

High Power Thyristor Hockey Puk Version U-PUK Series 4400PU

Types : 4400PU 200 TO 4400PU 320

FEATURES

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

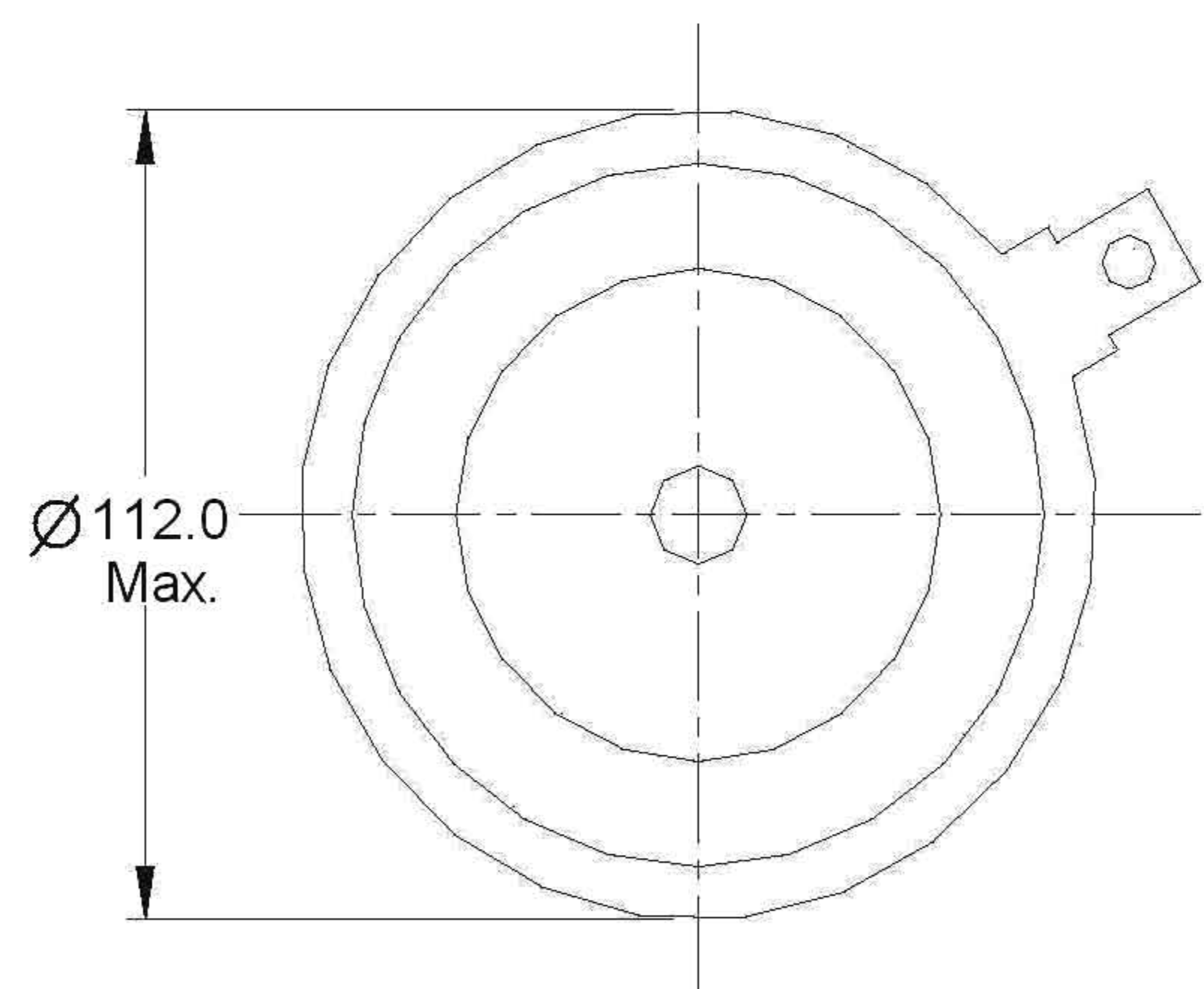
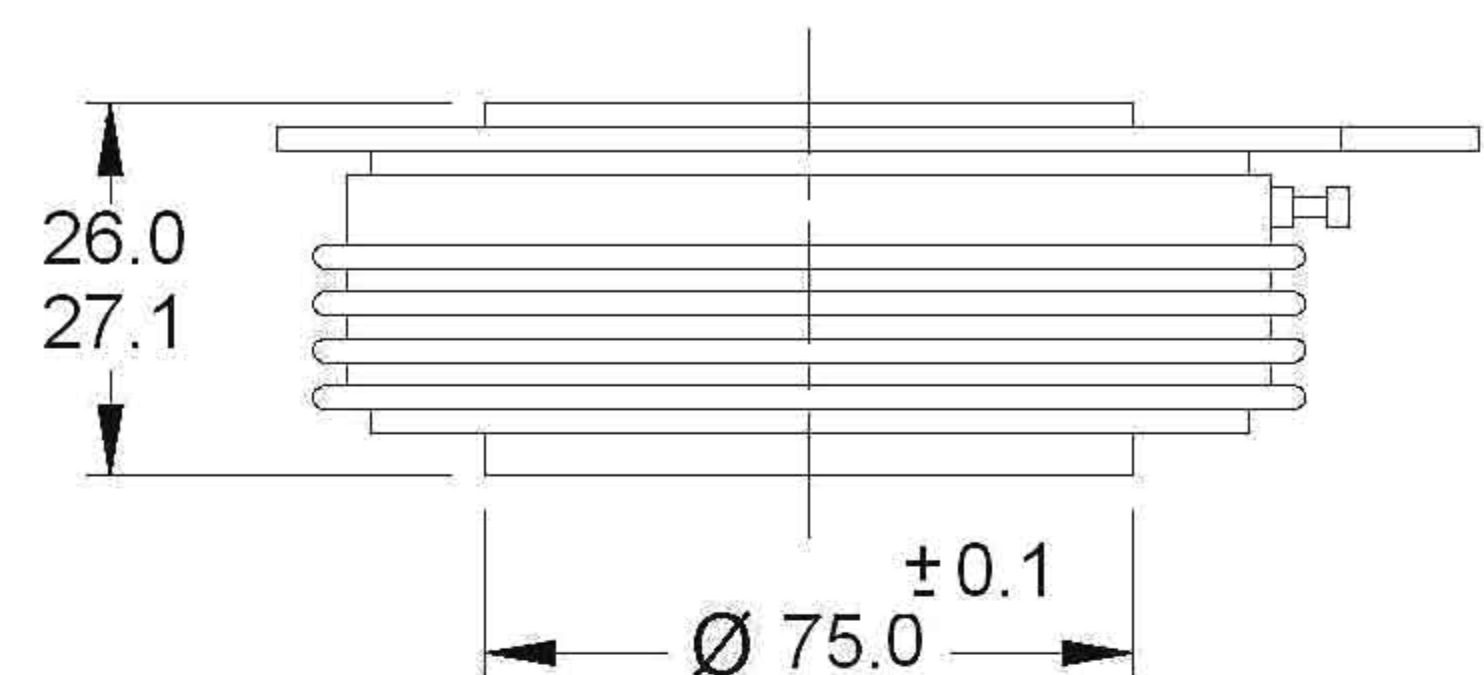
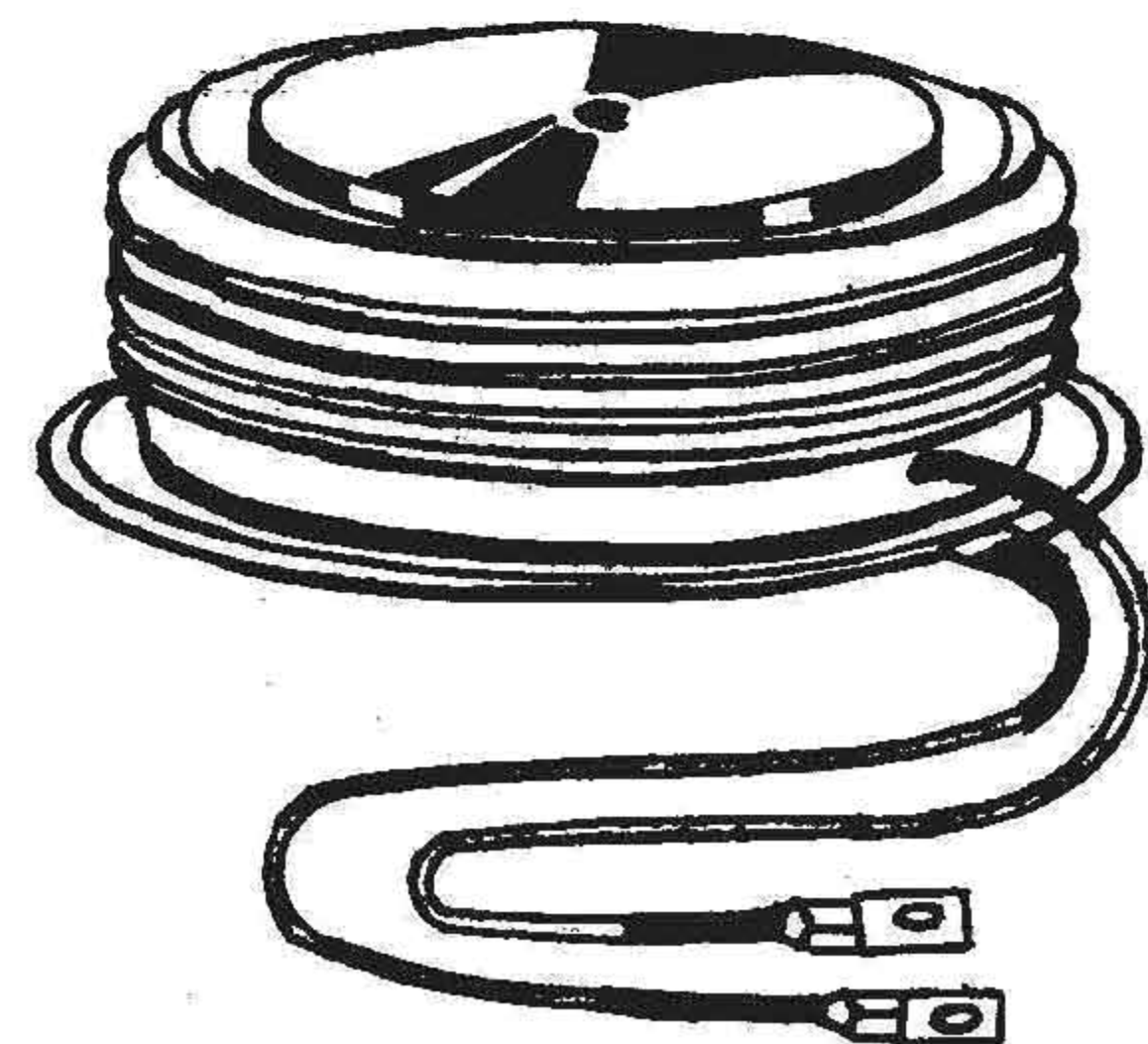
TYPICAL APPLICATIONS

- ❖ 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).

Major Ratings and Characteristics

Parameter	4400PU	Units
$I_{T(AV)}$	4400	A
@ T_{hs}	55	°C
$I_{T(RMS)}$	6908	A
@ T_{hs}	55	°C
I_{TSM}	64	KA
@ 50 Hz		
I^2t	18000	KA ² s
@ 50 Hz		
V_{DRM}/V_{RRM}	2000-3200	V
t_q	400	μs
T_J	-40 to +125	°C

(U - PUK)



All dimension in millimeters

SILICON CONTROLLED RECTIFIERS

ELECTRICAL SPECIFICATIONS

Types : 4400PU 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
4400PU	200	2000	2100	250
	220	2200	2300	
	240	2400	2500	
	260	2600	2700	
	280	2800	2900	
	320	3200	3300	

On - state Conduction

Parameter	4400PU	Units	Conditions
$I_{T(AV)}$ Max. average on-state current @ Heatsink temperature	4400	A	180° conduction, half sine wave
	55	°C	double side cooled
$I_{T(RMS)}$ Max RMS on-state current	6908	A	DC @ 55°C heatsink temperature double side cooled
I_{TSM} Max. peak, one-cycle non-repetitive surge current	64	KA	$t = 10$ ms Sinusoidal half wave, Initial $T_J = T_J$ max.
I^2t Maximum I^2t for fusing	18000	KA ² s	$t = 10$ ms
$V_{T(TO)}$ Threshold voltage	0.90	V	
r_t on-state slope resistance	0.100	mΩ	
V_{TM} Max. on state voltage	1.40	V	$I_{PK} = 4000$ A, $T_J = T_J$ max, $t_P = 10$ ms sine pulse
I_H Maximum holding current	1000	mA	$T_J = 25^\circ\text{C}$
I_L Latching current	1500	mA	$T_J = 25^\circ\text{C}$

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Types : 4400PU Series

Switching

Parameter	4400PU	Units	Conditions
di/dt Max. non-repetitive rate of rise of turned-on current	100	A/μs	IFG = 2A, $t_r = 0.5\mu s$, $I_{TRM} = 4500A$ $T_J = T_J$ max. anode voltage $\leq 67\% V_{DRM}$
t_q Typical turn-off time	400	μs	$I_{TM} = 1000A$, $T_J = T_J$ max. di/dt = 10A/μs, $V_R = 50V$ dv/dt = 200V/μs, $V_D \leq 0.67 V_{DRM}$, $t_p = 2ms$

Blocking

Parameter	4400PU	Units	Conditions
dv/dt Maximum critical rate of rise of off-state voltage	500	V/μs	$T_J = T_J$ max. EXP to 0.67 V_{DRM}
I_{RRM} I_{DRM} Max. peak reverse and off-state leakage current	250	mA	$T_J = T_J$ max. rated V_{DRM} / V_{RRM} applied

Triggering

Parameter	4400PU	Units	Conditions
$P_{G(AV)}$ Maximum average gate power	5	W	$T_J = T_J$ max., f = 50Hz, d% = 50
I_{GM} Max. peak positive gate current	10	A	$T_J = T_J$ max., $t_p \leq 5 ms$
$+V_{GM}$ Maximum peak positive gate voltage	12	V	$T_J = T_J$ max., $t_p \leq 5 ms$
$-V_{GM}$ Maximum peak negative gate voltage	5		
I_{GT} DC gate current required to trigger	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
	-		
	300		
V_{GT} DC gate voltage required to trigger	-	V	$T_J = 25^\circ C$
	3.0		
	-		
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	

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Thermal and Mechanical Specifications

Parameter		4400PU	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	0.008	K/W	DC operation double side cooled
F	Mounting force, ± 10% ,	63-77	KN	
wt.	Approximate weight	1400	g	
Case style		U - PUK		See Outline Table

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Type:- 4400PU Series

Curves

Figure 1 - On-state characteristics of Limit device

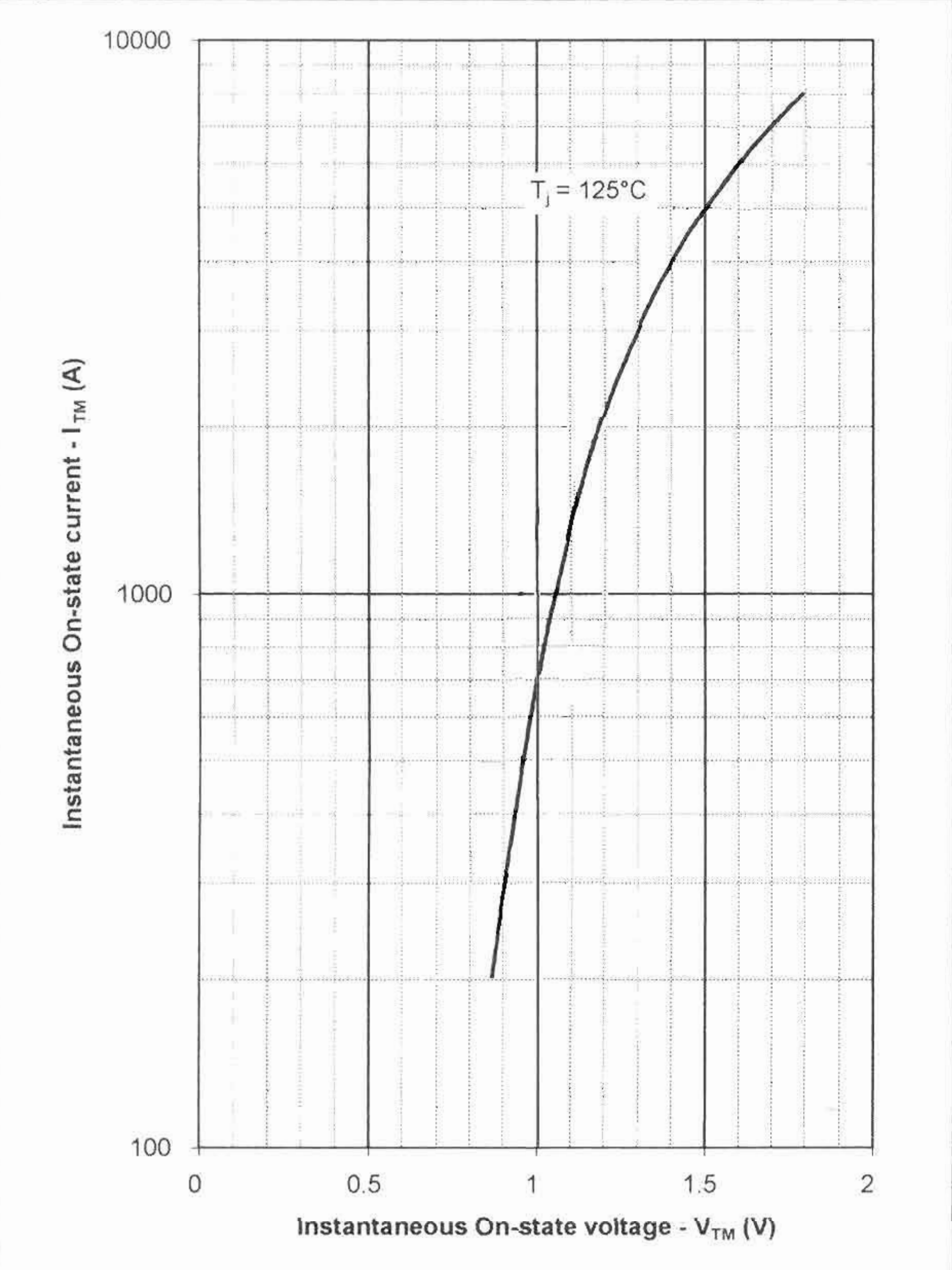


Figure 2 - Transient Thermal Impedance

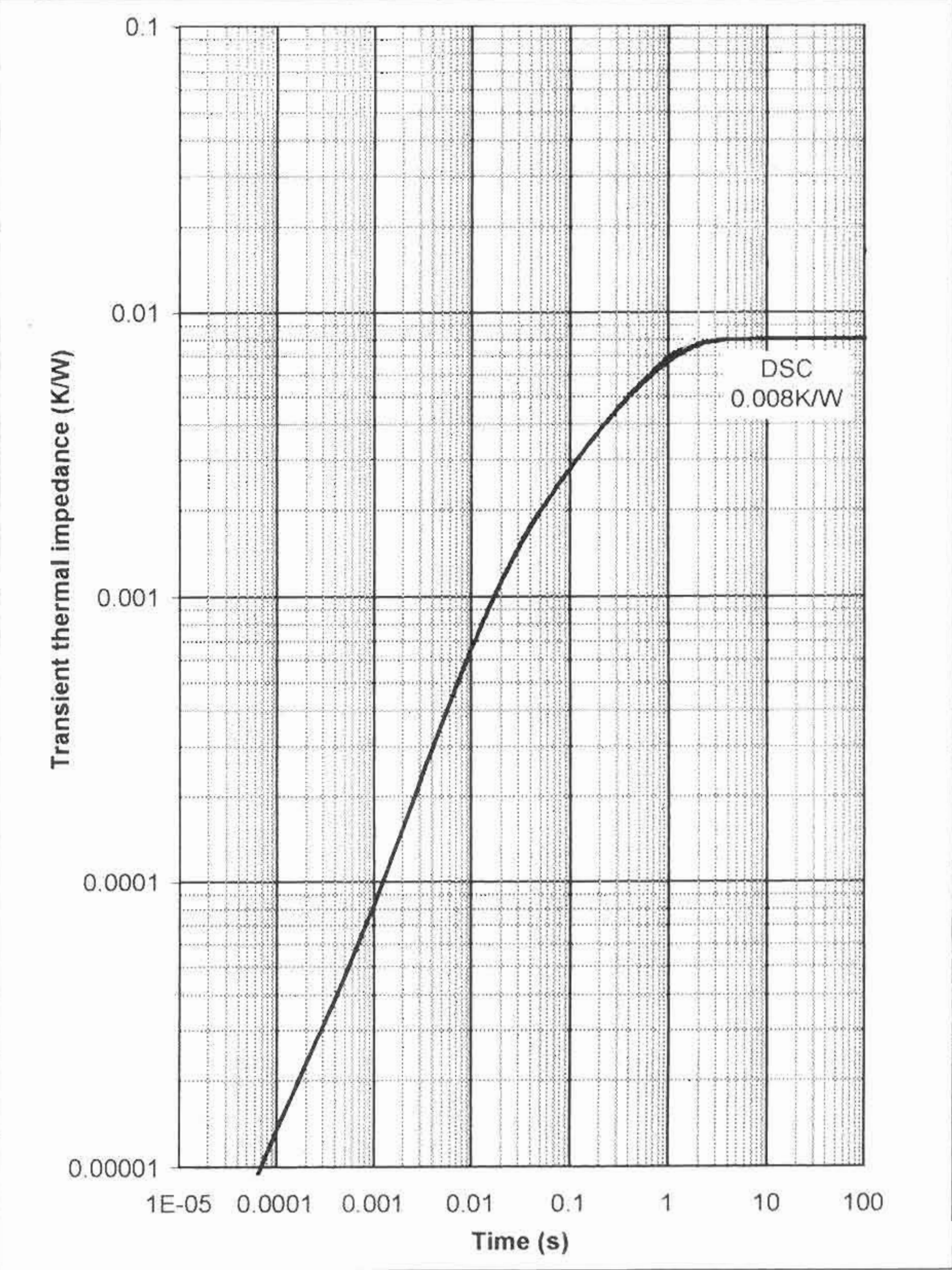
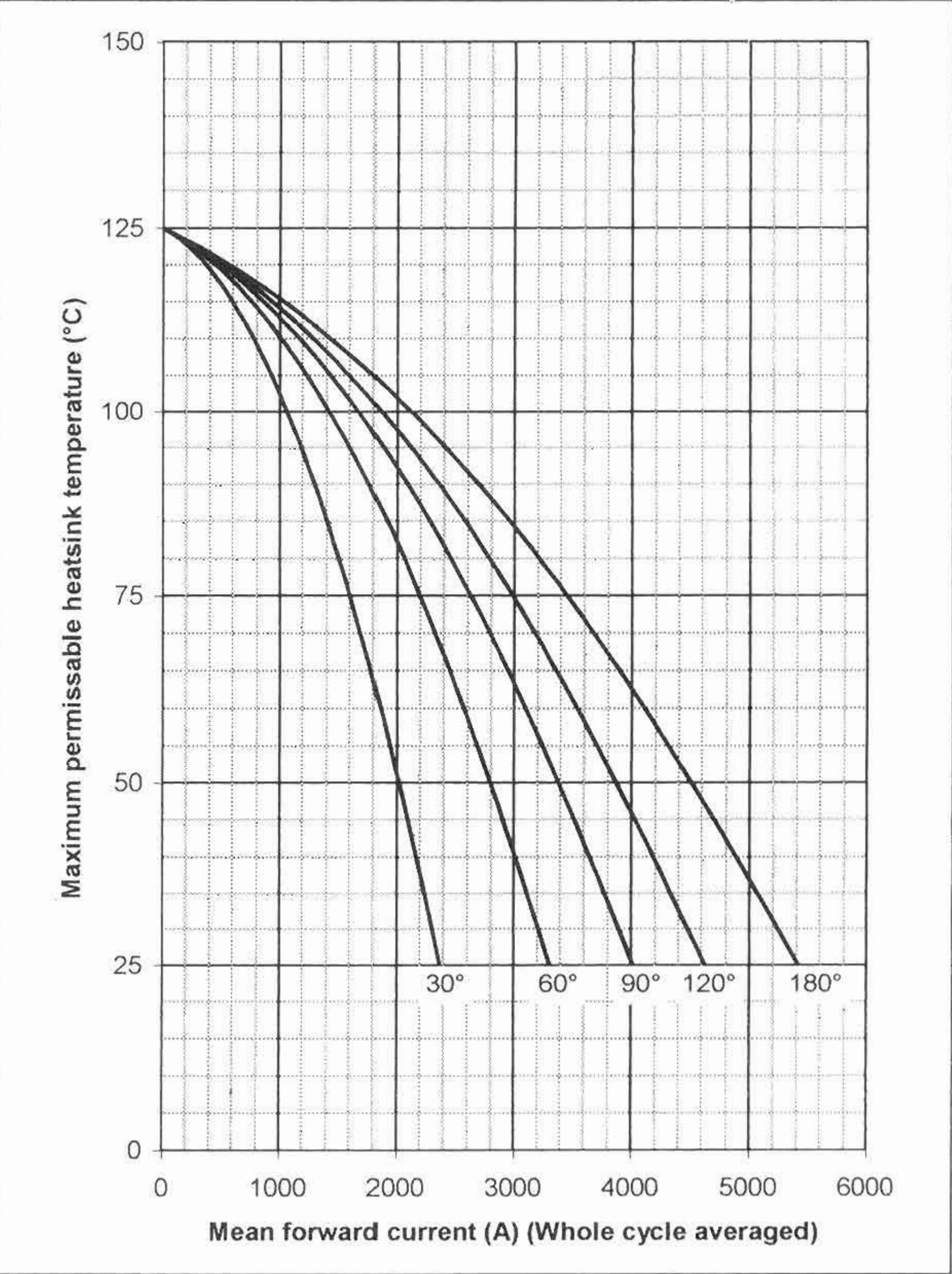


Figure 3 - On-state current vs. Heatsink temperature - Double Side Cooled (Sine wave)



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Figure 4 – Maximum surge and I^2t Ratings

