5SDD 71B0400

Old part no. DS 808D-7110-04

High current diode

Properties

- High forward current capability
- Low forward and reverse recovery losses
- High operational reliability

Applications

- Welding equipment
- High current application up to 2000 Hz

Key parameters

V_{RRM}	=	400	V
I_{FAVm}	=	7 110	A
I_{FSM}	=	55 000	A
V_{TO}	=	0.740	V
r_T	=	0.026	mΩ

Types

type	V_{RRM}
5SDD 71B0400 **5SDD 71B0200**	**400 V** **200 V**
Conditions:	*T_j = -40 ÷ 170 °C, half sine waveform, f = 50 Hz*

Mechanical data

F_m	**Mounting force**	22 ± 2 kN
m	**Weight**	0.14 kg
D_S	**Surface creepage distance**	4 mm
D_a	**Air strike distance**	4 mm

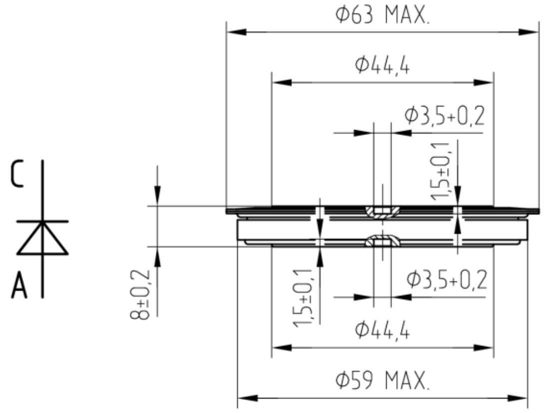

Fig. 1 Case

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Maximum Ratings			***Maximum Limits***	***Unit***
V_{RRM}	**Repetitive peak reverse voltage** *T_j = -40 ÷ 170 °C*	**5SDD 71B0400** **5SDD 71B0200**	**400** **200**	**V**
I_{FAVm}	***Average forward current*** *T_c = 85°C*		**7 110**	**A**
I_{FRMS}	***RMS forward current*** *T_c = 85°C*		**11 200**	**A**
I_R	***Repetitive reverse current*** *$V_R = V_{RRM}$*		**50**	**mA**
I_{FSM}	***Nonrepetitive peak surge current*** *t_p = 10 ms, V_R = 0 V, half sine pulse*		**55 000**	**A**
I^2t	***Limiting load integral*** *t_p = 10 ms, V_R = 0 V, half sine pulse*		**15 125 000**	**A^2s**
T_{jmin} –T_{jmax}	***Operating temperature range***		**- 40 ÷ 170**	**°C**
T_{stgmin} - T_{stgmax}	***Storage temperature range***		**- 40 ÷ 170**	**°C**

Unless otherwise specified T_j = 170 °C

Characteristics			**Value**			**Unit**
			min	**typ**	**max**	
V_{T0}	**Threshold voltage**				**0.740**	**V**
r_T	**Forward slope resistance** *I_{F1} = 5 000 A, I_{F2} = 15 000 A*				**0.026**	**mΩ**
V_{FM}	**Maximum forward voltage**	*I_{FM} = 5 000 A, T_j = 25 °C*			**1.05**	**V**
		I_{FM} = 5 000 A			**0.87**	
Q_{rr}	**Recovered charge** *I_{FM} = 1000 A, di/dt = -30 A/μs, V_R = 50 V*			**300**		**μC**

Unless otherwise specified T_j = 170 °C

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

Analytical function for transient thermal impedance

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

F_m = 22 ± 2 kN, Double side cooled

i	1	2	3	4
R_i(K/kW)	2.33	4.80	2.00	0.87
τ_i(s)	0.29	0.14	0.027	0.0011

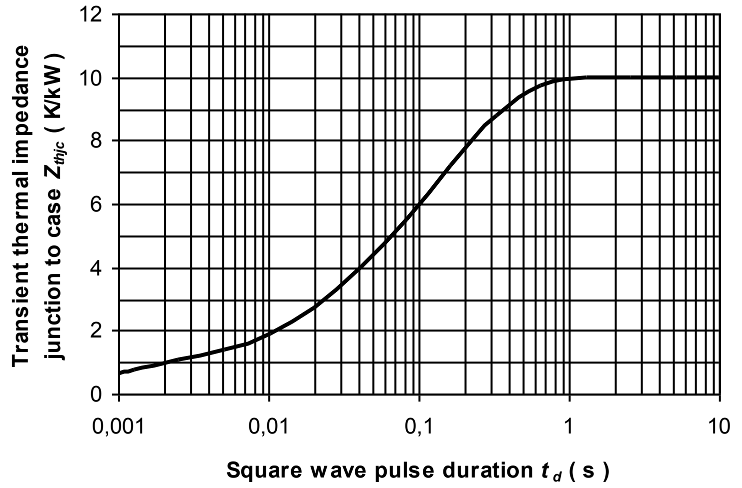

Fig. 2 Dependence transient thermal impedance junction to case on square pulse

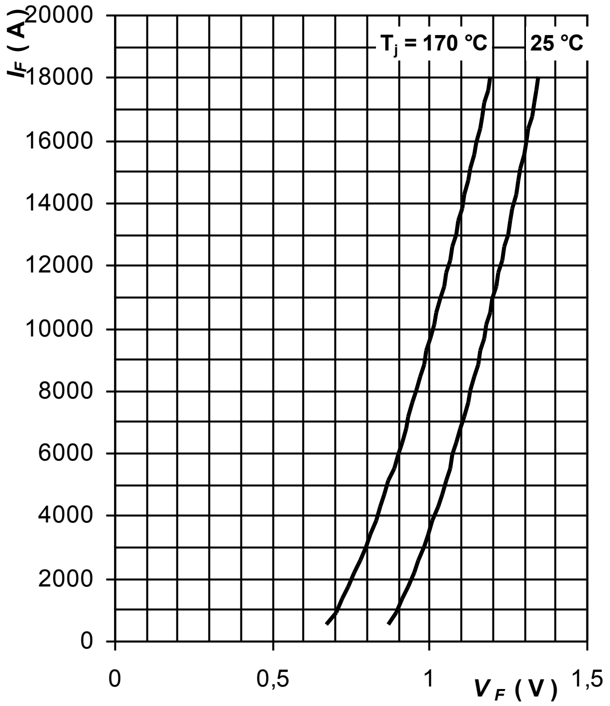

Fig. 3 Maximum forward voltage drop characteristics

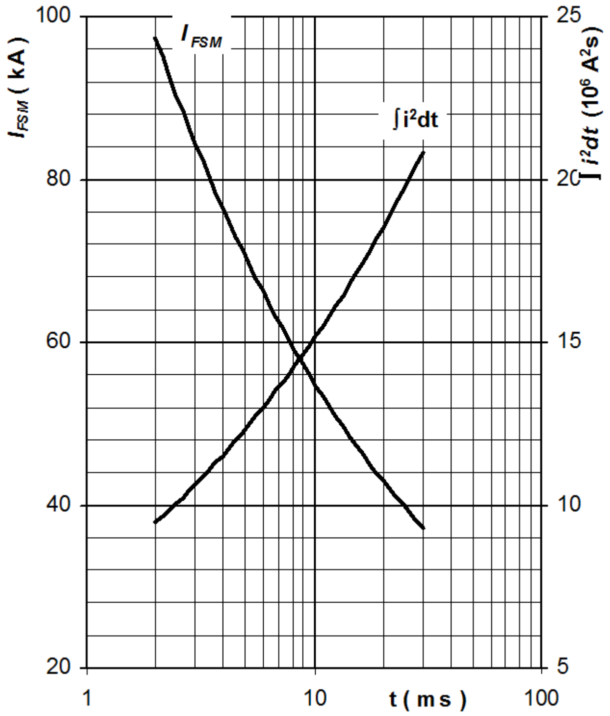

Fig. 4 Surge forward current vs. pulse length, half sine wave, single pulse, $V_R = 0$ *V,* $T_j = T_{jmax}$

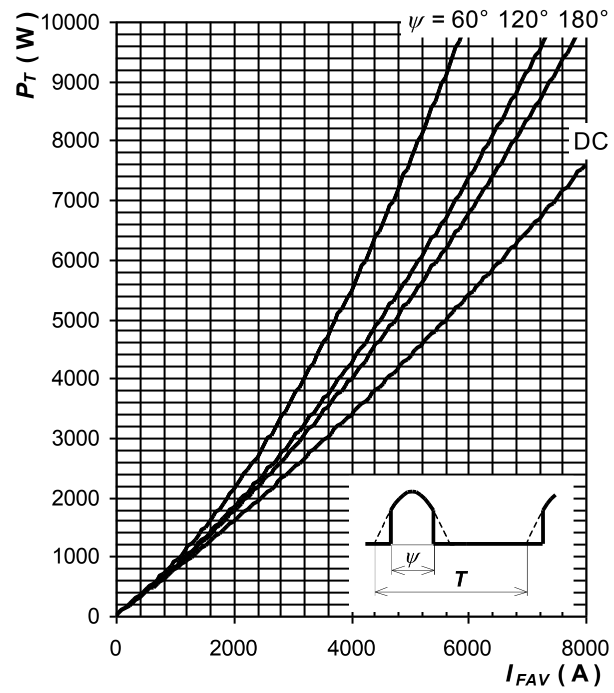

Fig. 5 Forward power loss vs. average forward current, sine waveform, f = 50 Hz

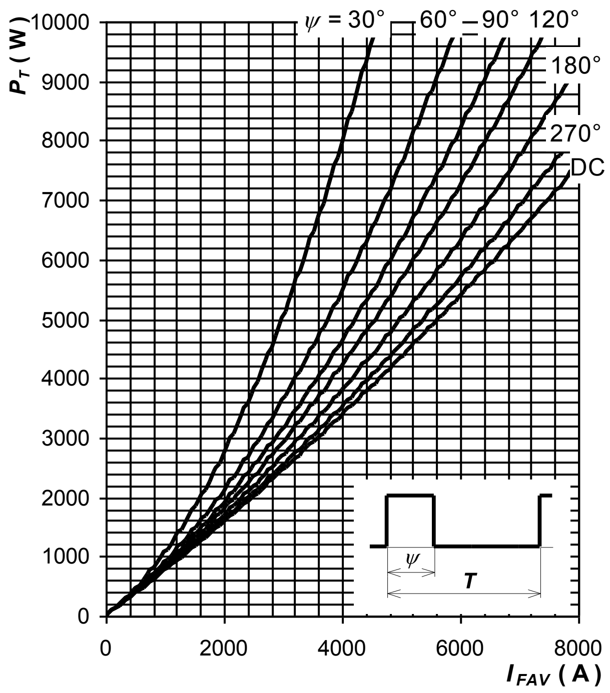

Fig. 6 Forward power loss vs. average forward current, square waveform, f = 50 Hz

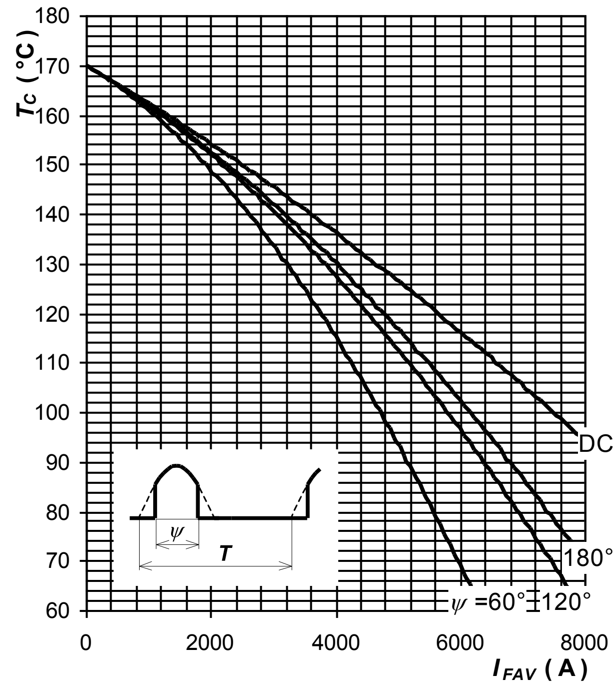

Fig. 7 Max. case temperature vs. aver. forward current, sine waveform, f = 50 Hz

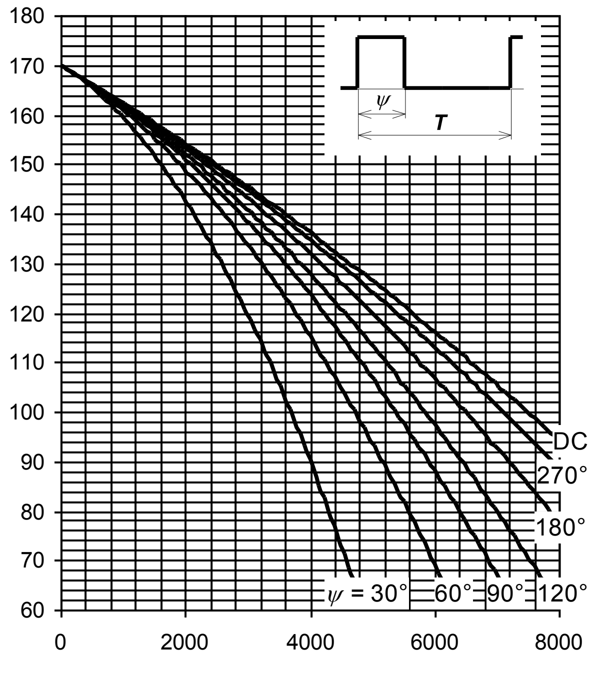

Fig. 8 Max.case temperature vs. aver. forward current, square waveform, f = 50 Hz

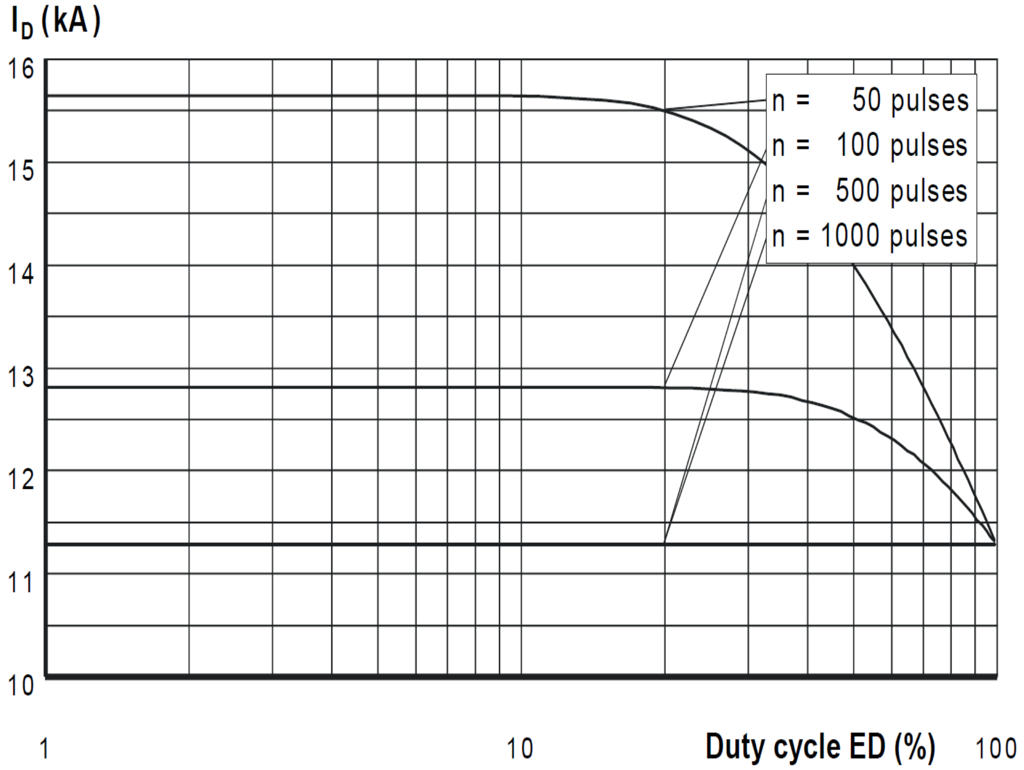

Fig. 9 Current load capability,
DC output current with single-phase centre tap vs. duty cycle
f = 1000 Hz, square wave, $T_c = 100$ *°C*

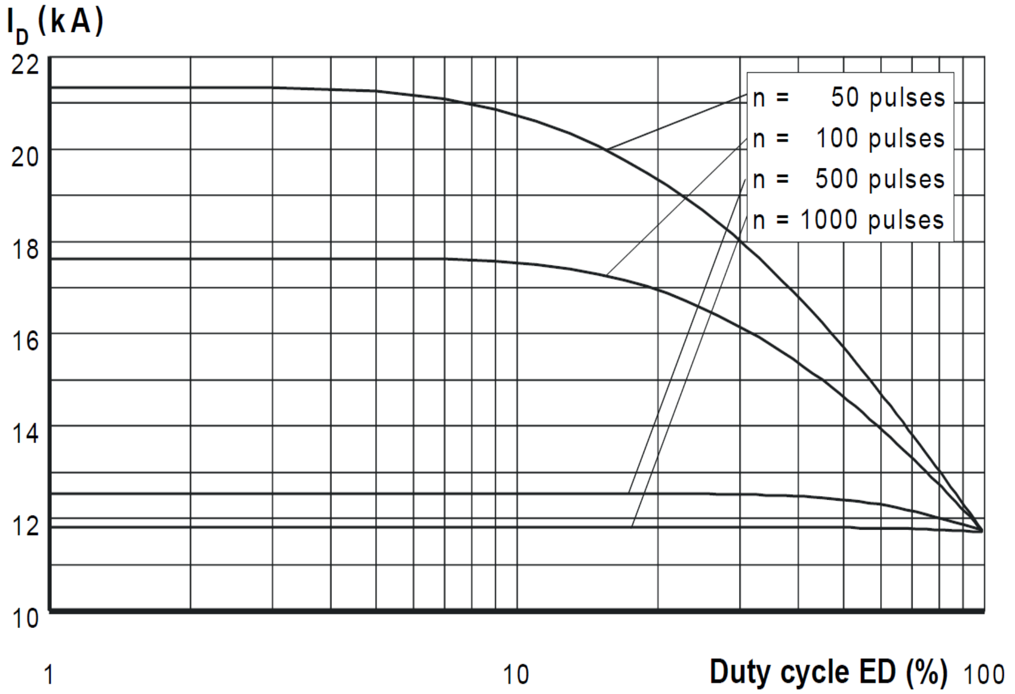

Fig. 10 Current load capacity, cont.,
DC output current with single-phase centre tap vs. duty cycle
f = 1000 Hz, square wave, $T_h = 60$ *°C*

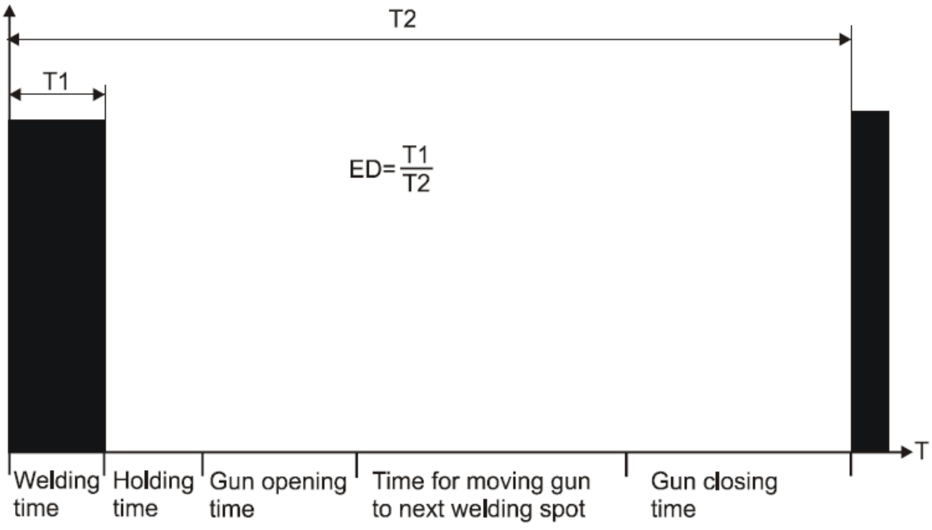

Fig. 11 Definition of ED for typical welding sequence

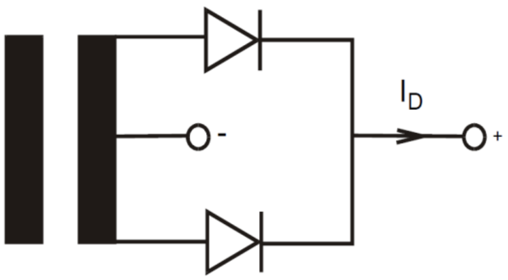

Fig. 12 Definition of I_D for single-phase centre tap

Notes: