Ruttonsha International Rectifier Ltd.

PHASE CONTROL THYRISTORS

RUTTONSHA

HOCKEY PUCK VERSION

Type : 750 PB 250 To 450

750 A

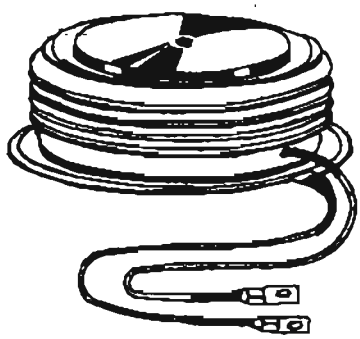
Features

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

Typical Applications

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

750 PB (B-PUK)



Major Ratings and Characteristics :-

PARAMETERS		750PB	UNITS
$I_{T(AV)}$		750	A
	@T_{hs}	55	°C
$I_{T(RMS)}$		1177	A
	@T_{hs}	25	°C
I_{TSM}	@50Hz	5100	A
I^2t	@50Hz	130	KA^2s
V_{DRM}	/ V_{RRM}	2500 to 4500	V
T_q	typical	400	µs
T_J		- 40 to 125	°C

ELECTRICAL SPECIFICATIONS 750 PB 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
750 PB	250	2500	2600	85
	300	3000	3100	
	350	3500	3600	
	400	4000	4100	
	450	4500	4600	

On - state Conduction

	Parameter	750 PB	Units	Conditions		
$I_{T(AV)}$	Max. average on-state current	750	A	180° conduction, half sine wave		
	@ Heatsink temperature	55	°C	double side (single side) cooled		
$I_{T(RMS)}$	Max RMS on-state current	1177	A	DC @ 25°C heatsink temperature double side cooled		
I_{TSM}	Max. peak, one-cycle non-repetitive surge current	5100	A	t = 10 ms	No voltage reapplied	Sinusoidal half wave,
I^2t	Maximum I^2t for fusing	130	KA^2s	t = 10 ms	No voltage reapplied	
$V_{T(TO)}$	High level value of threshold voltage	1.04	V	(I> π x $I_{T(AV)}$), $T_J=T_J$ max		
r_t	High level value of on-state slope resistance	0.70	mΩ	(I> π x $I_{T(AV)}$), $T_J=T_J$ max.		
V_{TM}	Max. on state voltage	2.2	V	I_{PK} = 500A, $T_J=T_J$ max, t_p = 10 ms sine pulse		
I_H	Maximum holding current	600	mA	T_J = 25°C , anode supply 12 V resistive load		
I_L	Typical latching current	1000	mA	T_J = 25°C , anode supply 12 V resistive load		

750 PB Series

Switching

	Parameter	750 PB	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_q	Typical turn-off time	400	µs	I_{TM} = 500A, $T_J=T_J$ max. di/dt = 5A/µs , V_R = -100V dv/dt = 20V/µs , Gate OV 100 Ω, t_p = 500µs

Blocking

	Parameter	750 PB	Units	Conditions
dv/dt	Maximum critical rate of rise of off-state voltage	500	V/µs	$T_J = T_J$ max. linear to 80% rated V_{DRM}
I_{RRM} I_{DRM}	Max. peak reverse and off-state leakage current	85	mA	$T_J = T_J$ max. rated V_{DRM} /V_{RRM} applied

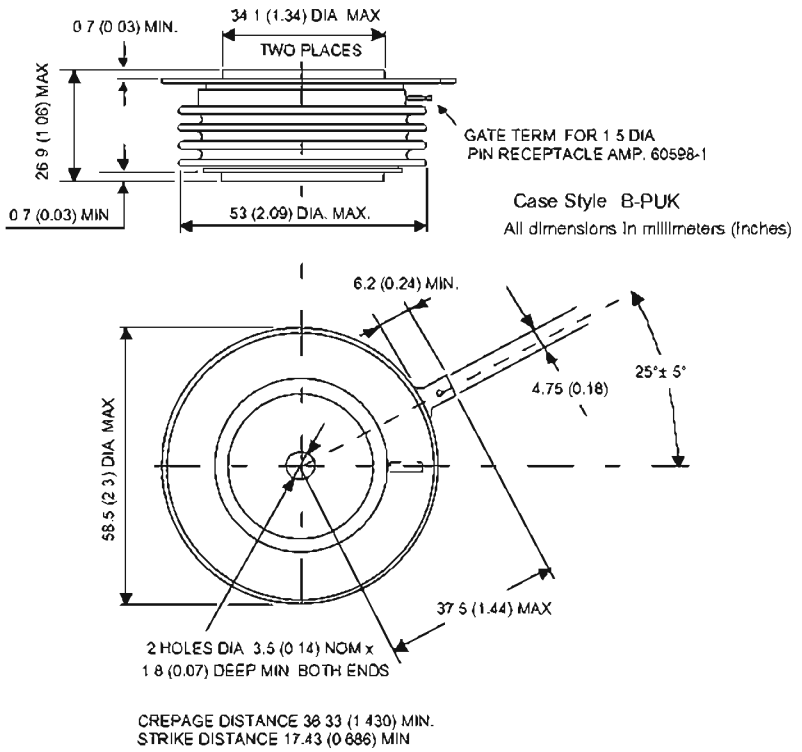
Triggering

	Parameter	750 PB	Units	Conditions
P_{GM}	Maximum peak gate power	10.0	W	$T_J = T_J$ max., $t_p \leq 5$ ms
$P_{G(AV)}$	Maximum average gate power	2.0		$T_J = T_J$ max., f = 50Hz, d% = 50
I_{GM}	Max. peak positive gate current	3.0	A	$T_J = T_J$ max., $t_p \leq 5$ ms
$+V_{GM}$	Maximum peak positive gate voltage	20	V	$T_J = T_J$ max., $t_p \leq 5$ ms
$-V_{GM}$	Maximum peak negative gate voltage	5.0		
I_{GT}	DC gate voltage required to trigger	200 MAX.	mA	T_J = 25°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°C
I_{GD}	DC gate current not to trigger	10	mA	$T_J = T_J$ 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	

Thermal and Mechanical Specification

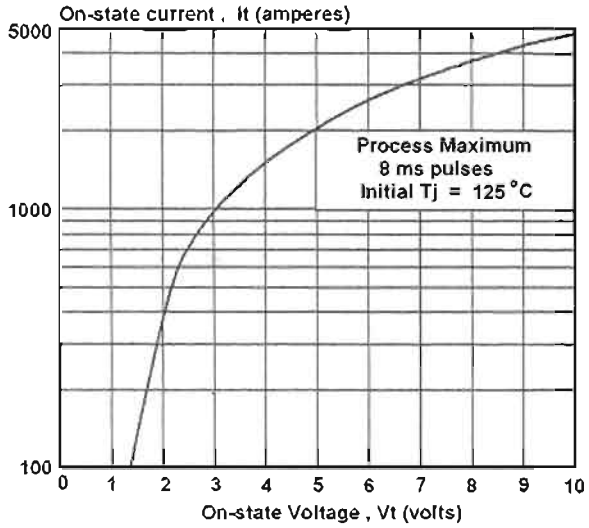
	Parameter	750 PB	Units	Conditions
T_J	Max.operating temperature range	- 40 to 125	°C	
T_{stg}	Max.storage temperature range	- 40 to 150		
R_{thJ-hs}	Max. thermal resistance, junction to heatsink	0.08 0.04	K/W	DC operation single side cooled DC operation double side cooled
F	Mounting force, ± 10%	14700	N	
wt	Approximate weight	255	g	
	Case style	B-PUK		See Outline Table

Outline Table

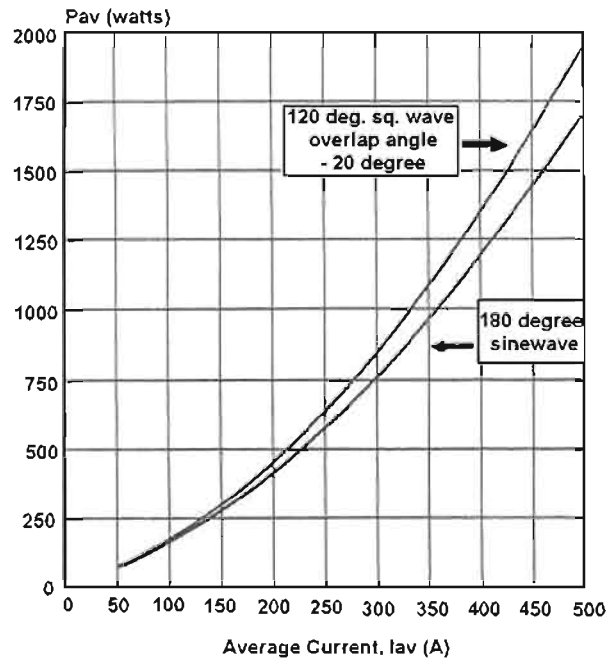


750 PB Series

ON-STATE CHARACTERISTIC



FULL CYCLE AVERAGE POWER LOSS versus AVERAGE CURRENT 50/60 Hz



Last update : Oct. 2007