



Ruttonsha International Rectifier Ltd.

SILICON CONTROLLED RECTIFIERS

High Power Thyristor Hockey Puk Version

Types : 2500 PM ...
2500 PL ...

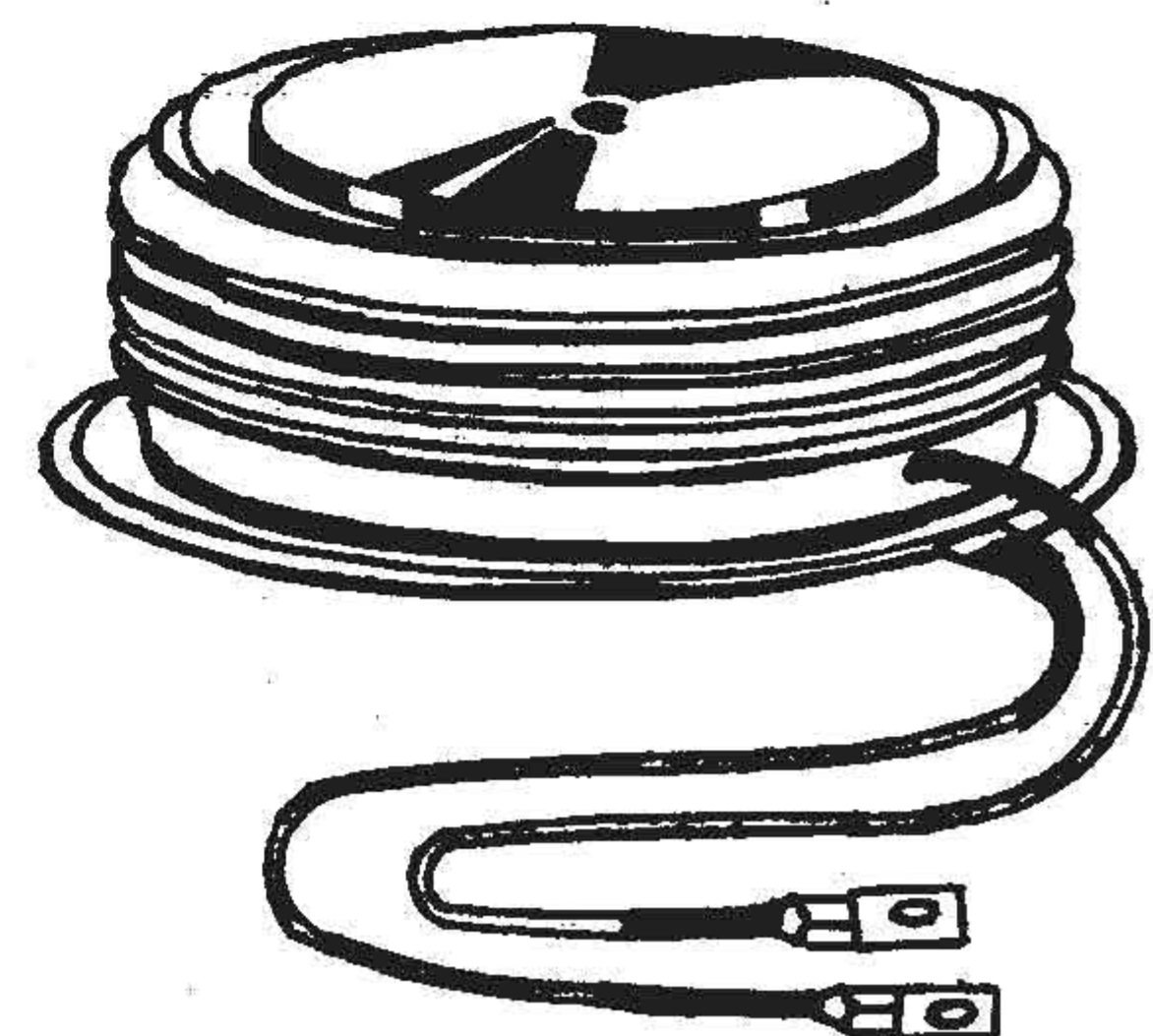
FEATURES

- ❖ Center amplifying gate.
- ❖ Metal case with ceramic insulator
- ❖ High profile hockey - puk.

TYPICAL APPLICATIONS

- ❖ DC motor control (e.g. for machine tools).
- ❖ Controlled rectifiers (e.g. for battery charging, Uninterrupted Power Supply).
- ❖ AC controllers (e.g. for temperature control, lights control).

2500 PM / PL



Major Ratings and Characteristics

Parameter	2500PM / PL	Units
$I_{T(AV)}$	2500	A
@ T_{hs}	55	°C
$I_{T(RMS)}$	3925	A
@ T_{hs}	55	°C
I_{TSM} @ 50 Hz	37	kA
I^2t @ 50 Hz	6845	KA ² s
V_{DRM}/V_{RRM}	1200 to 1800	V
t_q typical	400	μs
T_J	125	°C

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ELECTRICAL SPECIFICATIONS

2500 PM / PL Series

Voltage Ratings

Type number	Voltage Code	$V_{\text{DRM}}/V_{\text{RRM}}$, max repetitive peak and off-state voltage V	V_{RSM} ,maximum non-repetitive peak voltage V	$I_{\text{DRM}}/I_{\text{RRM}}$ max. @ $T_J = T_J$ max. mA
2500PM / PL	120	1200/1200	1300	100
	140	1400/1400	1500	
	160	1600/1600	1700	
	180	1800/1800	1900	

On - state Conduction

Parameter		2500PM / PL	Units	Conditions	
I _{T(AV)}	Max. average on-state current	2500	A	180° conduction, half sine wave	
	@ Heatsink temperature	55	°C	double side cooled	
I _{T(RMS)}	Max RMS on-state current	3925	A	DC @55°C heatsink temperature double side cooled	
I _{TSM}	Max. peak, one-cycle non-repetitive surge current	37	KA	t = 10 ms	Sinusoidal half wave, Initial T _J =T _J max.
I ² t	Maximum I ² t for fusing	6845	KA ² s	t = 10 ms	
V _{T(TO)}	Threshold voltage	0.92	V	T _J =T _J max	
r _t	on-state slope resistance	0.16	mΩ	T _J =T _J max.	
V _{TM}	Max. on state voltage	1.20	V	I _{PK} = 2000A,T _J =T _J max, t _P = 10 ms sine pulse	
I _H	Maximum holding current	400	mA	T _J = 25°C , anode supply 12 V resistive load	
I _L	Latching Current	1000	mA		

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Switching

Parameter	2500PM / PL	Units	Conditions
di/dt Max. non-repetitive rate of rise of turned-on current	150	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_q Typical turn-off time	400	μs	$I_{TM} = 1000A$, $T_J = T_J \text{ max.}$ di/dt = 40A/μs, $V_R = 75V$ dv/dt = 50V/μs, 0.5 V_{DRM} Reapplied, $t_p = 500\mu s$

Blocking

Parameter	2500PM / PL	Units	Conditions
dv/dt Maximum critical rate of rise of off-state voltage	1000	V/μs	$T_J = T_J \text{ max. linear to } 80\% \text{ rated } V_{DRM}$
I_{RRM} I_{DRM} Max. peak reverse and off-state leakage current	100	mA	$T_J = T_J \text{ max. rated } V_{DRM} / V_{RRM} \text{ applied}$

Triggering

Parameter	2500PM / PL		Units	Conditions
P_{GM} Maximum peak gate power	30		W	$T_J = T_J \text{ max.}, t_p \leq 5 \text{ ms}$
$P_{G(AV)}$ Maximum average gate power	5			$T_J = T_J \text{ max.}, f = 50\text{Hz}, d\% = 50$
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 current required to trigger	TYP.	MAX.	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
	200	200		
V_{GT} DC gate voltage required to trigger	3.0	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	

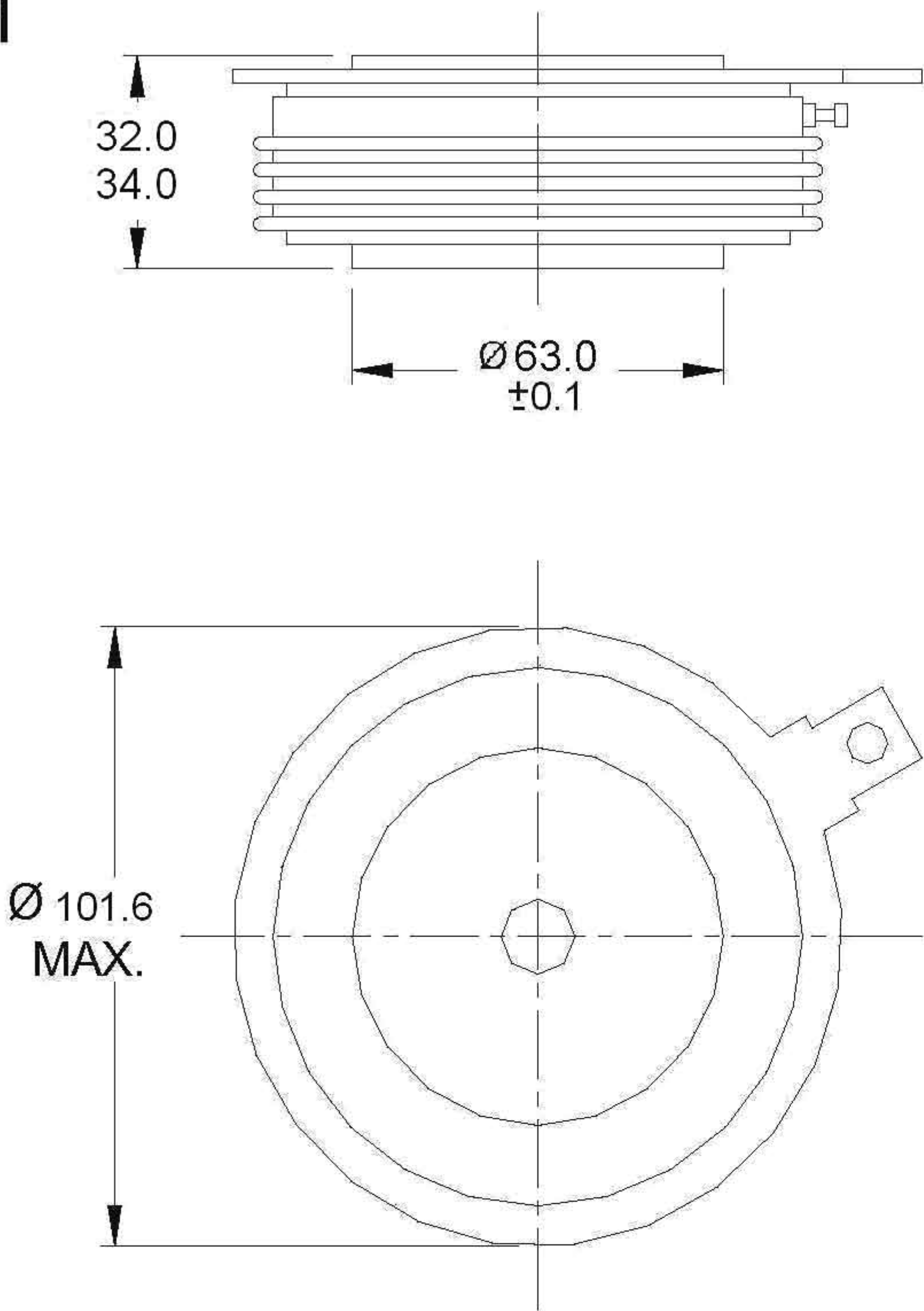
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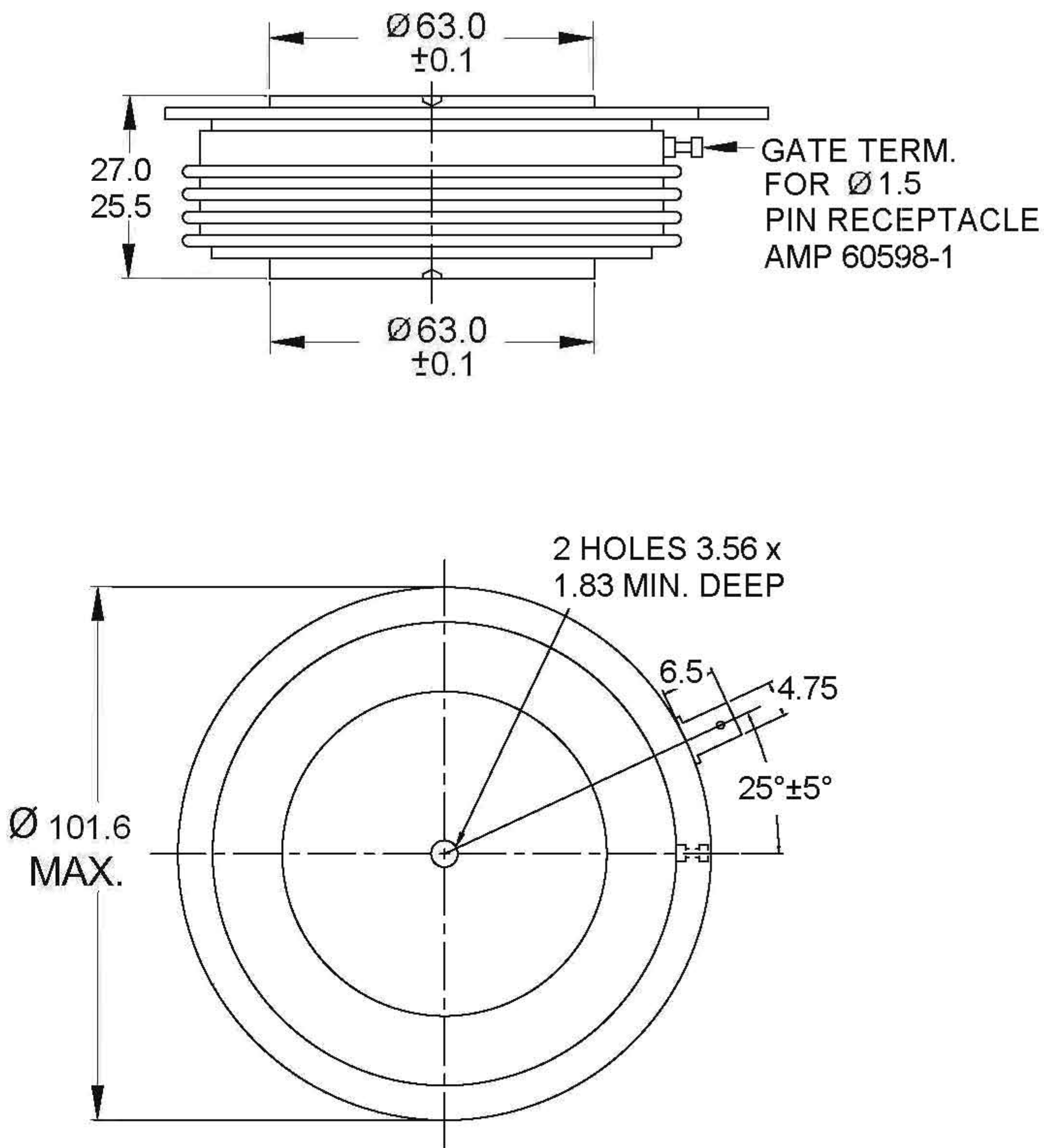
Thermal and Mechanical Specifications

Parameter		2500PM / PL	Units	Conditions
T _J	Max.operating temperature range	125	°C	
T _{stg}	Max.storage temperature range	150		
R _{thJ-hs}	Max. thermal resistance, junction to heatsink	0.017	K/W	DC operation double side cooled
F	Mounting force, ± 10% ,	30	KN	
wt	Approximate weight	1000	g	
Case style		M / L - PUK		See Outline Table

PM



PL



All dimension in millimeters

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Figure - 1 ON-STATE CHARACTERISTICS

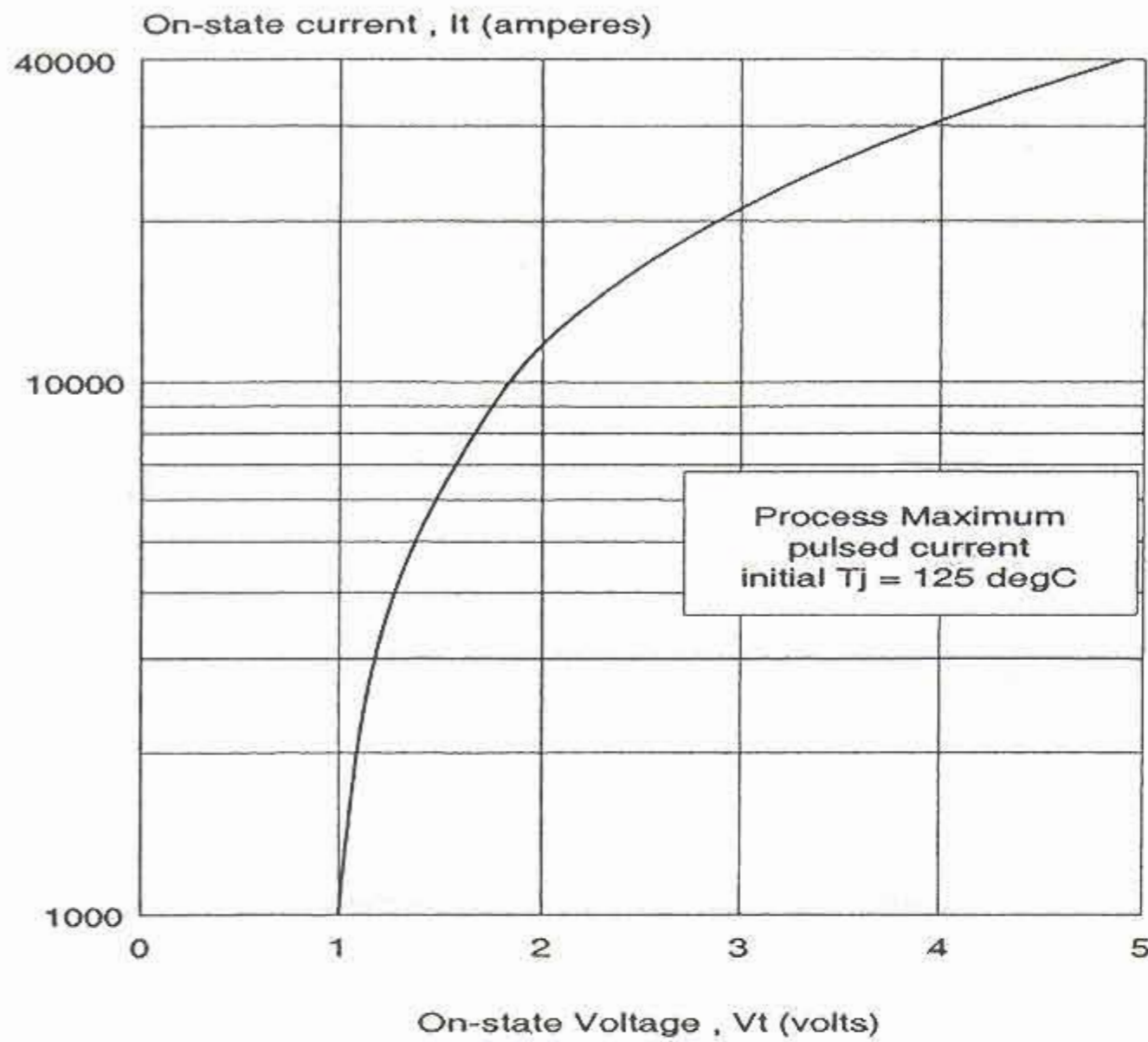


Figure 2 - THERMAL IMPEDANCE vs. ON-TIME

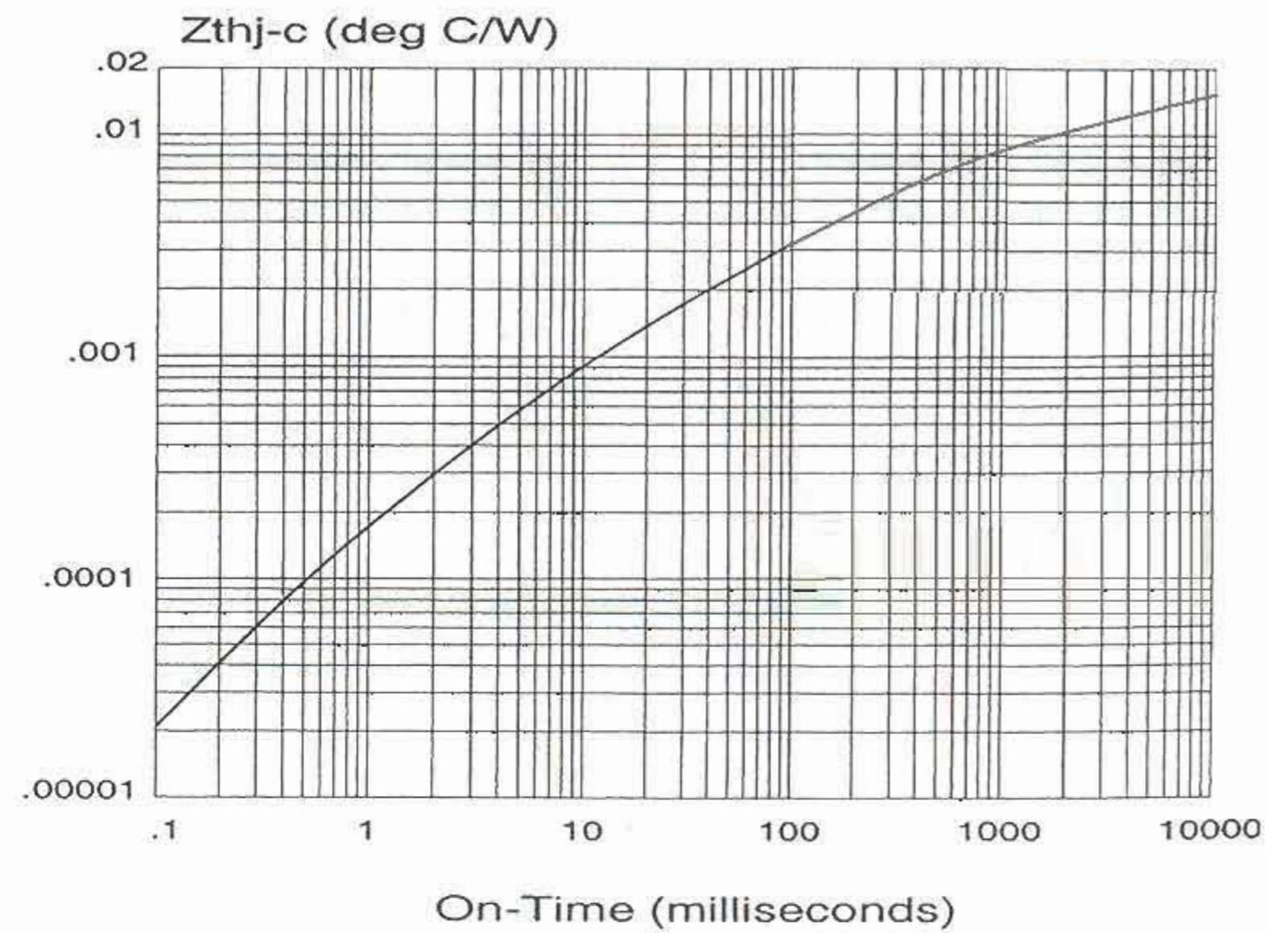


Figure 3 - NON-REPETITIVE SUB-CYCLE SURGE RATINGS

