

# DV 827-1100-28

## Rectifier Diode

### Properties

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

### Key Parameters

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

### Types

	$V_{RRM}$
DV 827-1100-28	2 800 V
DV 827-1100-26	2 600 V
DV 827-1100-24	2 400 V
DV 827-1100-22	2 200 V
Conditions:	$T_j = -40 \div 160^\circ\text{C}$ , half sine waveform, $f = 50\text{ Hz}$

### Mechanical Data

$F_m$	Mounting force	$10 \pm 2 \text{ kN}$
$m$	Weight	0.27 kg
$D_s$	Surface creepage distance	30 mm
$D_a$	Air strike distance	20 mm

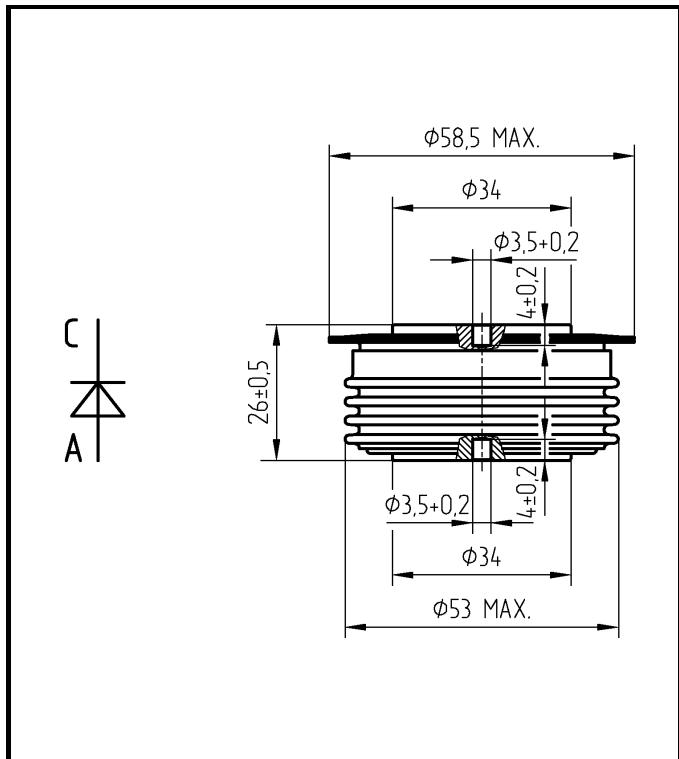


Fig. 1 Case

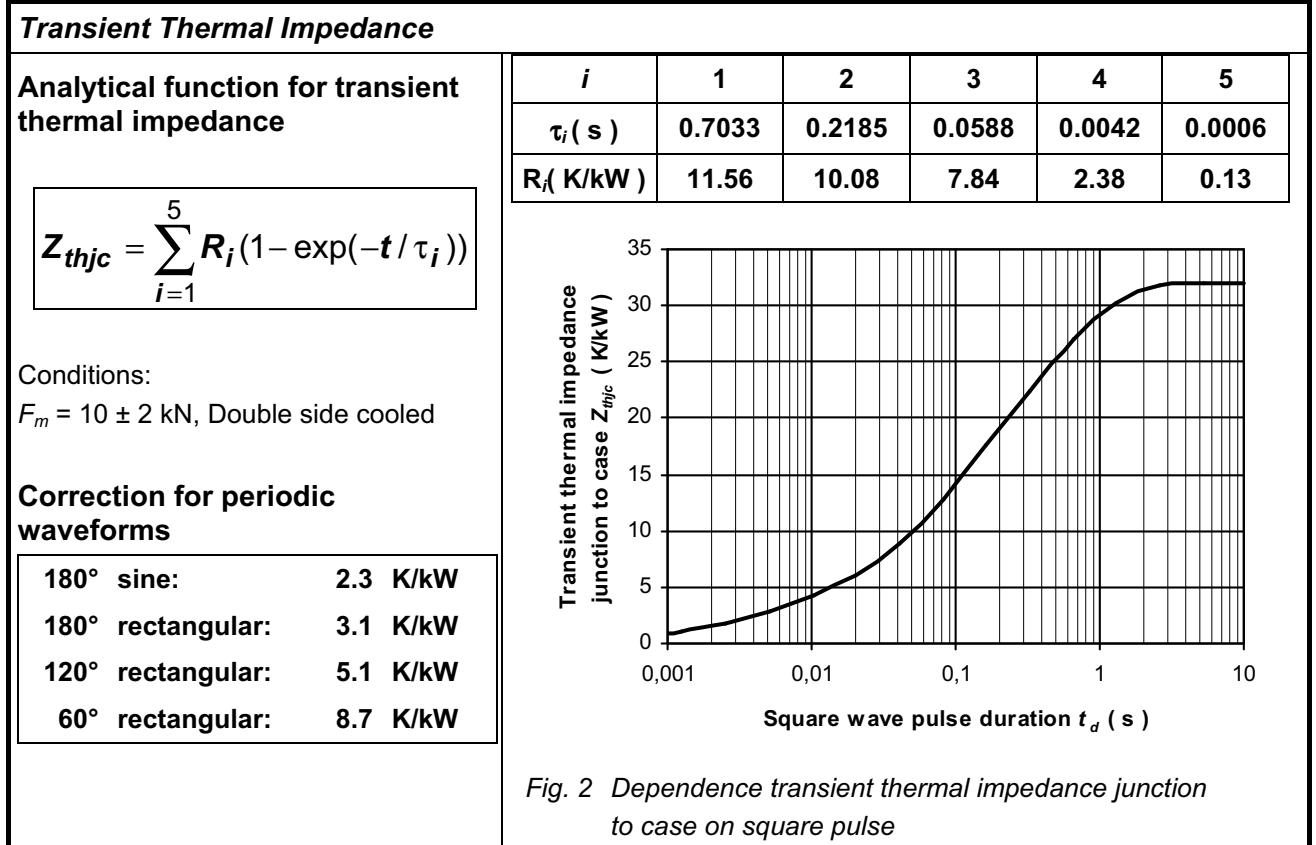
<b>Maximum Ratings</b>			<b>Maximum Limits</b>	<b>Unit</b>
$V_{RRM}$	<b>Repetitive peak reverse voltage</b> $T_j = -40 \div 160^\circ\text{C}$	DV 827-1100-28 DV 827-1100-26 DV 827-1100-24 DV 827-1100-22	2 800 2 600 2 400 2 200	V
$I_{FAVm}$	<b>Average forward current</b> $T_c = 85^\circ\text{C}$		1 285	A
$I_{FRMS}$	<b>RMS forward current</b> $T_c = 85^\circ\text{C}$		2 019	A
$I_{RRM}$	<b>Repetitive reverse current</b> $V_R = V_{RRM}$		30	mA
$I_{FSM}$	<b>Non repetitive peak surge current</b> $V_R = 0 \text{ V, half sine pulse, } T_j = 25^\circ\text{C}$	$t_p = 8.3 \text{ ms}$	19 200	A
		$t_p = 10 \text{ ms}$	18 000	A
	<b>Non repetitive peak surge current</b> $V_R = 0 \text{ V, half sine pulse}$	$t_p = 8.3 \text{ ms}$	16 000	A
		$t_p = 10 \text{ ms}$	15 000	A
$I^2t$	<b>Limiting load integral</b> $V_R = 0 \text{ V, half sine pulse, } T_j = 25^\circ\text{C}$	$t_p = 8.3 \text{ ms}$	1 534 000	$\text{A}^2\text{s}$
		$t_p = 10 \text{ ms}$	1 620 000	$\text{A}^2\text{s}$
	<b>Limiting load integral</b> $V_R = 0 \text{ V, half sine pulse}$	$t_p = 8.3 \text{ ms}$	1 066 000	$\text{A}^2\text{s}$
		$t_p = 10 \text{ ms}$	1 125 000	$\text{A}^2\text{s}$
$T_{jmin} - T_{jmax}$	<b>Operating temperature range</b>		-40 $\div$ 160	$^\circ\text{C}$
$T_{STG}$	<b>Storage temperature range</b>		-40 $\div$ 160	$^\circ\text{C}$

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

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

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

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



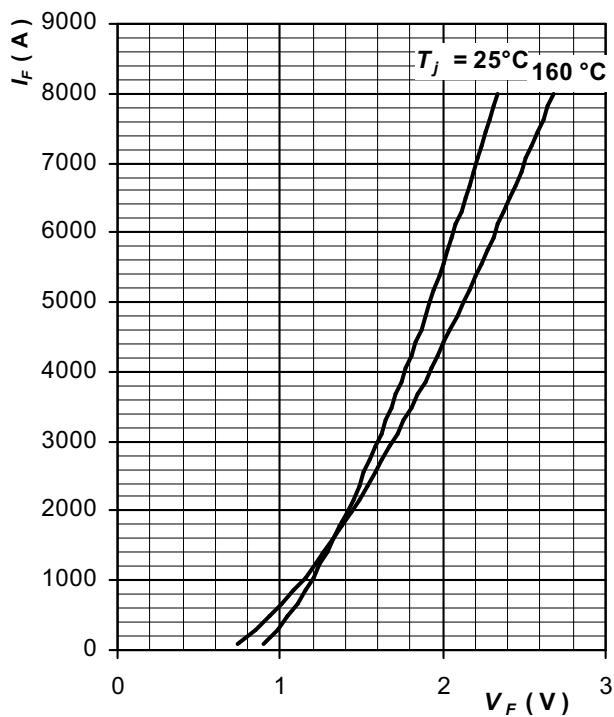


Fig. 3 Maximum forward voltage drop characteristics

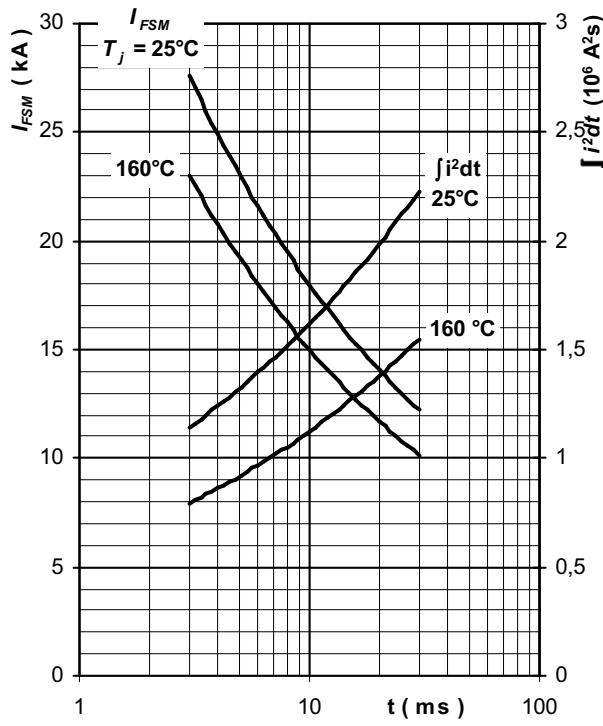


Fig. 4 Surge forward current vs. pulse length,  
half sine wave, single pulse,  $T_j = T_{jmax}$

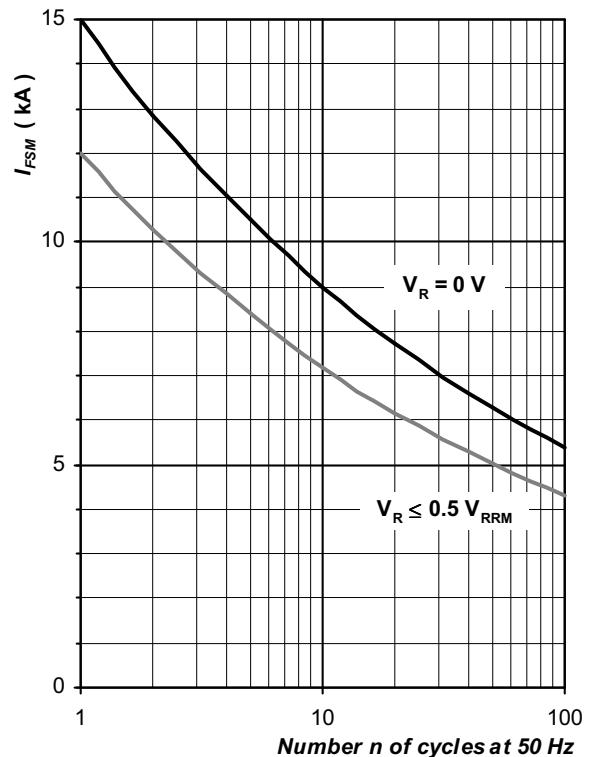


Fig. 5 Surge forward current vs. number  
of pulses, half sine wave,  $T_j = T_{jmax}$

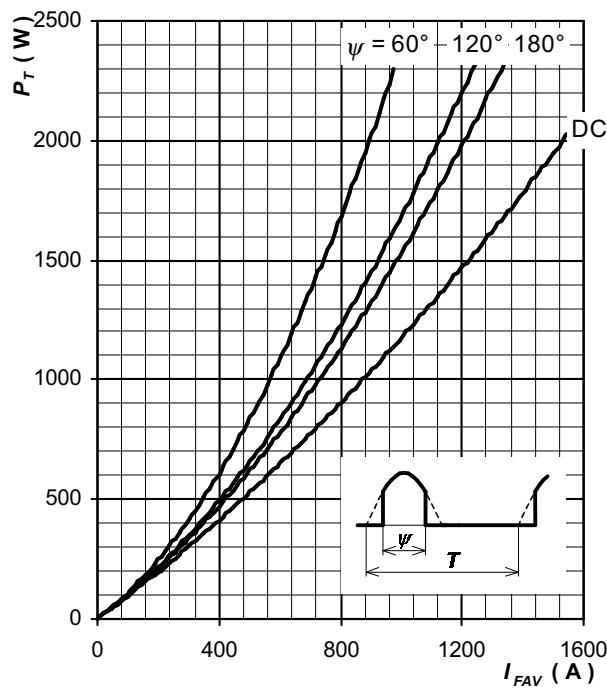


Fig. 6 Forward power loss vs. average forward current, sine waveform,  $f = 50$  Hz,  $T = 1/f$

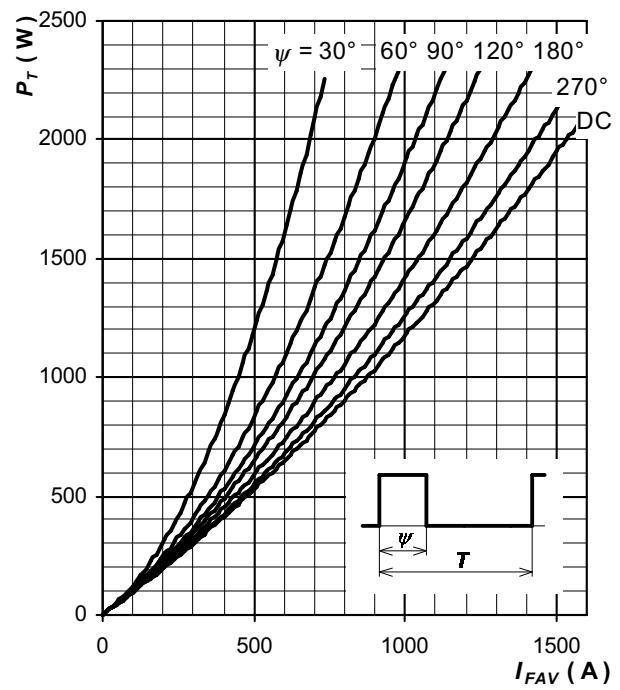


Fig. 7 Forward power loss vs. average forward current, square waveform,  $f = 50$  Hz,  $T = 1/f$

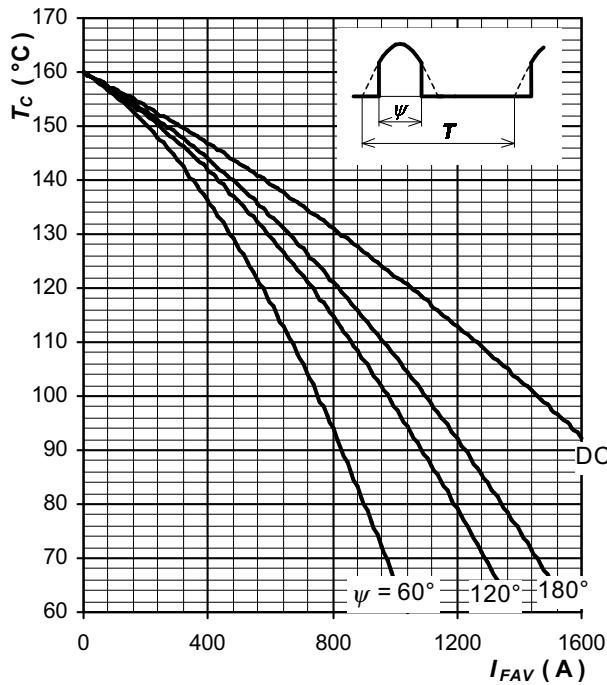


Fig. 8 Max. case temperature vs. aver. forward current, sine waveform,  $f = 50$  Hz,  $T = 1/f$

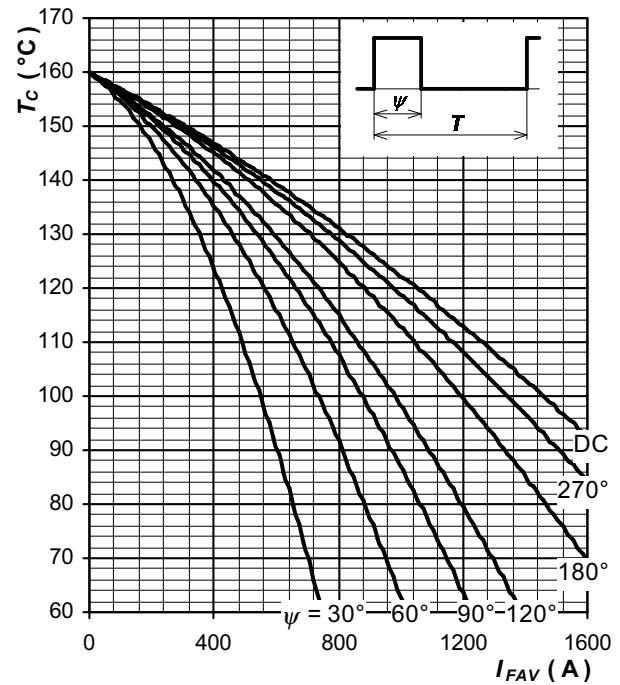


Fig. 9 Max. case temperature vs. aver. forward current, square waveform,  $f = 50$  Hz,  $T = 1/f$

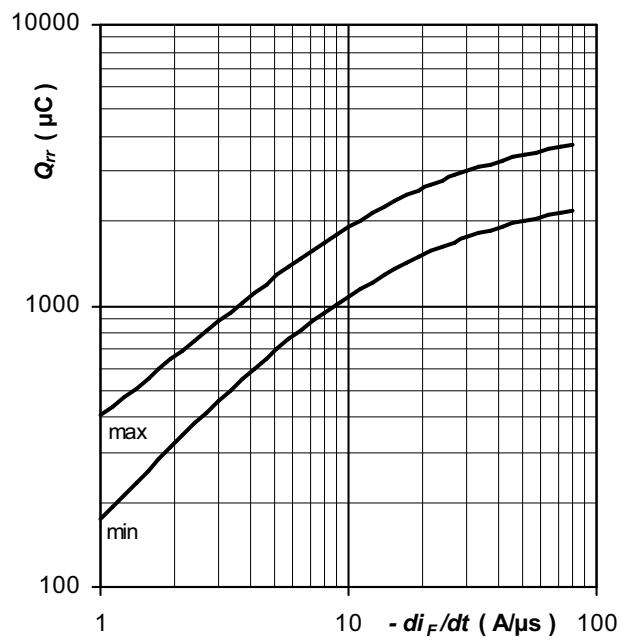


Fig. 10 Recovered charge  $Q_{rr}$   
vs. rate of fall forward current  $di_F/dt$ ,  
trapezoid pulse,  $I_{FM} = 1\,000\text{ A}$ ,  
 $V_R = 100\text{ V}$ ,  $T_j = T_{jmax}$

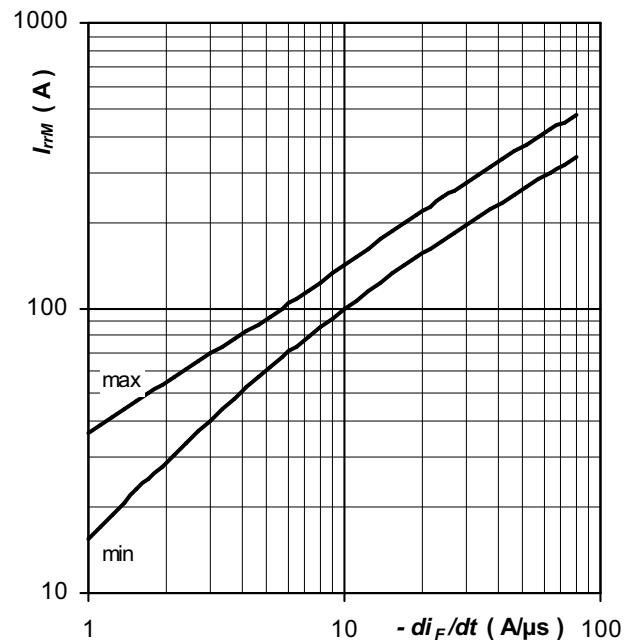


Fig. 11 Reverse recovery maximum current  $I_{rrM}$   
vs. rate of fall forward current  $di_F/dt$ ,  
trapezoid pulse,  $I_{FM} = 1\,000\text{ A}$ ,  
 $V_R = 100\text{ V}$ ,  $T_j = T_{jmax}$

Notes