

5SDD 11D2800

Old part no. DV 827-1100-28

Rectifier Diode

Properties

- ③ Industry standard housing
- ③ Suitable for parallel operation
- ③ High operating temperature
- ③ Low forward voltage drop

Key Parameters

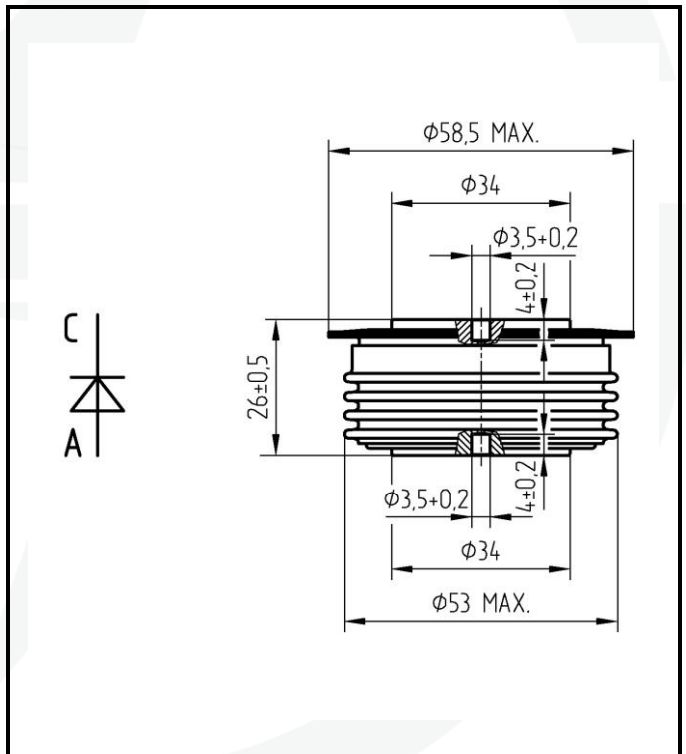
V_{RRM}	= 2 800 V
I_{FAVm}	= 1 285 A
I_{FSM}	= 15 000 A
V_{TO}	= 0.933 V
r_T	= 0.242 m:

Types

	V_{RRM}
5SDD 11D2800	2 800 V
Conditions: $T_j = -40 \div 160 \text{ }^\circ\text{C}$, half sine waveform, $f = 50 \text{ Hz}$	

F_m	Mounting force	10 ± 2 kN
m	Weight	0.27 kg
D_s	Surface creepage distance	30 mm
D_a	Air st ike distance	20 mm

Mechanical Data



Maximum Ratings		Maximum Limits	Unit	
V_{RRM}	Repetitive peak reverse voltage $T_j = -40 \div 160 \text{ }^\circ\text{C}$	2 800	V	
I_{FAVm}	Average forward current $T_c = 85 \text{ }^\circ\text{C}$	1 285	A	
I_{FRMS}	RMS forward current $T_c = 85 \text{ }^\circ\text{C}$	2 019	A	
I_{RRM}	Repetitive reverse current $V_R = V_{RRM}$	30	mA	
I_{FSM}	Non repetitive peak surge current $V_R = 0 \text{ V}$, half sine pulse, $T_j = 25 \text{ }^\circ\text{C}$	$t_p = 8.3 \text{ ms}$	19 200	A
		$t_p = 10 \text{ ms}$	18 000	A
	Non repetitive peak surge current $V_R = 0 \text{ V}$, half sine pulse	$t_p = 8.3 \text{ ms}$	16 000	A
		$t_p = 10 \text{ ms}$	15 000	A
Pt	Limiting load integral $V_R = 0 \text{ V}$, half sine pulse, $T_j = 25 \text{ }^\circ\text{C}$	$t_p = 8.3 \text{ ms}$	1 534 000	A ² s
		$t_p = 10 \text{ ms}$	1 620 000	A ² s
	Limiting load integral $V_R = 0 \text{ V}$, half sine pulse	$t_p = 8.3 \text{ ms}$	1 066 000	A ² s
		$t_p = 10 \text{ ms}$	1 125 000	A ² s
$T_{jmin} - T_{jmax}$	Operating temperature range	-40 ÷ 160	°C	
T_{STG}	Storage temperature range	-40 ÷ 160	°C	

Unless otherwise specified $T_j = 160 \text{ }^\circ\text{C}$

Characteristics		Value			Unit
		min	typ	max	
$V_{TO} r_T$	Threshold voltage			0.933	V
	Forward slope resistance $I_{F1} = 1\,500 \text{ A}$, $I_{F2} = 4\,500 \text{ A}$;			0.242	m:
V_{FM}	Maximum forward voltage $I_{FM} = 1\,500 \text{ A}$			1.30	V
Q_{rr}	Recovered charge $V_R = 100 \text{ V}$, $I_{FM} = 1\,000 \text{ A}$, $di/dt = -30 \text{ A}/\mu\text{s}$		2 200	3 000	μC

Unless otherwise specified $T_j = 160 \text{ }^\circ\text{C}$

Thermal Parameters			Value	Unit
R_{thjc}	Thermal resistance junction to case	double side cooling	32	K/kW
		anode side cooling	50	
		cathode side cooling	88	
R_{thch}	Thermal resistance case to heatsink	double side cooling	8	K/kW
		single side cooling	16	

Transient Thermal Impedance

Analytical function for transient thermal impedance

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

i	1	2	3	4	5
W_i (s)	0.7033	0.2185	0.0588	0.0042	0.0006
R_i (K/kW)	11.56	10.08	7.84	2.38	0.13

Conditions:
 $F_m = 10 \pm 2$ kN, Double side cooled

Correction for periodic waveforms

180° sine:	2.3 K/kW
180° rectangular:	3.1 K/kW
120° rectangular:	5.1 K/kW
60° rectangular:	8.7 K/kW

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



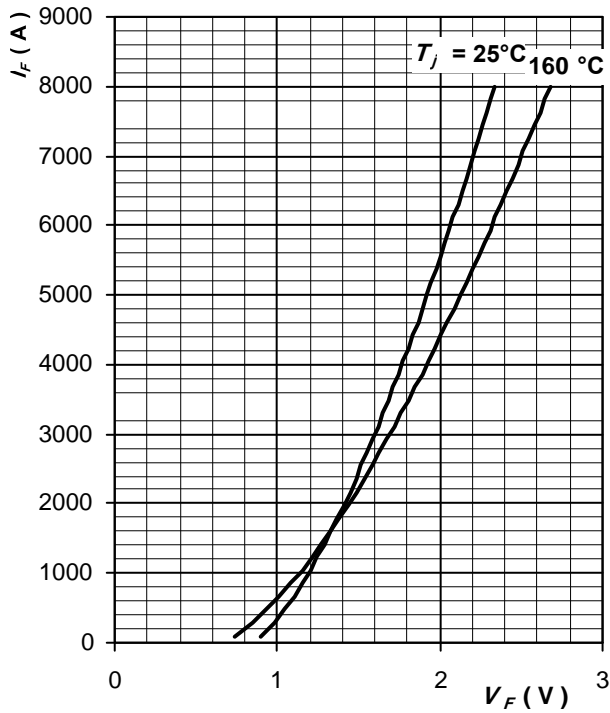


Fig. 3 Maximum forward voltage drop characteristics

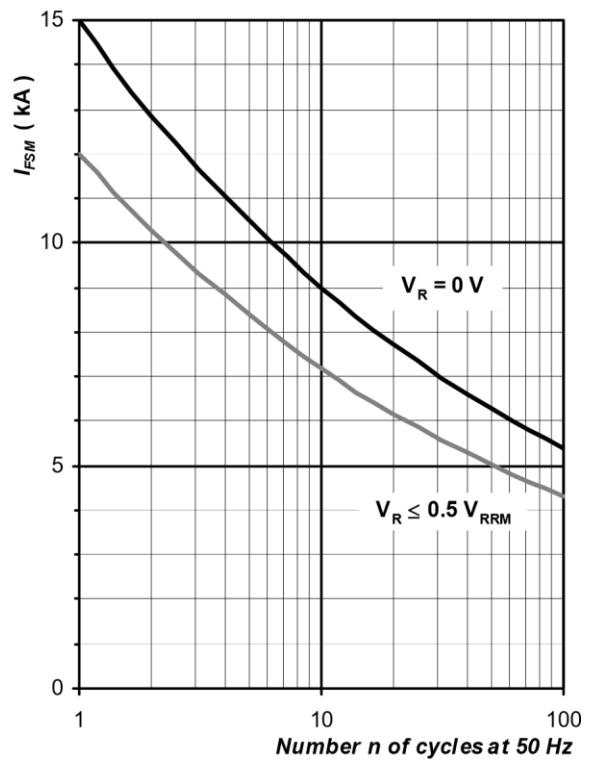
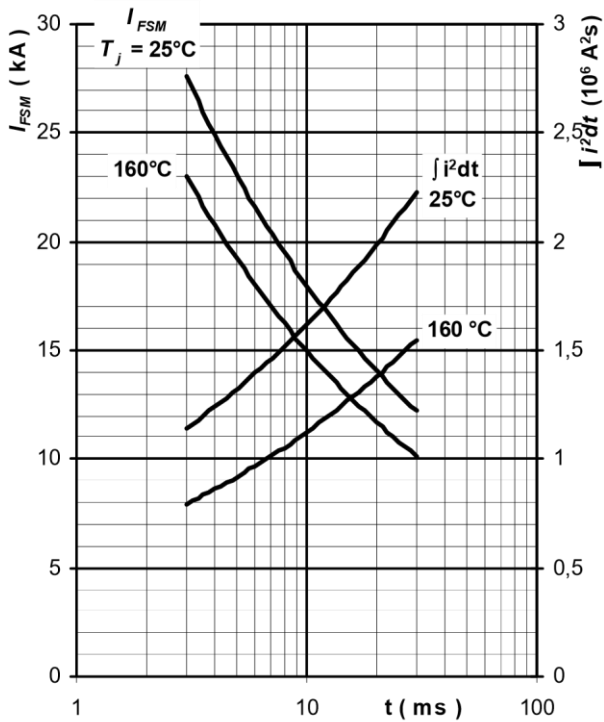


Fig. 4 Surge forward current vs. pulse length, Fig. 5 Surge forward current vs. number half sine wave, single pulse, $T_j = T_{jmax}$ of pulses, half sine wave, $T_j = T_{jmax}$

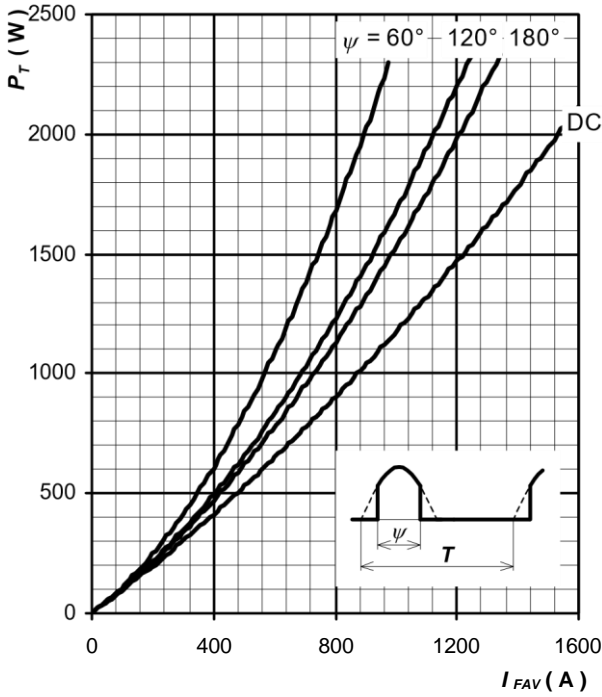


Fig. 6 Forward power loss vs. average forward current, sine waveform, $f = 50$ Hz, $T = 1/f$

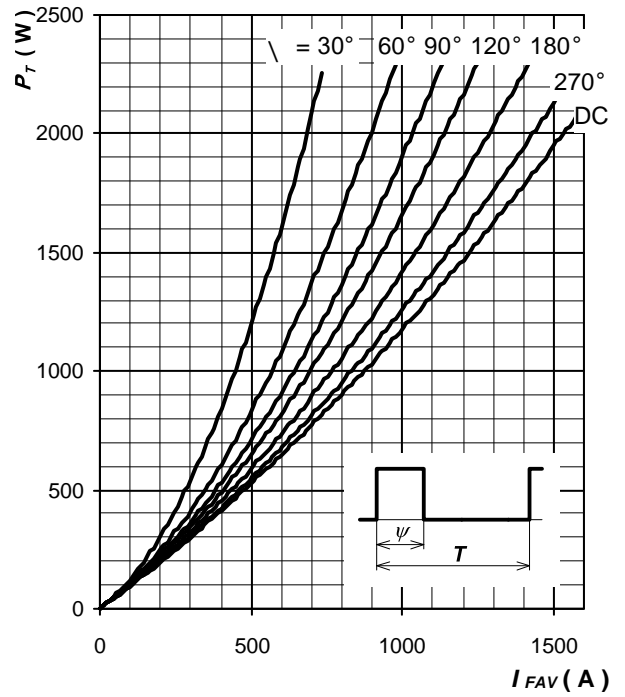


Fig. 7 Forward power loss vs. average forward current, square waveform, $f = 50$ Hz, $T = 1/f$

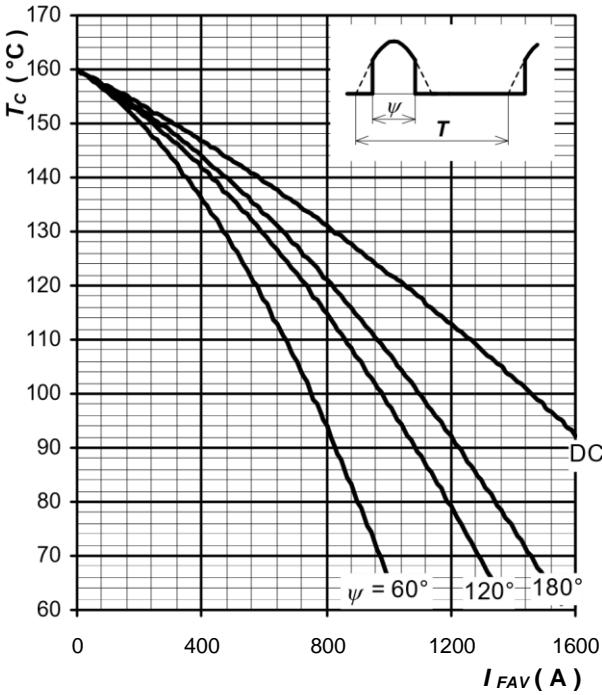


Fig. 8 Max. case temperature vs. aver. forward current, sine waveform, $f = 50$ Hz, $T = 1/f$

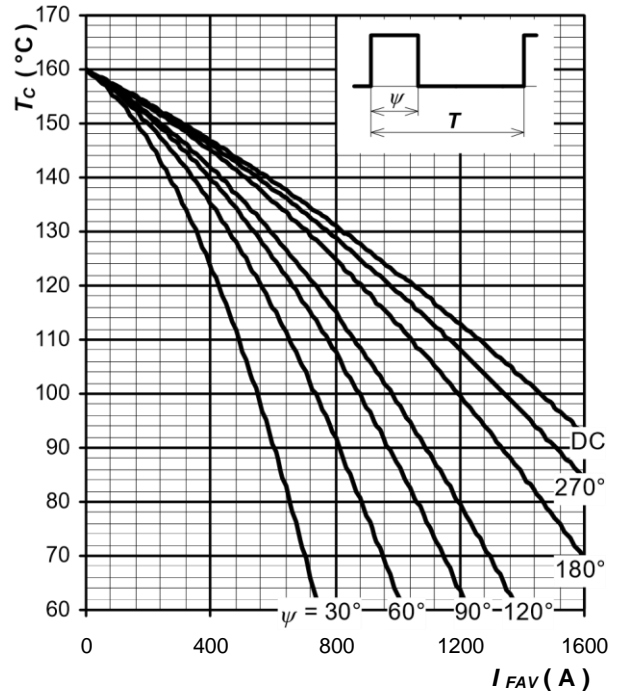


Fig. 9 Max. case temperature vs. aver. forward current, square waveform, $f = 50$ Hz, $T = 1/f$

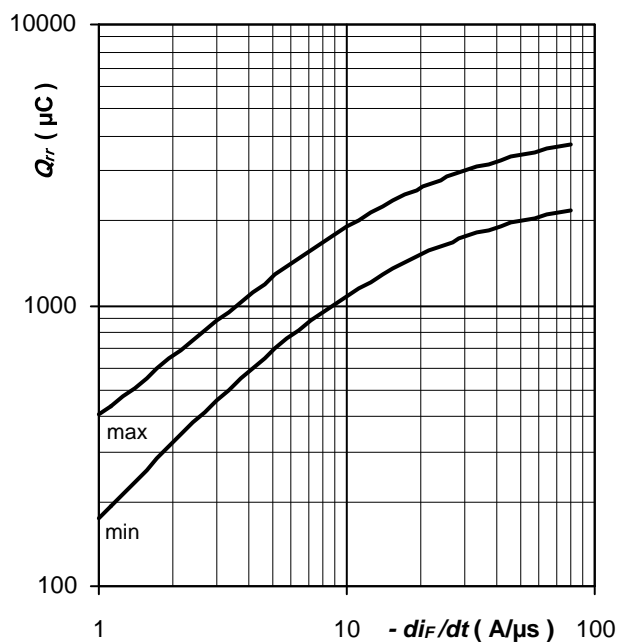


Fig. 10 Recovered charge Q_{rr}

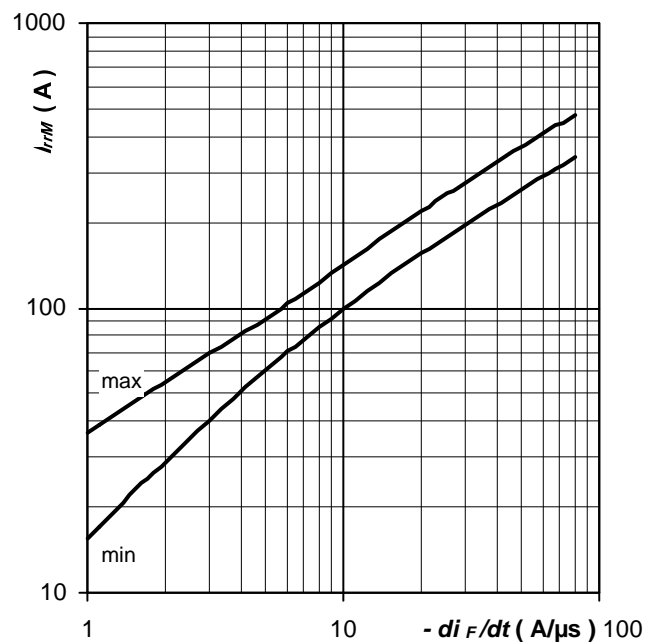


Fig. 11 Reverse recovery maximum current I_{rrM}

vs. rate of fall forward current di_F/dt , vs. rate of fall forward current di_F/dt , trapezoid pulse, $I_{FM} = 1\ 000\ \text{A}$, trapezoid pulse, $I_{FM} = 1\ 000\ \text{A}$, $V_R = 100\ \text{V}$, $T_j = T_{jmax}$ $V_R = 100\ \text{V}$, $T_j = T_{jmax}$

Notes: