



Key Parameters

V_{RRM}	= 5600V
$I_{F(AV)}$	= 4510A
I_{FSM}	= 50000A
$V_{F(TO)}$	= 0.87V
r_F	= 0.116mΩ

Features

- Full blocking capability over wide temperature range
- Hermetically sealed ceramic package
- High case non-rupture current

Applications

- Traction Rectifiers
- Uncontrolled Rectifiers
- Induction Heating / Melting

Ordering Information

MS PERI	D	4510	CZ	X X
Fixed Code	Rectifier Diode	Current code	CZ - Capsule package with Free floating silicon Technology	Voltage Code Code X 100 = V_{RRM}
Order Code MS PERI D4510CZ56 : 5600V V_{RRM} , Capsule Diode				

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Symbol	Characteristic	Conditions	T _j [°C]	Value	Unit
BLOCKING					
V _{RRM}	Repetitive peak reverse voltage	10ms, 50Hz	160	5600	V
V _{RSM}	Non-repetitive peak reverse voltage	10ms, 5Hz	160	6000	V
I _{RRM}	Repetitive peak reverse current	V = V _{RRM}	160	200	mA
I _R	Continuous reverse current (DC)	V _R = 3000V	25	15	μA
CONDUCTING					
I _{F(AV)}	Mean forward current	180° sin, 50 Hz, T _c =85°C, double side cooled		4510	A
I _{FRMS}	RMS current	T _c =85°C, double side cooled		7080	A
I _{FSM1}	Surge forward current	Sine wave, 10 ms Without reverse voltage	160	50000	A
I ² t	I ² t		160	12500 x 10 ³	A ² s
V _F	Forward voltage	On-state current = 5000A	160	1.45	V
V _{F(TO)}	Threshold voltage		160	0.87	V
r _F	Forward slope resistance		160	0.116	mΩ
SWITCHING					
Q _{rr}	Reverse recovery charge	I _{FM} =2000A, -di _F /dt = 10A/μs, V _R = 100V	160	4100 - 4700	μC
THERMAL					
R _{th(j-c)}	Thermal impedance, sin 180°	Junction to case, double side cooled		0.007	°C/W
R _{th(c-h)}	Thermal impedance	Case to heatsink, double side cooled		0.0015	°C/W
T _j	Max. junction temperature			160	°C
T _{stg}	Storage temperature			-40 150	°C
MECHANICAL					
M	Clamping force			63 - 84	KN
W	Weight (Approx.)			1500	gm
D _S	Surface creepage distance			36	mm
D _a	Air strike distance			15	mm
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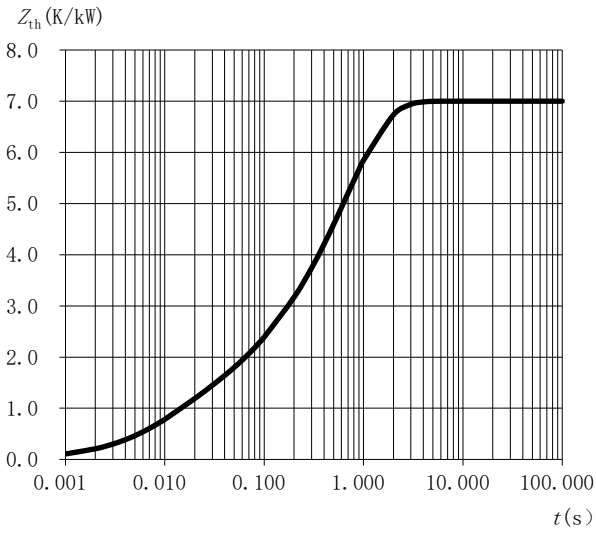


Fig.1 : Transient thermal impedance (junction-to-case) vs. time

$$Z_{th(j-c)}(t) = \sum_{i=1}^n R_i(1 - e^{-t/\tau_i})$$

<i>i</i>	1	2	3	4
$R_i(K/kW)$	4.9933	0.6144	0.8322	0.5600
$\tau_i(s)$	0.6825	0.1107	0.0096	0.0408

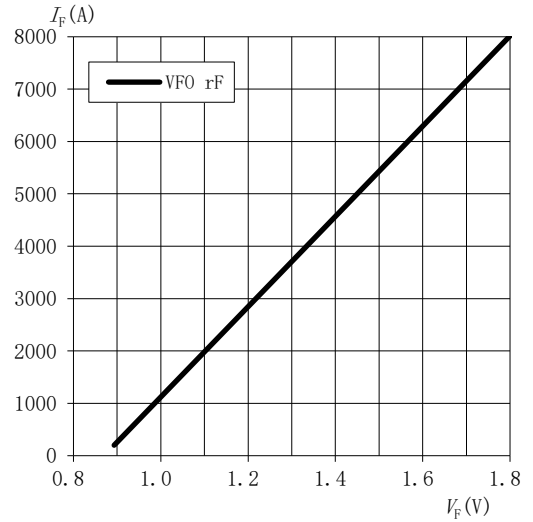


Fig.2 : On-state V-I characteristics

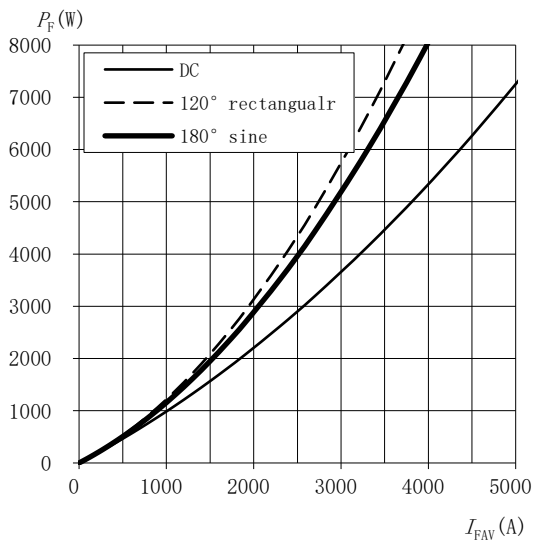


Fig.3 : On-state power loss (P_F) vs. average on-state Current (I_{FAV})

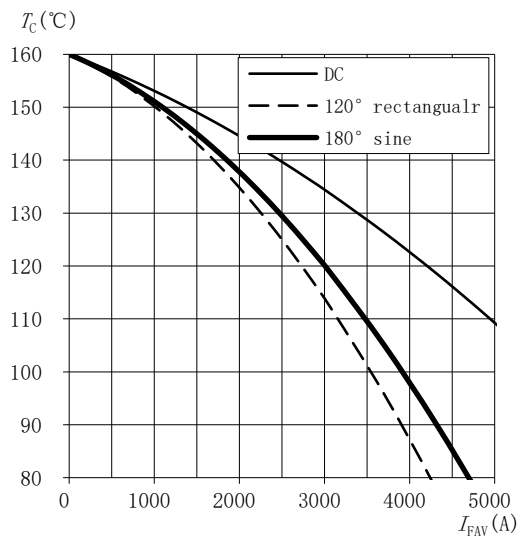


Fig.4 : Max. permissible case temperature(T_c) vs. average on-state current(I_{FAV})

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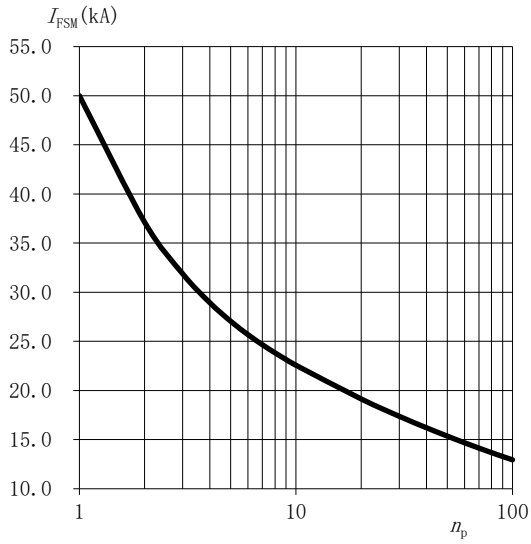


Fig.5: Surge on-state current (I_{FSM}) vs. number of pulses (n_p)

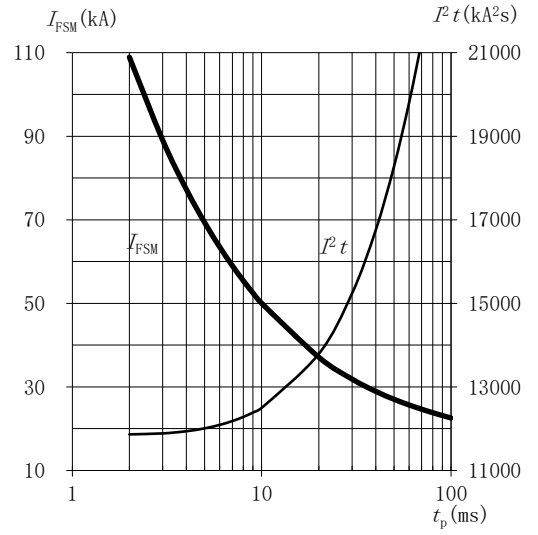


Fig.6: Surge on-state current (I_{FSM}) and surge current Integral ($I^2 t$) vs. pulse length (t_p)

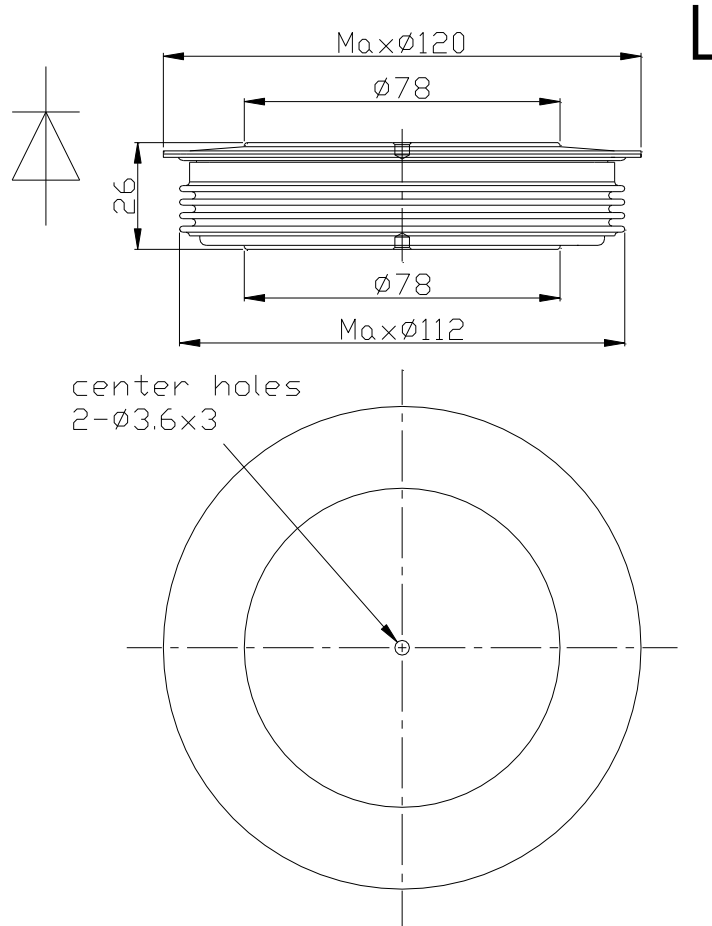
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