = 0.67 V_{DRM} dvD/dt = 20 V/µs, -diT/dt = 10A/µs

Blocking

	Parameter	1450 PK	Units	Conditions
dv/dt	Maximum critical rate of rise of off-state voltage	500	V/µs	$T_J = T_J$ max. V_D = 0.67 V_{DRM}
I_{RRM} I_{DRM}	Max. peak reverse and off-state leakage current	100	mA	$T_J = T_J$ max. rated V_{DRM} /V_{RRM} applied

Triggering

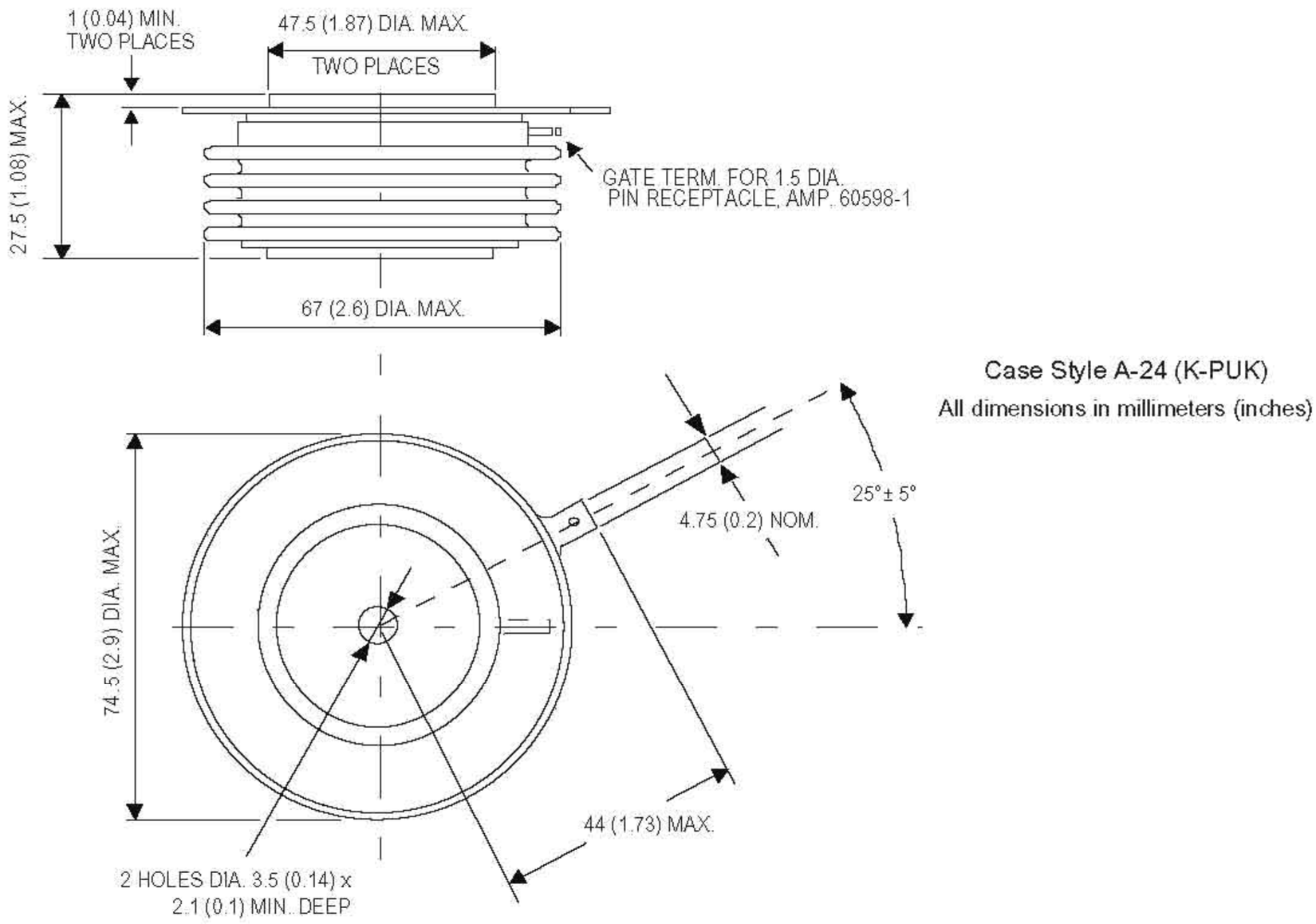
	Parameter	1450 PK	Units	Conditions
I_{GT}	DC gate current required to trigger	250 Max.	mA	T_J = 25°C V_D =10V
V_{GT}	DC gate voltage required to trigger	3.0 Max.	V	T_J = 25°C V_D =10V
I_{GD}	Gate non-trigger current	20 Max.	mA	T_{VJ}= T_{VJ} max. V_D = 6 V_{DRM}
		10 Max.	mA	T_{VJ}= T_{VJ} max. V_D = 0.5 V_{DRM}
V_{GD}	Gate non-trigger voltage	0.4 Max.	V	T_{VJ}= T_{VJ} max. V_D = 0.5 V_{DRM}

1450 PK Series

Thermal and Mechanical Specifications

	Parameter	1450 PK	Units	Conditions
T_J	Max.operating temperature range	- 40 to 125	°C	
T_{stg}	Max.storage temperature range	- 40 to 125		
$R_{thJ\text{-}hs}$	Max. thermal resistance, junction to heatsink	0.024	K/W	DC operation double side cooled
$R_{thC\text{-}hs}$	Max. thermal resistance, case to heatsink	0.006 0.003	K/W	DC operation double side cooled
F	Mounting force, ± 10%	24500 (2500)	N (Kg.)	
wt	Approximate weight	550	g	
	Case style	A-24(K-PUK)		See Outline Table

Outline Table



Case Style A-24 (K-PUK)

All dimensions in millimeters (inches)

CREPAGE DESTANCE 28.88 (1.137) MIN.
STRIKE DISTANCE 17.99 (0.708) MIN.