5SDD 10F6000

Old part no. DV 808-1000-60

High Voltage Diode

Properties

- Low forward voltage drop
- Low recovery charge
- High operating temperature
- Low leakage current

Applications

- Rectifier bridges

Key Parameters

V_{RRM}	=	6 000	V
I_{FAVm}	=	1 363	A
I_{FSM}	=	17 500	A
V_{TO}	=	1.015	V
r_T	=	0.407	mΩ

Types

	V_{RRM}
5SDD 10F6000	**6 000 V**
Conditions:	*T_j = -40 ÷ 150 °C, half sine waveform, f = 50 Hz*

Mechanical Data

F_m	**Mounting force**	**22 ± 2**	**kN**
m	**Weight**	**0.46**	**kg**
D_S	**Surface creepage distance**	**30**	**mm**
D_a	**Air strike distance**	**20.5**	**mm**

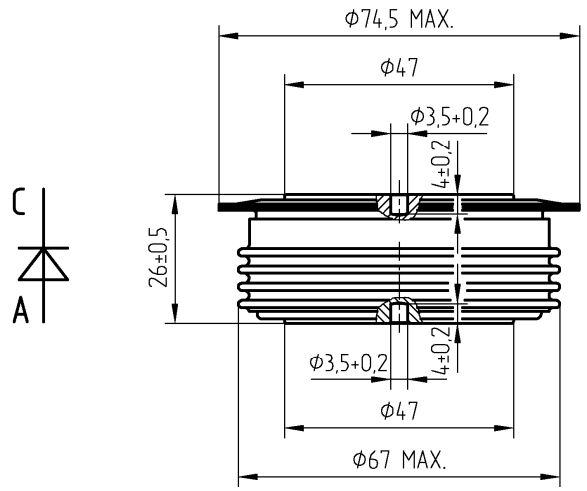

Fig. 1 Case

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Maximum Ratings			*Maximum Limits*	*Unit*
V_{RRM}	**Repetitive peak reverse voltage** T_j = -40 ÷ 150 °C		**6 000**	**V**
I_{FAVm}	**Average forward current** T_c = 85 °C		**1 363**	**A**
I_{FRMS}	**RMS forward current**		**2 142**	**A**
I_{RRM}	**Repetitive reverse current,** $V_R = V_{RRM}$		**75**	**mA**
I_{FSM}	**Non repetitive peak surge current** V_R = 0 V, half sine pulse, T_j = 25 °C	t_p = 8.3 ms	**20 300**	**A**
		t_p = 10 ms	**19 000**	**A**
	Non repetitive peak surge current V_R = 0 V, half sine pulse	t_p = 8.3 ms	**18 700**	**A**
		t_p = 10 ms	**17 500**	**A**
I^2t	**Limiting load integral** V_R = 0 V, half sine pulse, T_j = 25 °C	t_p = 8.3 ms	**1 710 000**	**A^2s**
		t_p = 10 ms	**1 805 000**	**A^2s**
	Limiting load integral V_R = 0 V, half sine pulse	t_p = 8.3 ms	**1 450 000**	**A^2s**
		t_p = 10 ms	**1 531 250**	**A^2s**
T_{jmin} **-** T_{jmax}	**Operating temperature range**		**-40 ÷ 150**	**°C**
T_{STG}	**Storage temperature range**		**-40 ÷ 150**	**°C**

Unless otherwise specified T_j = 150 °C

Characteristics		Value			Unit
		min	**typ**	**max**	
V_{T0}	**Threshold voltage** I_{F1} = 2 142 A, I_{F2} = 6 425 A			**1.015**	**V**
r_T	**Forward slope resistance**			**0.407**	**mΩ**
V_{FM}	**Maximum forward voltage** I_{FM} = 1 500 A			**1.60**	**V**
Q_{rr}	**Recovered charge** V_R = 100 V, I_{FM} = 1 000 A, di_F/dt = -10 A/µs		**3 000**	**4 000**	**µC**

Unless otherwise specified T_j = 150 °C

Thermal Parameters			*Value*	*Unit*
R_{thjc}	**Thermal resistance junction to case**	*double side cooling*	**20**	**K/kW**
		anode side cooling	**34**	
		cathode side cooling	**48**	
R_{thch}	**Thermal resistance case to heatsink**	*double side cooling*	**5**	**K/kW**
		single side cooling	**10**	

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 = 22 ± 2 kN, Double side cooled

i	1	2	3	4
R_i(K/kW)	11.83	4.26	1.63	2.28
τ_i (s)	0.432	0.071	0.01	0.0054

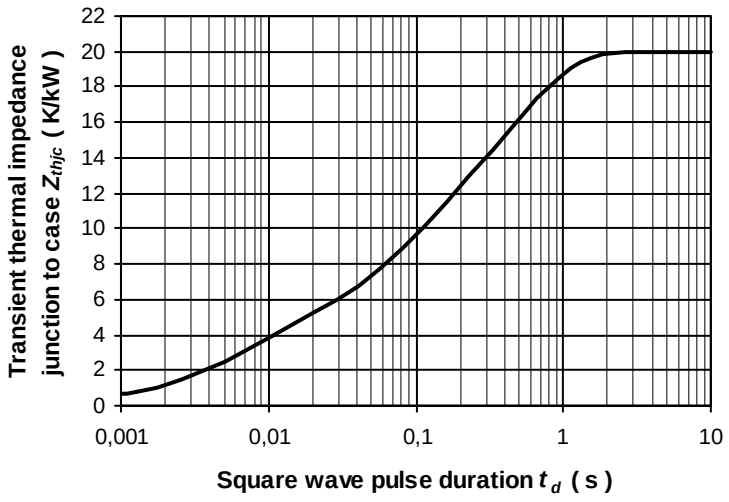

Fig. 2 Dependence transient thermal impedance junction to case on square pulse

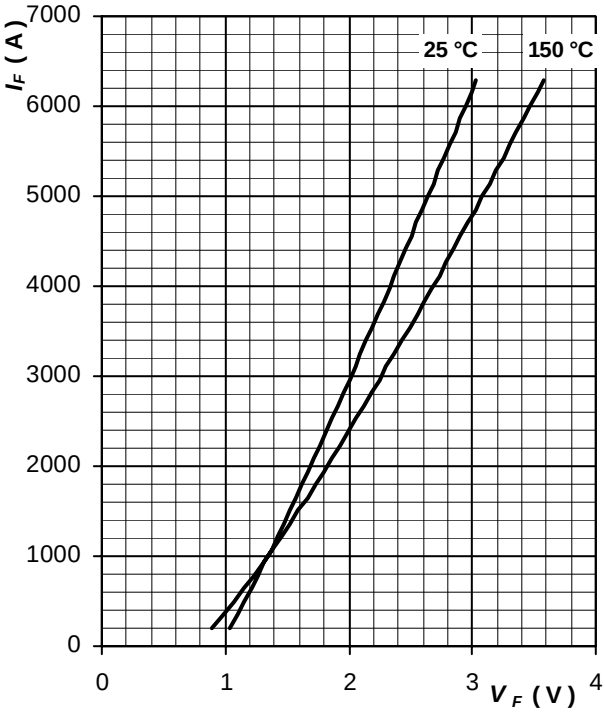

Fig. 3 Maximum forward voltage drop characteristics

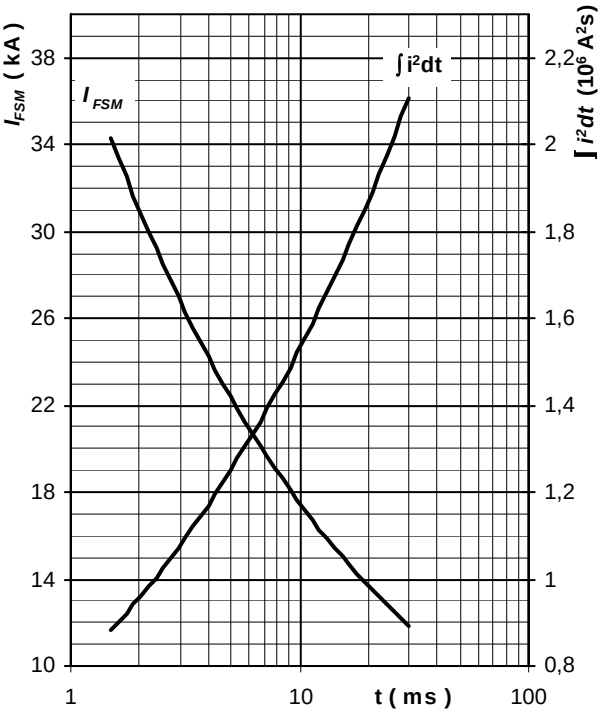

Fig. 4 Surge forward current vs. pulse length, half sine wave, single pulse, V_R = 0 V, $T_j = T_{jmax}$

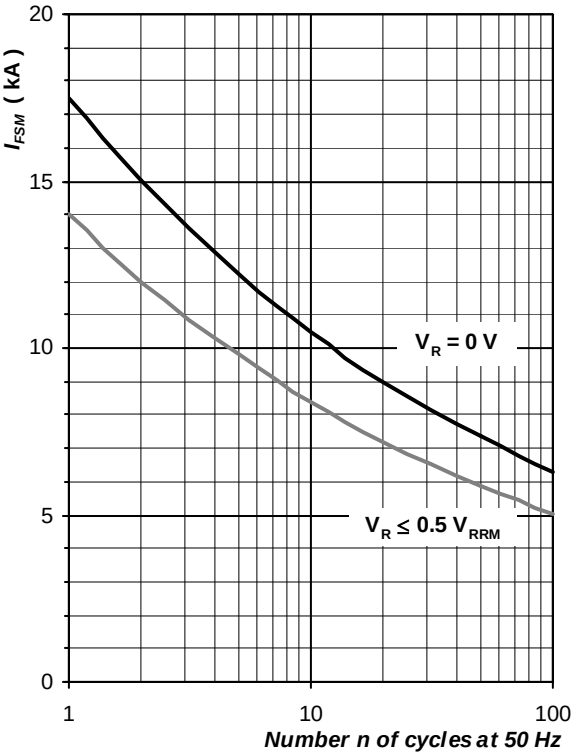

Fig. 5 Surge forward current vs. number of pulses, half sine wave, $T_j = T_{jmax}$

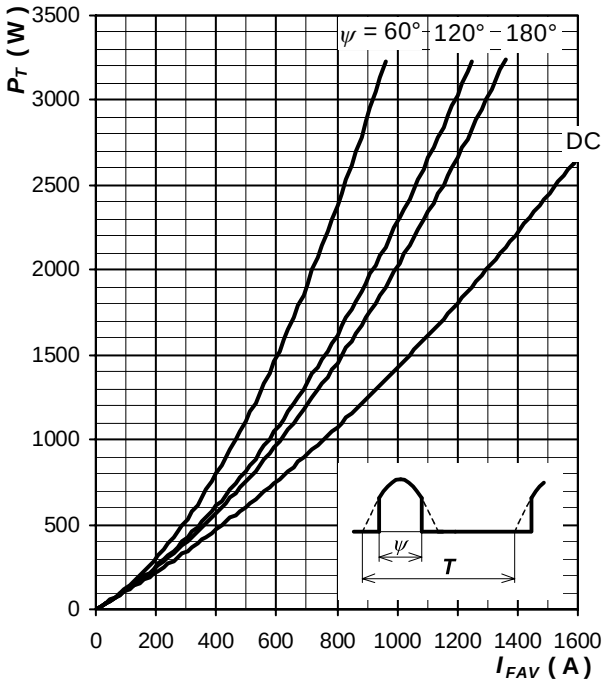

Fig. 6 Forward power loss vs. average forward current, sine waveform, f = 50 Hz, T = 1/f

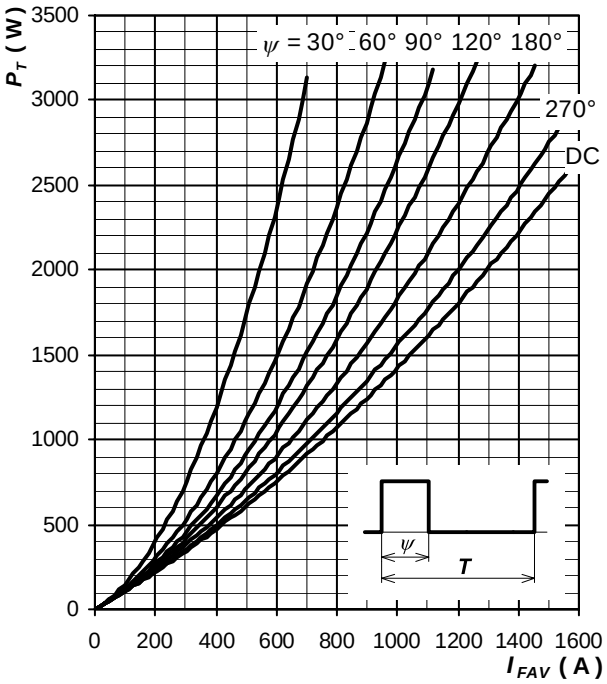

Fig. 7 Forward power loss vs. average forward current, square waveform, f = 50 Hz, T = 1/f

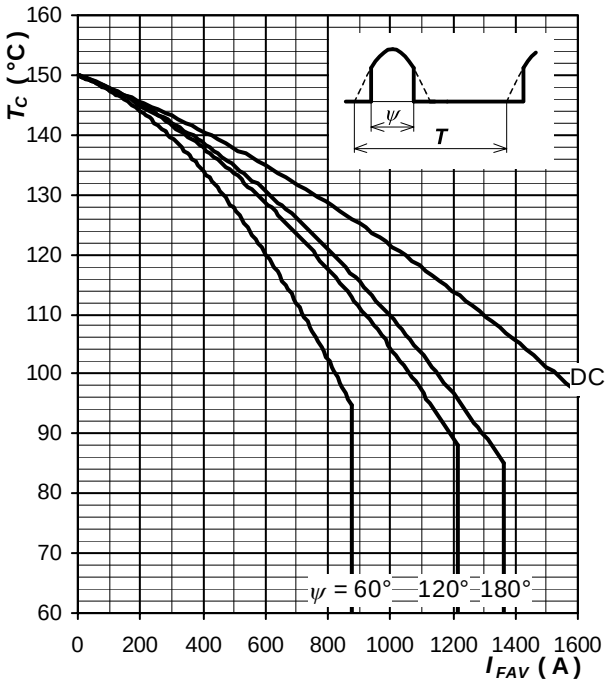

Fig. 8 Max. case temperature vs. aver. forward current, sine waveform, f = 50 Hz, T = 1/f

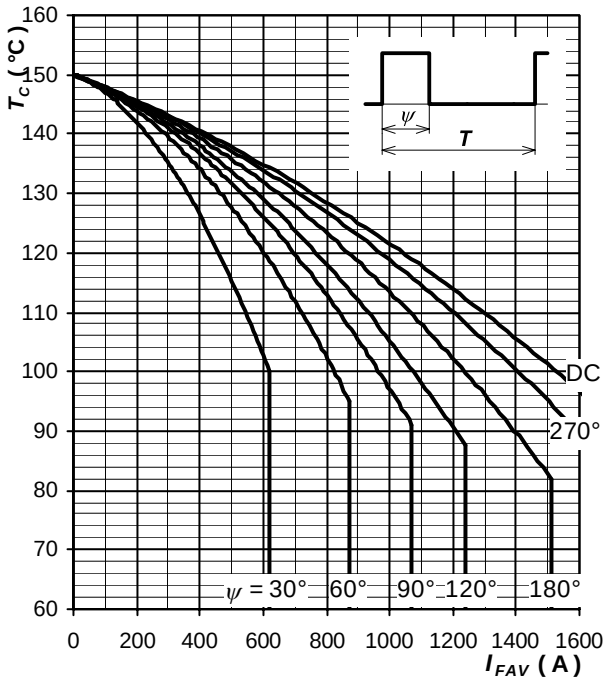

Fig. 9 Max.case temperature vs. aver. forward current, square waveform, f = 50 Hz, T = 1/f

Notes: