

5SDD 08T5000

Old part no. DV 827C-800-50

V_{RRM}	= 5 000 V
I_{FAVm}	= 1 028 A
I_{FSM}	= 12 000 A
V_{TO}	= 0.894 V
r_T	= 0.487 m:

Rectifier Diode

Properties

- ③ low forward voltage drop
- ③ low recovery charge
- ③ high operating temperature
- ③ low leakage current

Key Parameters

Applications

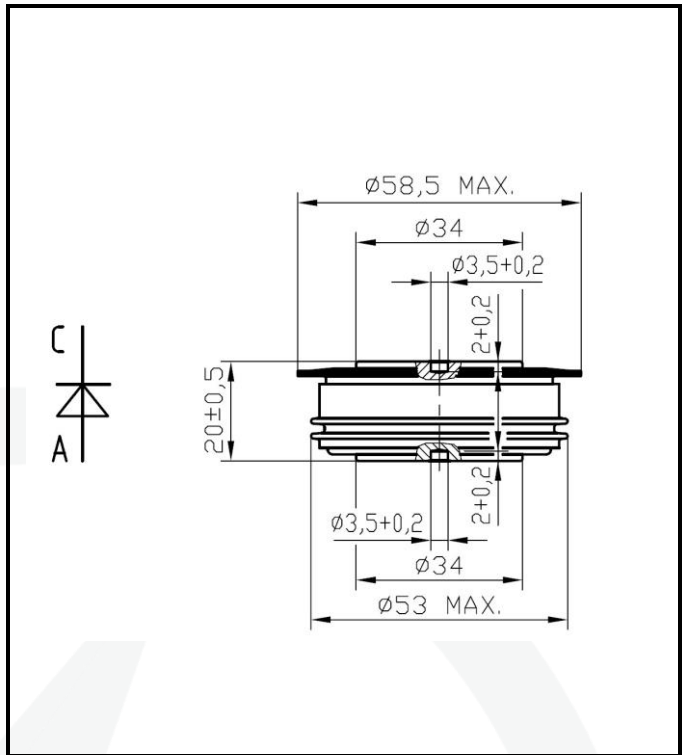
- ③ Rectifier bridges

	V_{RRM}
5SDD 08T5000	000 V
Conditions:	$T_j = -40 \div 160 \text{ }^\circ\text{C}$, half sine waveform, f = 50 Hz

F_m	Mounting force	$\pm 2 \text{ kN}$
m	Weight	0.20 kg
D_s	Surface creepage distance	mm
D_a	Air strike distance	mm

Types

Mechanical Data



Maximum Ratings		Maximum Limits	Unit	
V_{RRM}	Repetitive peak reverse voltage $T_j = -40 \div 160 \text{ }^\circ\text{C}$	5 000	V	
I_{FAVm}	Average forward current $T_c = 85 \text{ }^\circ\text{C}$	1 028	A	
I_{FRMS}	RMS forward current $T_c = 85 \text{ }^\circ\text{C}$	1 614	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, $T_j = 25 \text{ }^\circ\text{C}$	$t_p = 8.3 \text{ ms}$	16 000	A
		$t_p = 10 \text{ ms}$	15 000	A
	Non repetitive peak surge current $V_R = 0 \text{ V}$, half sine pulse	$t_p = 8.3 \text{ ms}$	12 800	A
		$t_p = 10 \text{ ms}$	12 000	A
Pt	Limiting load integral $V_R = 0 \text{ V}$, half sine pulse, $T_j = 25 \text{ }^\circ\text{C}$	$t_p = 8.3 \text{ ms}$	1 066 000	A ² s
		$t_p = 10 \text{ ms}$	1 125 000	A ² s
	Limiting load integral $V_R = 0 \text{ V}$, half sine pulse	$t_p = 8.3 \text{ ms}$	682 000	A ² s
		$t_p = 10 \text{ ms}$	720 000	A ² s
$T_{jmin} - T_{jmax}$	Operating temperature range	-40 \div 160	$^\circ\text{C}$	
T_{STG}	Storage temperature range	-40 \div 160	$^\circ\text{C}$	

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

Characteristics		Value			Unit
		min	typ	max	
V_{T0} r_T	Threshold voltage			0.894	V
	Forward slope resistance $I_{F1} = 1\ 500\ A, I_{F2} = 4\ 500\ A$			0.487	m:
V_{FM}	Maximum forward voltage $I_{FM} = 1\ 500\ A$			1.65	V
Q_{rr}	Recovered charge $V_R = 100\ V, I_{FM} = 1\ 000\ A, di/dt = -30\ A/Ps$		2 400	3 500	PC

Unless otherwise specified $T_j = 160\ ^\circ C$

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

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

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

<i>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
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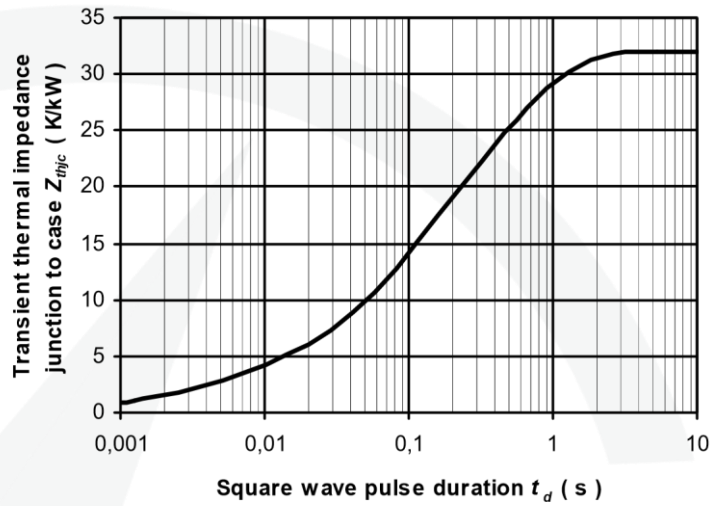


Fig. 2 Dependence transient thermal impedance junction to case on square pulse

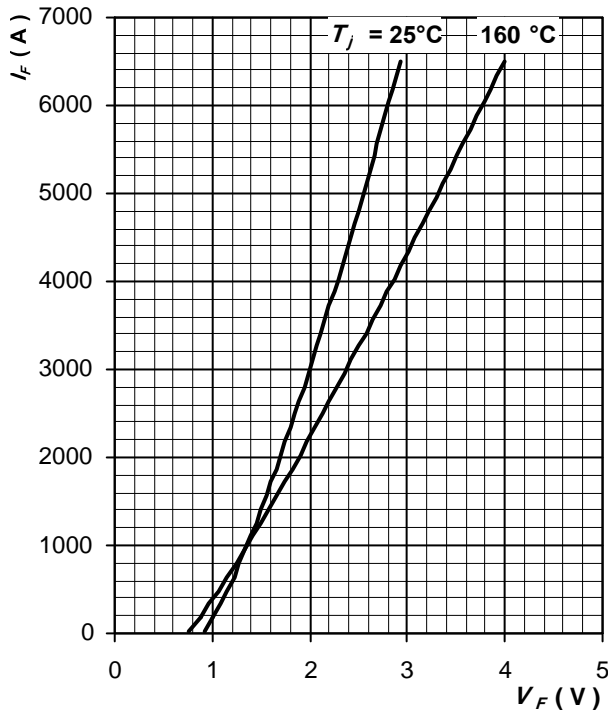


Fig. 3 Maximum forward voltage drop characteristics

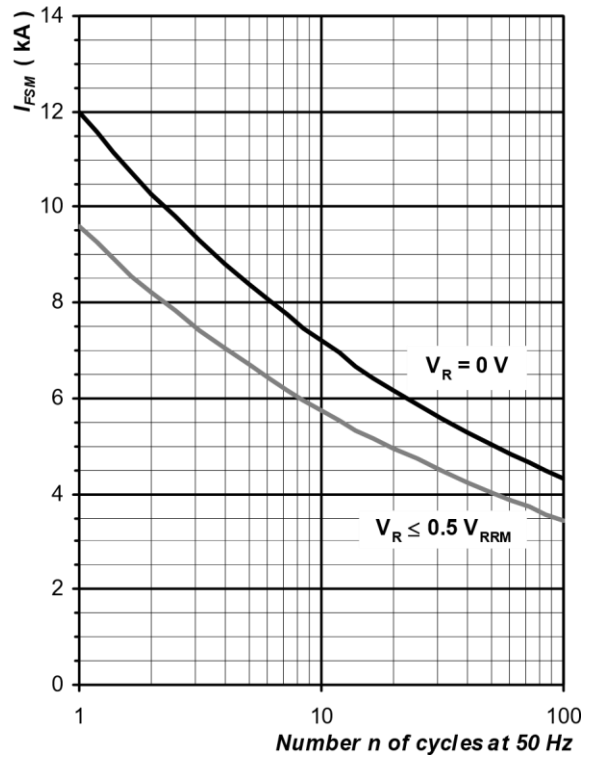
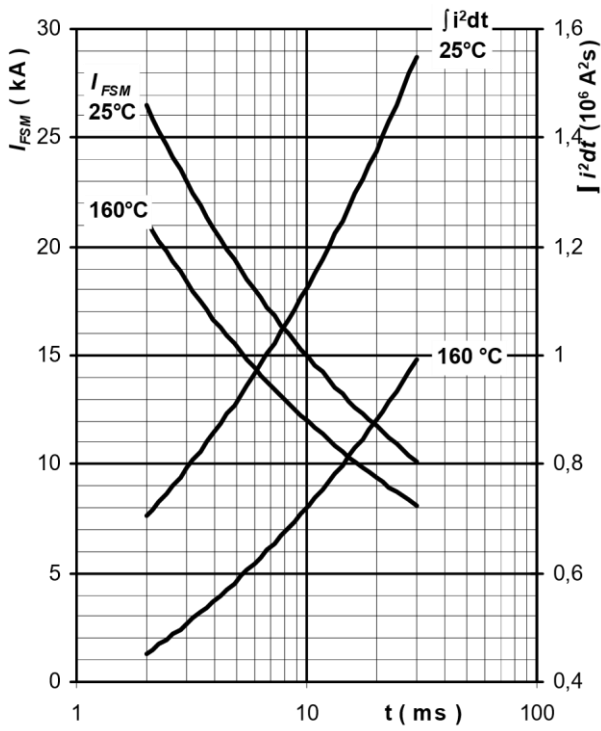


Fig. 4 Surge forward current vs. pulse length, Fig. 5 Surge forward current vs. number half sine wave, single pulse, $V_R = 0 V$ of pulses, half sine wave, $T_j = T_{jmax}$

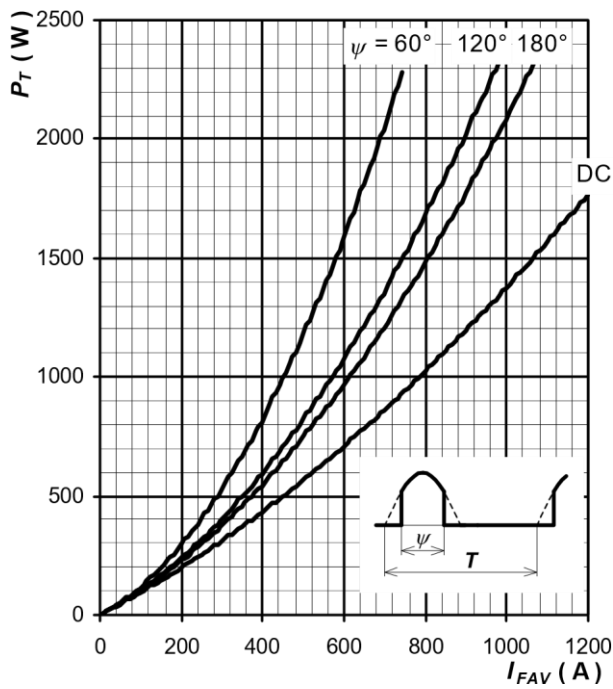


Fig. 6 Forward power loss vs. average forward current, sine waveform, $f = 50$ Hz, $T = 1/f$

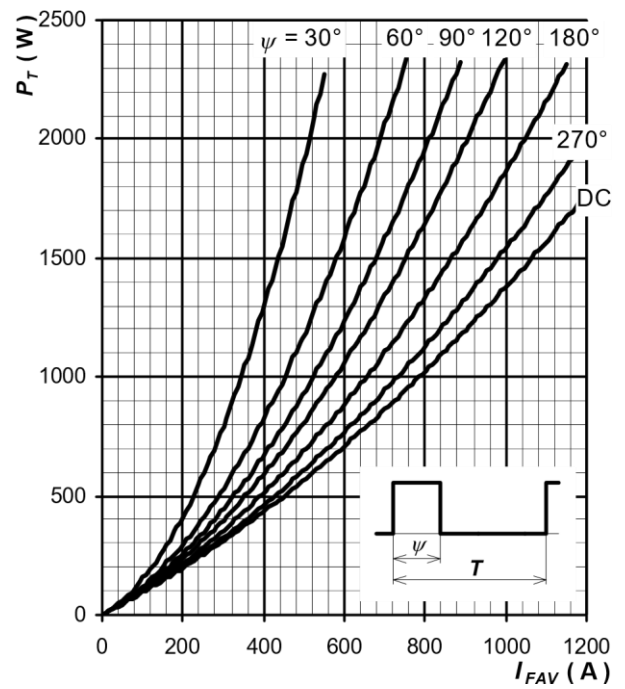


Fig. 7 Forward power loss vs. average forward current, square waveform, $f = 50$ Hz, $T = 1/f$

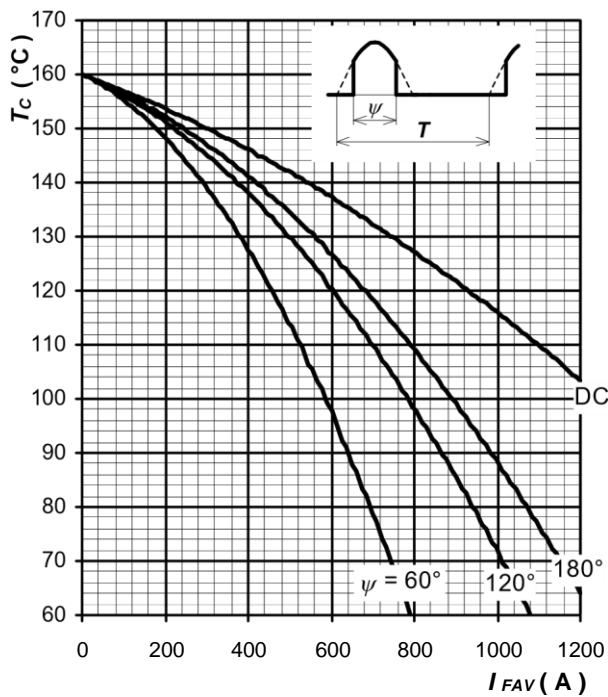


Fig. 8 Max. case temperature vs. aver. forward current, sine waveform, $f = 50$ Hz, $T = 1/f$

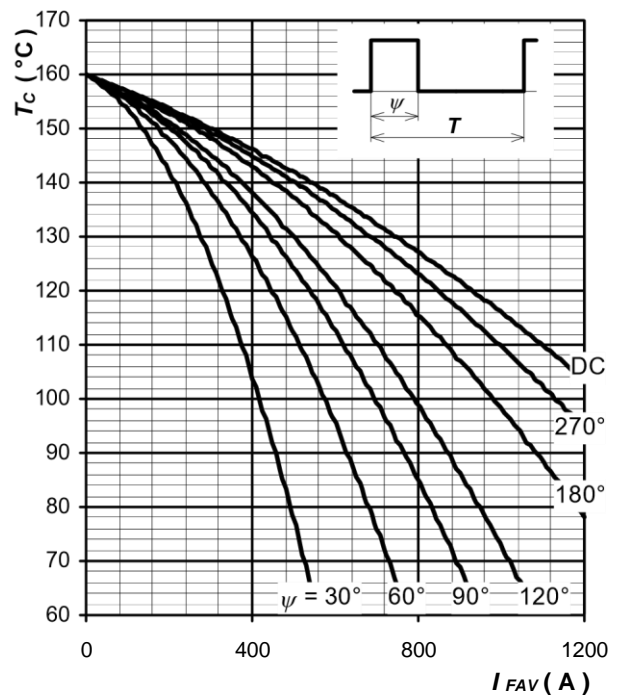


Fig. 9 Max. case temperature vs. aver. forward current, square waveform, $f = 50$ Hz, $T = 1/f$

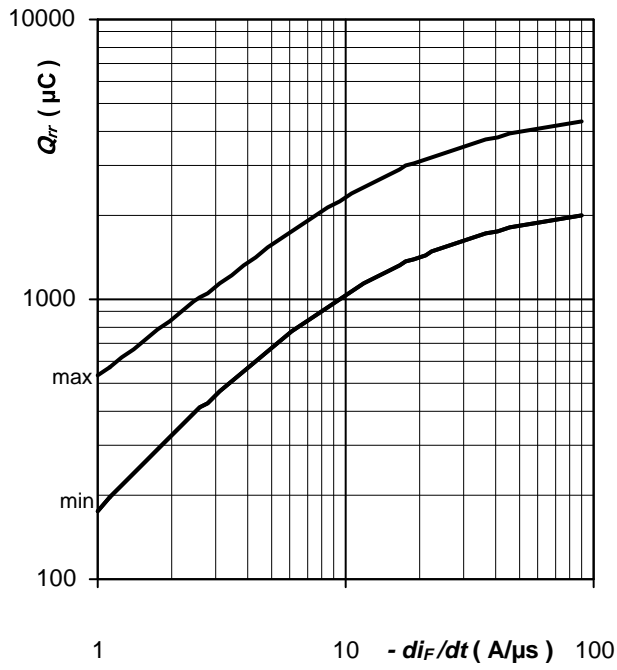


Fig. 10 Recovered charge Q_{rr}

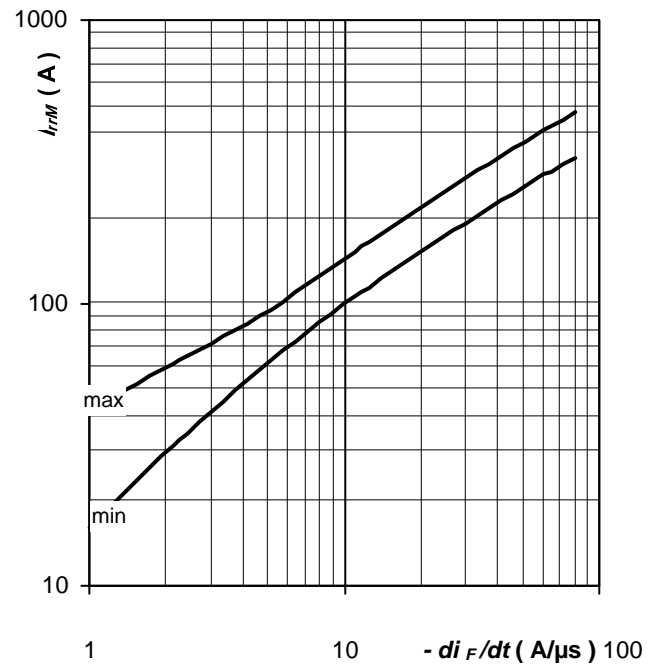


Fig. 11 Reverse recovery maximum current I_{rrM}

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: