5SDD 24F2800

Old part no. DV 818-2480-28

Rectifier Diode

Properties

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

Key Parameters

V_{RRM}	=	2 800	V
I_{FAVm}	=	2 596	A
I_{FSM}	=	30 000	A
V_{TO}	=	0.906	V
r_T	=	0.135	mΩ

Types

	V_{RRM}
5SDD 24F2800	**2 800 V**
Conditions:	*T_j = -40 ÷ 160 °C, half sine waveform, f = 50 Hz*

Mechanical Data

F_m	**Mounting force**	**22 ± 2 kN**
m	**Weight**	**0.49 kg**
D_S	**Surface creepage distance**	**33 mm**
D_a	**Air st ike distance**	**20 mm**

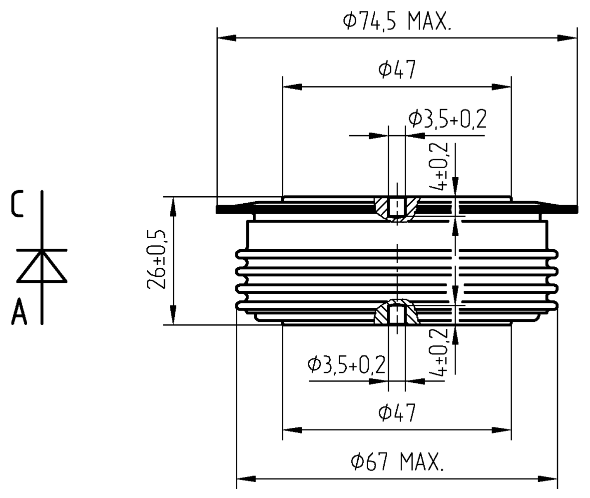

Fig. 1 Case

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Maximum Ratings			**Maximum Limits**	**Unit**
V_{RRM}	**Repetitive peak reverse voltage** T_j = -40 ÷ 160 °C		**2 800**	**V**
I_{FAVm}	**Average forward current** T_c = 85 °C		**2 596**	**A**
I_{FRMS}	**RMS forward current** T_c = 85 °C		**4 078**	**A**
I_{RRM}	**Repetitive reverse current** $V_R = V_{RRM}$		**50**	**mA**
I_{FSM}	**Non repetitive peak surge current** V_R = 0 V, half sine pulse, T_j = 25 °C	t_p = 8.3 ms	**38 500**	**A**
		t_p = 10 ms	**36 000**	**A**
	Non repetitive peak surge current V_R = 0 V, half sine pulse	t_p = 8.3 ms	**32 000**	**A**
		t_p = 10 ms	**30 000**	**A**
I^2t	**Limiting load integral** V_R = 0 V, half sine pulse, T_j = 25 °C	t_p = 8.3 ms	**6 137 540**	**A^2s**
		t_p = 10 ms	**6 480 000**	**A^2s**
	Limiting load integral V_R = 0 V, half sine pulse	t_p = 8.3 ms	**4 262 180**	**A^2s**
		t_p = 10 ms	**4 500 000**	**A^2s**
T_{jmin} -T_{jmax}	**Operating temperature range**		**-40 ÷ 160**	**°C**
T_{STG}	**Storage temperature range**		**-40 ÷ 160**	**°C**

Unless otherwise specified T_j = 160 °C

Characteristics		**Value**			**Unit**
		min	***typ***	***max***	
V_{T0}	**Threshold voltage**			**0.906**	**V**
r_T	**Forward slope resistance** I_{F1} = 3 140 A, I_{F2} = 9 420 A			**0.135**	**mΩ**
V_{FM}	**Maximum forward voltage** I_{FM} = 4 000 A			**1.46**	**V**
Q_{rr}	**Recovered charge** V_R = 100 V, I_{FM} = 1000 A, di/dt = -30 A/µs		**3000**	**3500**	**µC**

Unless otherwise specified T_j = 160 °C

Thermal Parameters			**Value**	**Unit**
R_{thjc}	**Thermal resistance junction to case**	*double side cooling*	**15**	**K/kW**
		anode side cooling	**24**	
		cathode side cooling	**40**	
R_{thch}	**Thermal resistance case to heatsink**	*double side cooling*	**4**	**K/kW**
		single side cooling	**8**	

Transient Thermal Impedance

Analytical function for transient thermal impedance

$$Z_{thjc} = \sum_{i=1}^{5} R_i (1 - \exp(-t/\tau_i))$$

Conditions:
F_m = 22 ± 2 kN, Double side cooled

Correction for periodic waveforms

180°	sine:	1.3	K/kW
180°	rectangular:	1.7	K/kW
120°	rectangular:	2.9	K/kW
60°	rectangular:	4.8	K/kW

i	1	2	3	4	5
τ_i (s)	0.6937	0.2040	0.0452	0.0040	0.0005
R_i(K/kW)	6.04	3.83	3.76	1.31	0.07

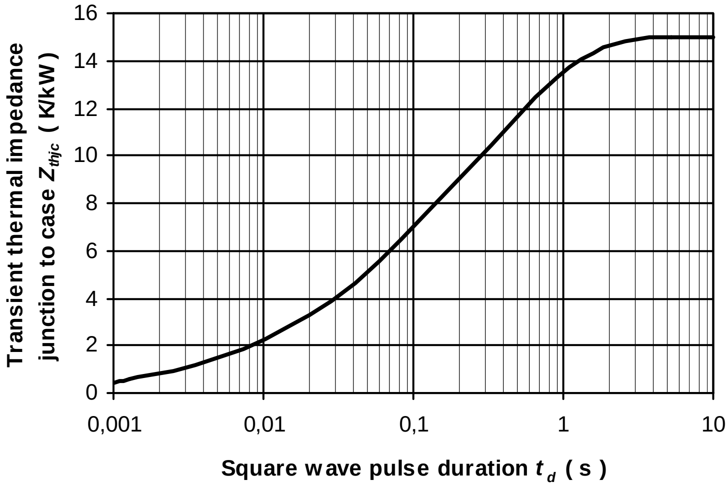

Fig. 2 Dependence transient thermal impedance junction to case on square pulse

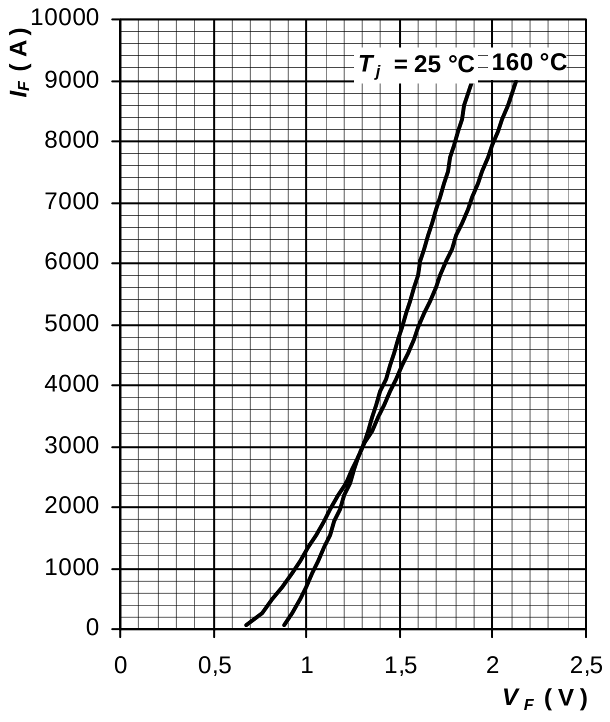

Fig. 3 Maximum forward voltage drop characteristics

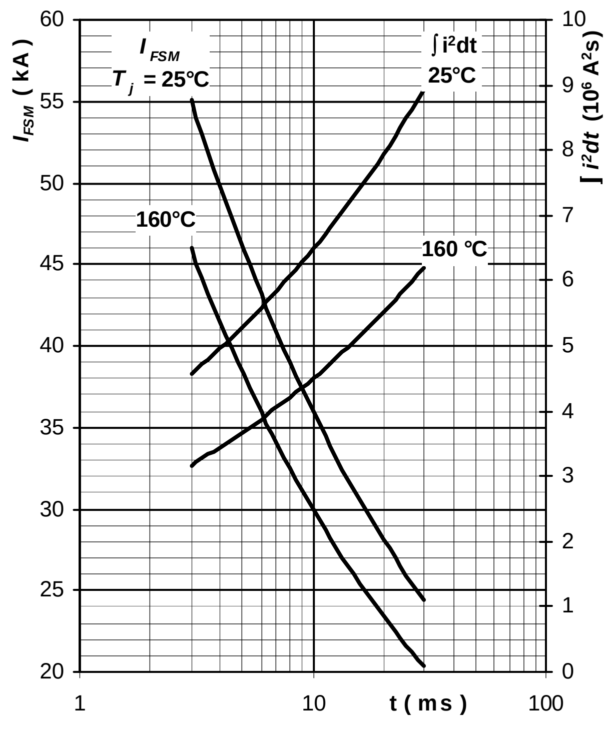

Fig. 4 Surge forward current vs. pulse length, half sine wave, single pulse, V_R = 0 V, $T_j = T_{jmax}$

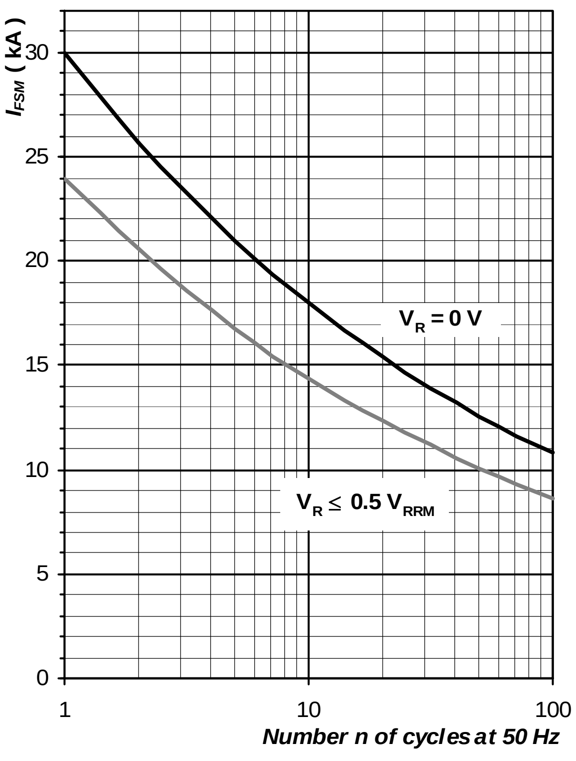

Fig. 5 Surge forward current vs. number of pulses, half sine wave, $T_j = T_{jmax}$

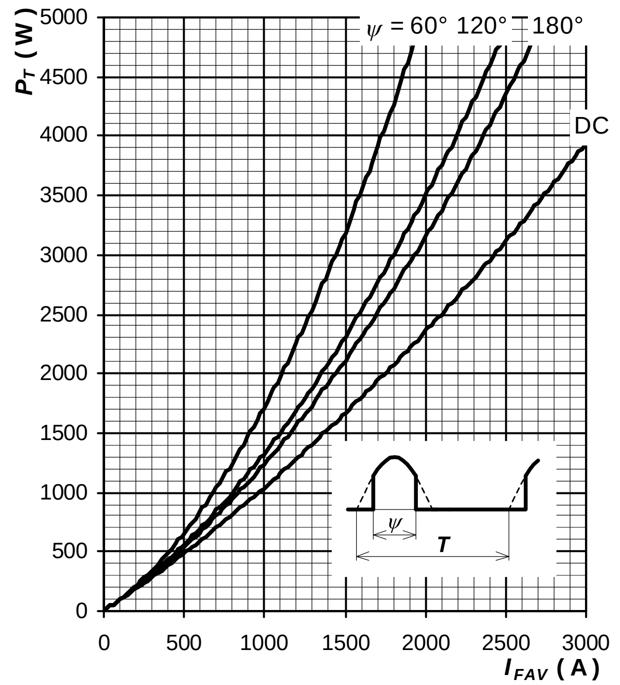

Fig. 6 Forward power loss vs. average forward current, sine waveform, f = 50 Hz, T = 1/f

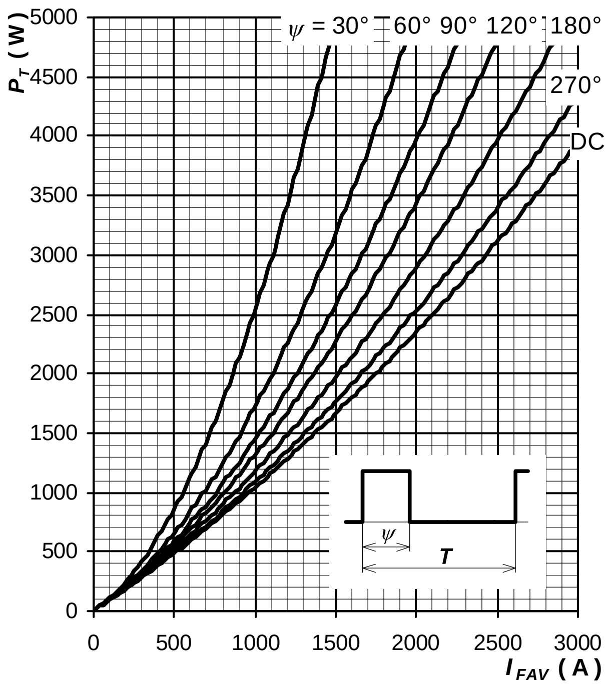

Fig. 7 Forward power loss vs. average forward current, square waveform, f = 50 Hz, T = 1/f

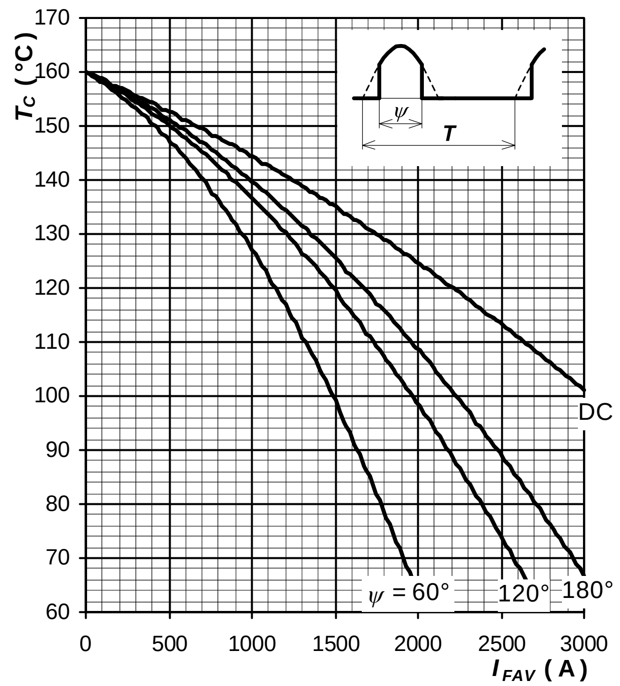

Fig. 8 Max. case temperature vs. aver. forward current, sine waveform, f = 50 Hz, T = 1/f

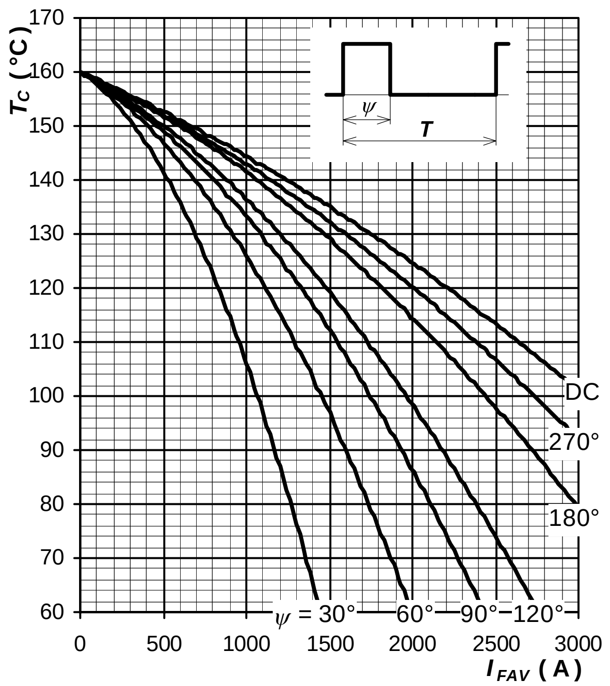

Fig. 9 Max.case temperature vs. aver. forward current, square waveform, f = 50 Hz, T = 1/f

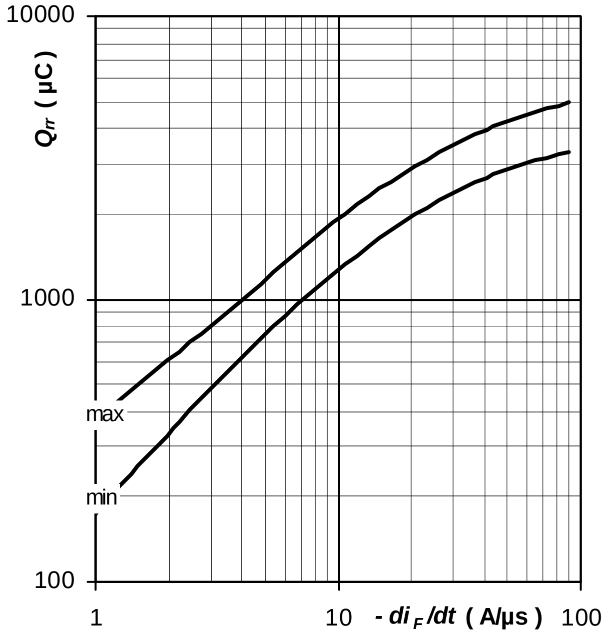

Fig. 10 *Recovered charge* $\boldsymbol{Q_{rr}}$
vs. rate of fall forward current $\boldsymbol{di_F/dt}$*,*
trapezoid pulse, I_{FM} *= 1 000 A,*
V_R *= 100 V,* $T_j = T_{jmax}$

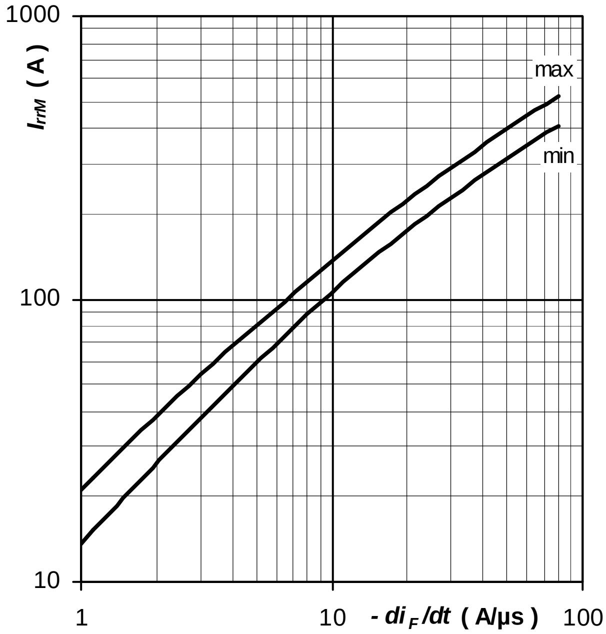

Fig. 11 *Reverse recovery maximum current* $\boldsymbol{I_{rrM}}$
vs. rate of fall forward current $\boldsymbol{di_F/dt}$*,*
trapezoid pulse, I_{FM} *= 1 000 A,*
V_R *= 100 V,* $T_j = T_{jmax}$

Notes:

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