5SDD 70H2000

Old part no. DV 889-7000-20

Rectifier Diode

Properties

- Industry standard housing
- Suitable for parallel operation
- High operating temperature
- Low forward voltage drop

Key Parameters

V_{RRM}	=	2 000	V
I_{FAVm}	=	7 030	A
I_{FSM}	=	65 000	A
V_{TO}	=	0.861	V
r_T	=	0.046	mΩ

Types

	V_{RRM}
5SDD 70H2000	**2 000 V**
Conditions:	*T_j = 0 ÷ 190 °C, half sine waveform, f = 50 Hz*

Mechanical Data

F_m	**Mounting force**	**50 ± 5 kN**
m	**Weight**	**0.9 kg**
D_S	**Surface creepage distance**	**40 mm**
D_a	**Air strike distance**	**20 mm**

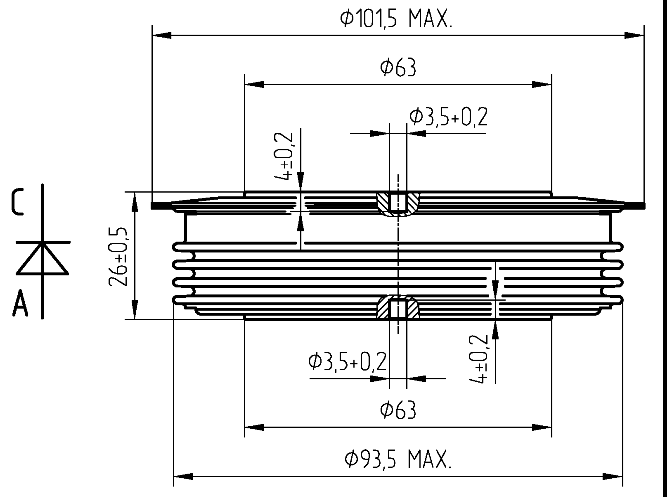

Fig. 1 Case

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Maximum Ratings			***Maximum Limits***	***Unit***
V_{RRM}	**Repetitive peak reverse voltage** *$T_j = 0 \div 190$ °C*		**2 000**	**V**
I_{FAVm}	**Average forward current** *$T_c = 85$ °C*		**7 030**	**A**
I_{FRMS}	**RMS forward current** *$T_c = 85$ °C*		**11 042**	**A**
I_{RRM}	**Repetitive reverse current** *$V_R = V_{RRM}$*		**120**	**mA**
I_{FSM}	**Non repetitive peak surge current** *$V_R = 0$ V, half sine pulse, $T_j = 25$ °C*	t_p = 8.3 ms	**80 000**	**A**
		t_p = 10 ms	**75 000**	**A**
	Non repetitive peak surge current *$V_R = 0$ V, half sine pulse*	t_p = 8.3 ms	**69 000**	**A**
		t_p = 10 ms	**65 000**	**A**
I^2t	**Limiting load integral** *$V_R = 0$ V, half sine pulse, $T_j = 25$ °C*	t_p = 8.3 ms	**26 640 000**	**A^2s**
		t_p = 10 ms	**28 125 000**	**A^2s**
	Limiting load integral *$V_R = 0$ V, half sine pulse*	t_p = 8.3 ms	**20 010 000**	**A^2s**
		t_p = 10 ms	**21 125 000**	**A^2s**
T_{jmin} - T_{jmax}	**Operating temperature range**		**0 ÷ 190**	**°C**
T_{STG}	**Storage temperature range**		**-40 ÷ 190**	**°C**

Unless otherwise specified $T_j = 190$ °C

Characteristics		***Value***			***Unit***
		min	***typ***	***max***	
V_{T0}	**Threshold voltage**			**0.861**	**V**
r_T	**Forward slope resistance** *$I_{F1} = 11\ 048$ A, $I_{F2} = 33\ 143$ A*			**0.046**	**mΩ**
V_{FM}	**Maximum forward voltage** *$I_{FM} = 4\ 000$ A*			**0.970**	**V**
Q_{rr}	**Recovered charge** *$V_R = 100$ V, $I_{FM} = 2000$ A, $di_F/dt = -30$ A/µs*		**4 000**		**µC**

Unless otherwise specified $T_j = 190$ °C

Thermal Parameters			**Value**	**Unit**
R_{thjc}	**Thermal resistance junction to case**	*double side cooling*	**8.0**	**K/kW**
		anode side cooling	**14.5**	
		cathode side cooling	**18.0**	
R_{thch}	**Thermal resistance case to heatsink**	*double side cooling*	**2.5**	**K/kW**
		single side cooling	**5.0**	

Transient Thermal Impedance

Analytical function for transient thermal impedance

$$Z_{thjc} = \sum_{i=1}^{4} R_i (1 - \exp(-t/\tau_i))$$

Conditions:

F_m = 50 ± 5 kN, Double side cooled

Correction for periodic waveforms

180°	**sine:**	**1.0**	**K/kW**
120°	**sine:**	**1.5**	**K/kW**
60°	**sine:**	**2.5**	**K/kW**
180°	**rectangular:**	**0.9**	**K/kW**
120°	**rectangular:**	**1.5**	**K/kW**
60°	**rectangular:**	**2.5**	**K/kW**

i	1	2	3	4
τ_i (s)	0.4406	0.1045	0.0092	0.0022
R_i (K/kW)	4.533	2.255	0.868	0.345

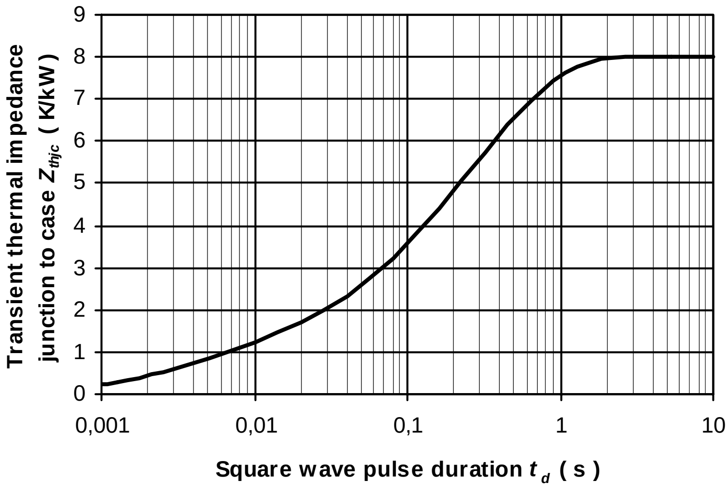

Fig. 2 Dependence transient thermal impedance junction to case on square pulse

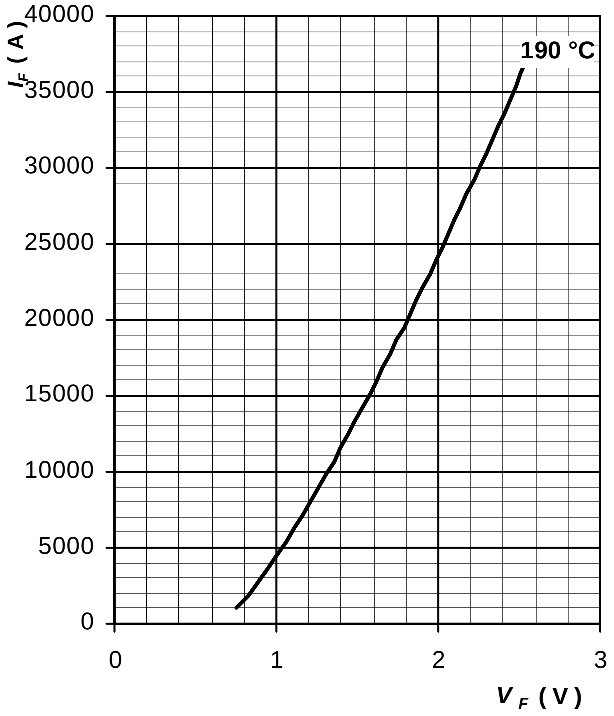

Fig. 3 Maximum forward voltage drop characteristics

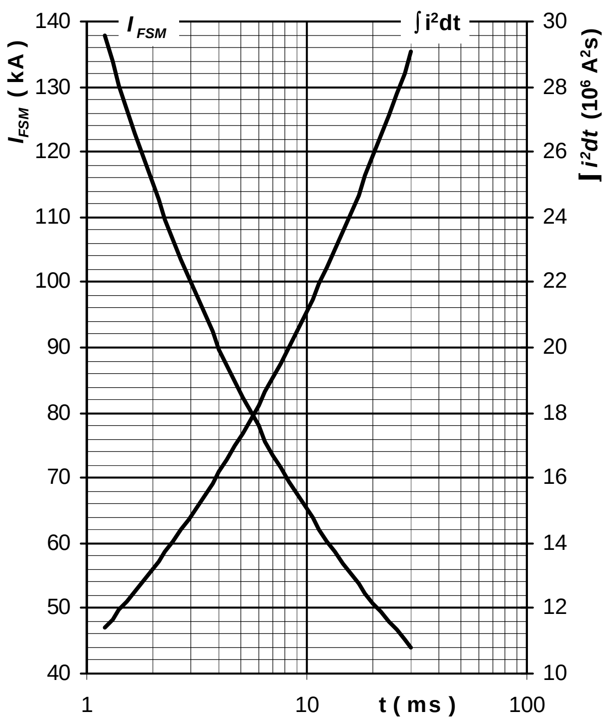

Fig. 4 Surge forward current vs. pulse length, half sine wave, single pulse, V_R = 0 V, $T_j = T_{jmax}$

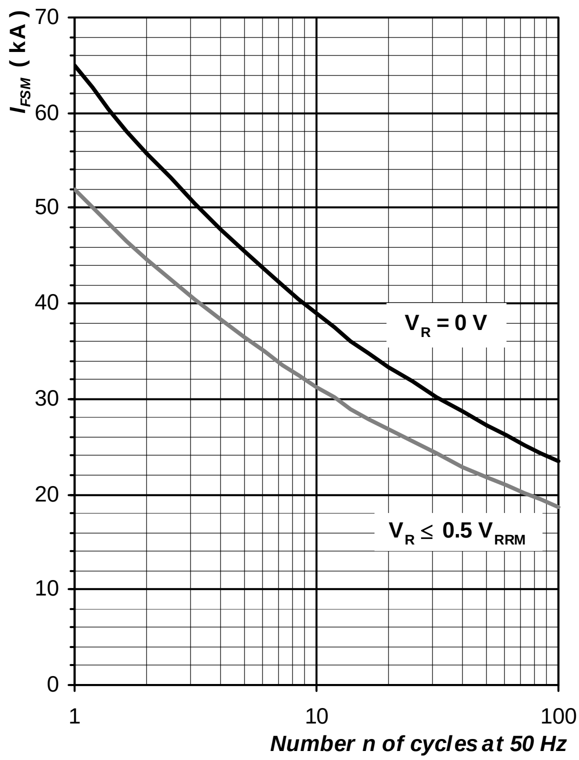

Fig. 5 Surge forward current vs. number of pulses, half sine wave, $T_j = T_{jmax}$

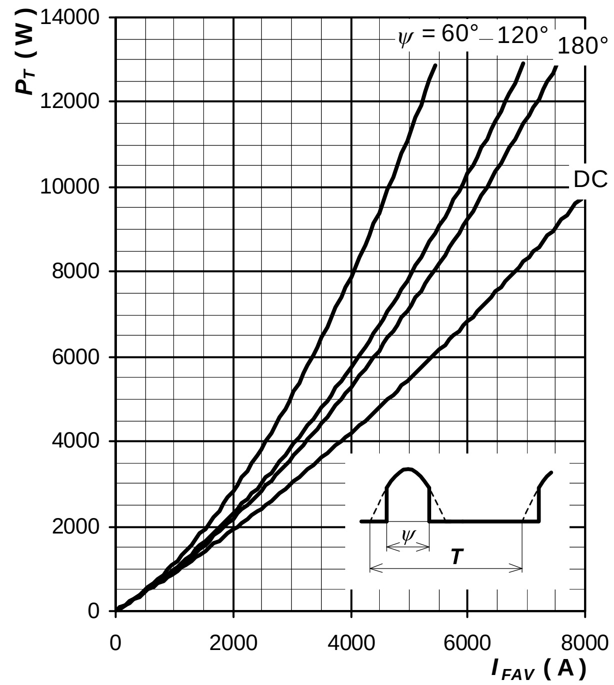

Fig. 6 Forward power loss vs. average forward current, sine waveform, f = 50 Hz, T = 1/f

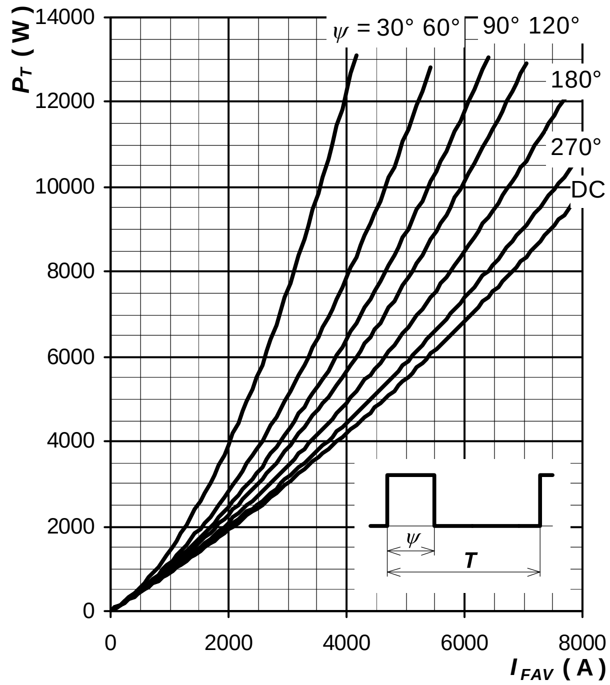

Fig. 7 Forward power loss vs. average forward current, square waveform,f = 50 Hz, T = 1/f

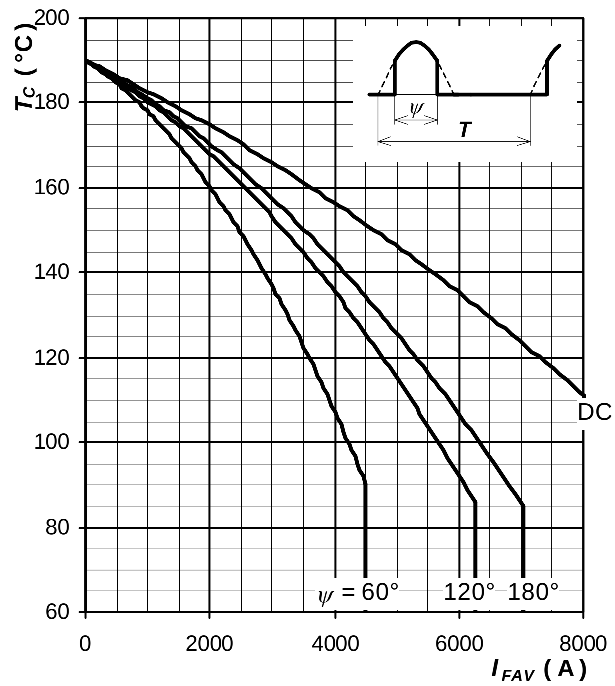

Fig. 8 Max. case temperature vs. aver. forward current, sine waveform, f = 50 Hz, T = 1/f

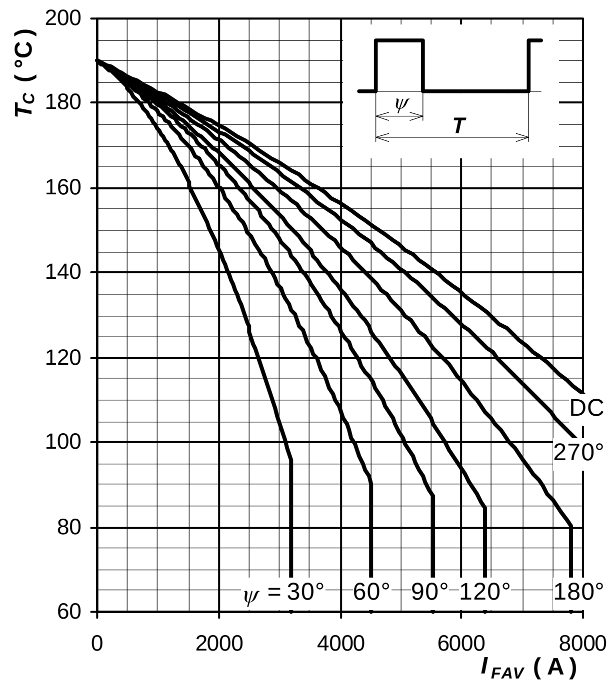

Fig. 9 Max.case temperature vs. aver. forward current, square waveform,f = 50 Hz, T = 1/f

Notes: