



Key Parameters

I_{FAV} = 800 A
 V_{RRM} = 1800 - 2800 V

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters			Value	Unit
I_{FAV}	Maximum allowable average forward current	$T_c=136^{\circ}\text{C}$; double-sided cooling; $T_c=100^{\circ}\text{C}$; double-sided cooling; 180° el. sine; 50 Hz	800 1235	A
I_{FRMS}	RMS forward current	$T_c=136^{\circ}\text{C}$; double-sided cooling; 180° half-sine wave; 50 Hz	1256	A
I_{FSM}	Surge forward current	$T_j=T_{j\max}$ $T_j=25^{\circ}\text{C}$ 180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_R=0\text{ V}$	18.0 20.0	kA
		$T_j=T_{j\max}$ $T_j=25^{\circ}\text{C}$ 180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_R=0\text{ V}$	19.0 21.9	
I^2t	Safety factor	$T_j=T_{j\max}$ $T_j=25^{\circ}\text{C}$ 180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_R=0\text{ V}$	1620 2140	$\text{A}^2\text{s}\cdot 10^3$
		$T_j=T_{j\max}$ $T_j=25^{\circ}\text{C}$ 180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_R=0\text{ V}$	1495 1990	
V_{RRM}	Repetitive peak reverse voltage	$T_{j\min} < T_j < T_{j\max}$; 180° el. sine; 50 Hz;	1800 - 2800	V
V_{RSM}	Non-repetitive peak reverse voltage	$T_{j\min} < T_j < T_{j\max}$; 180° el. sine; single pulse;	1900 - 2900	V
V_R	Reverse continuous voltages	$T_j=T_{j\max}$;	$0.75\cdot V_{RRM}$	V

CHARACTERISTICS

Symbols and parameters			Value			Unit
			min	typ	max	
V_{FM}	Peak forward voltage	$T_j=25\text{ }^{\circ}\text{C}; I_{FM}=2512\text{ A}$			1.55	V
$V_{F(TO)}$	Forward threshold voltage	$T_j=T_{j\text{ max}};$ $0.5\text{ p } I_{FAV} < I_T < 1.5\text{ p } I_{FAV}$			1.00	V
r_T	Dynamic on-state resistance				0.410	mΩ
I_{RRM}	Repetitive peak reverse current	$T_j=T_{j\text{ max}};$ $V_R=V_{RRM}$			70	mA

THERMAL PARAMETERS

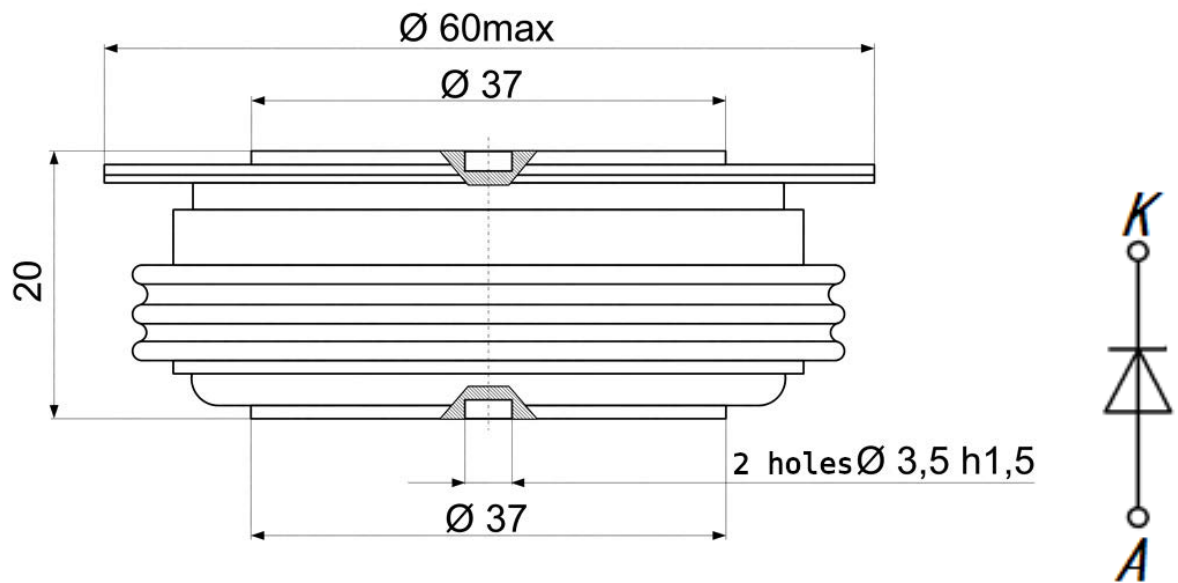
Symbols and parameters		Value	Unit
R_{thjc}	Thermal resistance junction to case, max	0.027	$^{\circ}\text{C/W}$
R_{thjc-A}		0.059	$^{\circ}\text{C/W}$
R_{thjc-K}		0.049	$^{\circ}\text{C/W}$
R_{thck}	Thermal resistance, case to heatsink, max	0.006	$^{\circ}\text{C/W}$

MECHANICAL PARAMETERS

Symbols and parameters			Value	Unit
w	Weight, max		260	g
D_s	Creepage distance (surface leakage path length)		23.69 (0.933)	mm (inch)
D_a	Clearance (air) distance		19.10 (0.752)	mm (inch)
F	Mounting force		14.0 - 16.0	kN
a	Acceleration	Unclamped condition	50	mm
		Clamped condition	100	

DIMENSIONS

Housing type: PD42, D.C2



K – cathode;
A – anode;

All dimensions in millimeters



Key Parameters

I_{FAV}	=	200	A
V_{RRM}	=	400 - 1800	V

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters			Value	Unit
V_{RRM}	Repetitive peak reverse voltage	$T_j = -60\text{ °C} \dots +150\text{ °C}$	400 - 1800	V
V_{BR}	Breakdown voltage	$T_j = -60\text{ °C} \dots +150\text{ °C}$	500 - 2250	V
I_{RRM}	Repetitive pulsed reverse current	$T_j = 150\text{ °C}$, $V_R = V_{RRM}$	25	mA
$I_{F(AV)}$	Maximum permissible average forward current	$T_C = 115\text{ °C}$, $f = 50\text{ Hz}$	210	A
I_{FRMS}	RMS forward current		330	A
I_{FSM}	Surge forward current	$V_R = 0$, $T_j = 150\text{ °C}$, $t_p = 10\text{ ms}$	7.5	kA
I^2t	Safety factor		280	kA ² s

MECHANICAL PARAMETERS

Symbols and parameters			Value	Unit
w	Weight		0.265	kg
M_d	Torque		20 - 30	Nm

CHARACTERISTICS

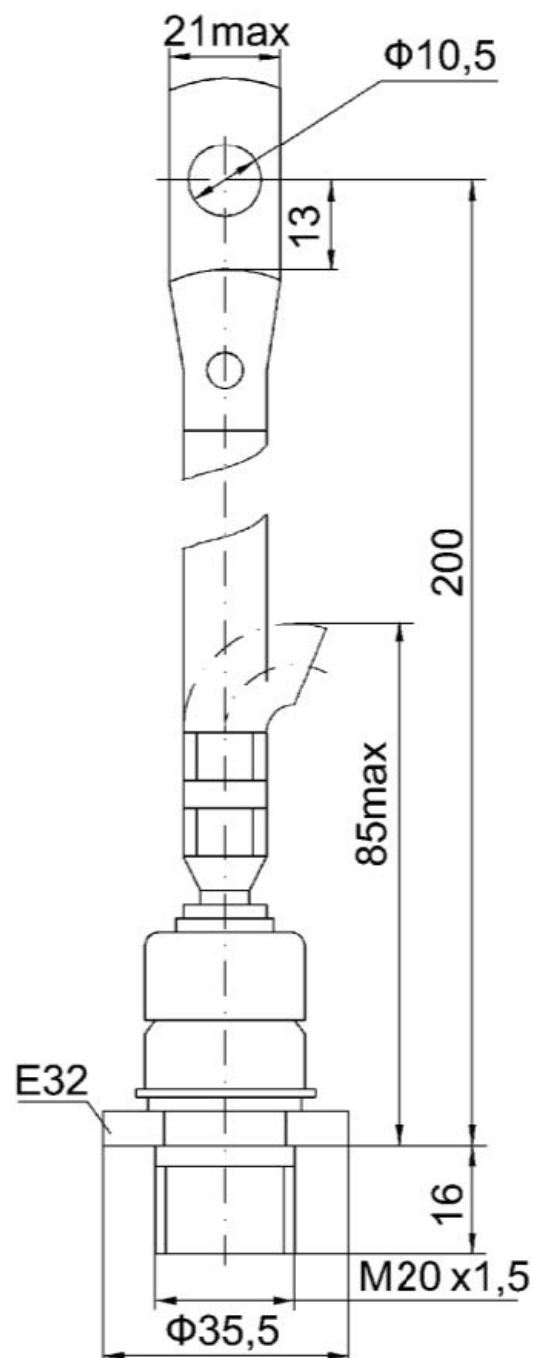
Symbols and parameters			Value			Unit
			min	typ	max	
V_{FM}	Pulse forward voltage	$T_j = 25\text{ }^{\circ}\text{C}$, $I_F = 628\text{ A}$			1.40	V
$V_{(TO)}$	Threshold voltage	$T_j = 150\text{ }^{\circ}\text{C}$, $I_F = 300\text{-}1000\text{ A}$			0.92	V
r_T	Dynamic resistance	$T_j = 150\text{ }^{\circ}\text{C}$, $I_F = 300\text{-}1000\text{ A}$			0.68	m Ω
Q_{rr}	Reverse recovery charge	$T_j = 150\text{ }^{\circ}\text{C}$, $I_F = 200\text{ A}$, $di_F/dt = -5\text{ A}/\mu\text{s}$, $V_R \geq 100\text{ V}$			1000	μC
P_{RSM}	Surge reverse power dissipation	$T_j = 150\text{ }^{\circ}\text{C}$, single pulses, sinusoidal current, $t_p = 100\text{ }\mu\text{s}$			16	kW

THERMAL PARAMETERS

Symbols and parameters			Value	Unit
R_{thjc}	Junction-to-case thermal resistance		0.13	$^{\circ}\text{C}/\text{W}$
R_{thch}	Case-to-heatsink thermal resistance		0.05	
T_j	Junction temperature		-60... +150	$^{\circ}\text{C}$
T_{stg}	Storage temperature		-60... +50	

DIMENSIONS

Housing type: SD6, D.SA1



K – cathode;
A – anode;

All dimensions in millimeters

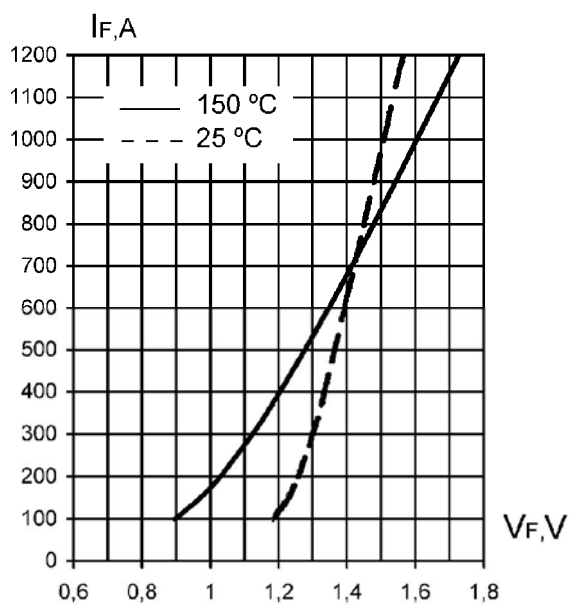


Fig. 1. Limiting forward volt-ampere characteristics

Equation of the forward volt-ampere characteristic

$$V_F = A + B \cdot I_F + C \cdot \ln(I_F + 1) + D \cdot \sqrt{I_F}$$

Valid for $I_F = 100\text{--}1200\text{ A}$

	$T_j = 150\text{ }^{\circ}\text{C}$	$T_j = 25\text{ }^{\circ}\text{C}$
A	0.115	0.453
B	0.0006892	0.0005796
C	0.189	0.215
D	-0.016	-0.032

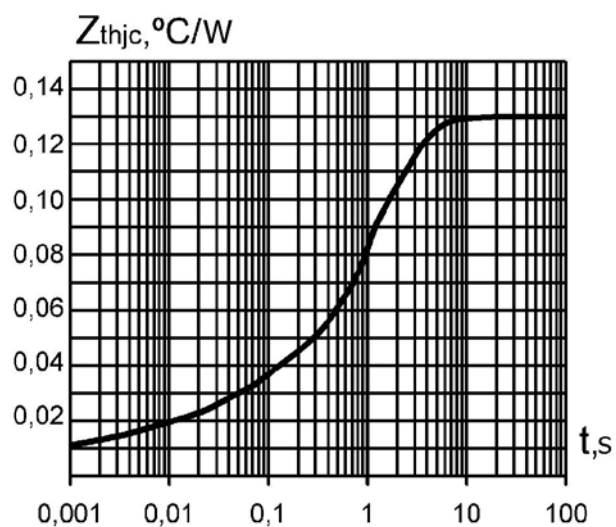


Fig. 2. Junction-to-case transient thermal resistance (DC)

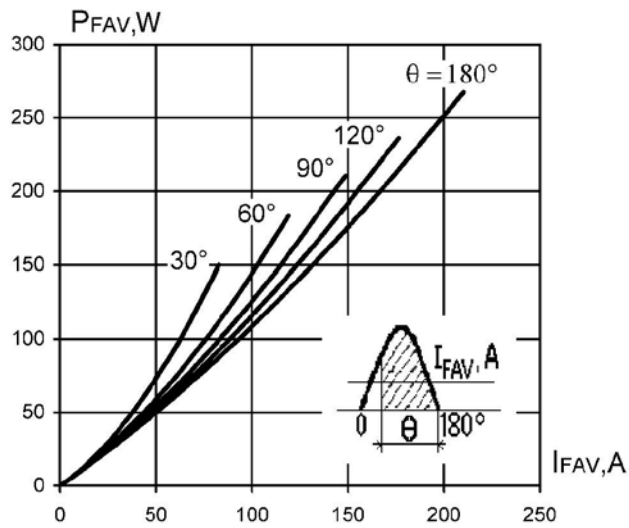


Fig. 3. Average forward loss power (half-wave sinusoidal pulse)

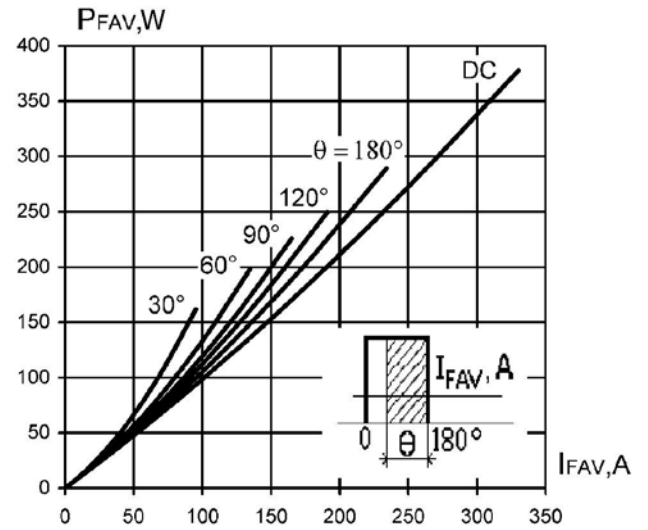


Fig. 4. Average forward loss power (rectangular pulse)

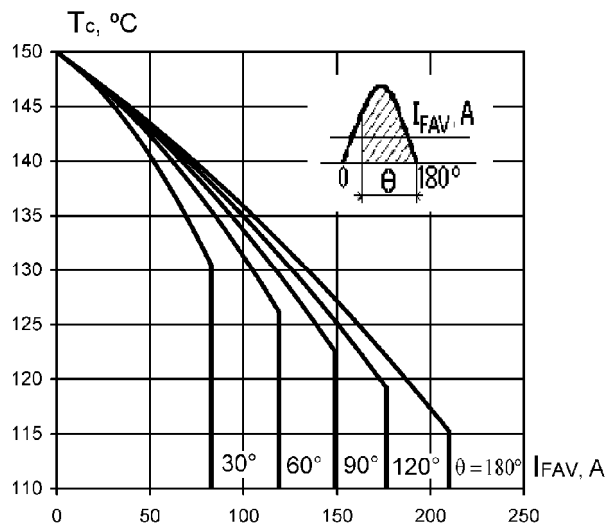


Fig. 5. Maximum allowable case temperature (half-wave sinusoidal pulse)

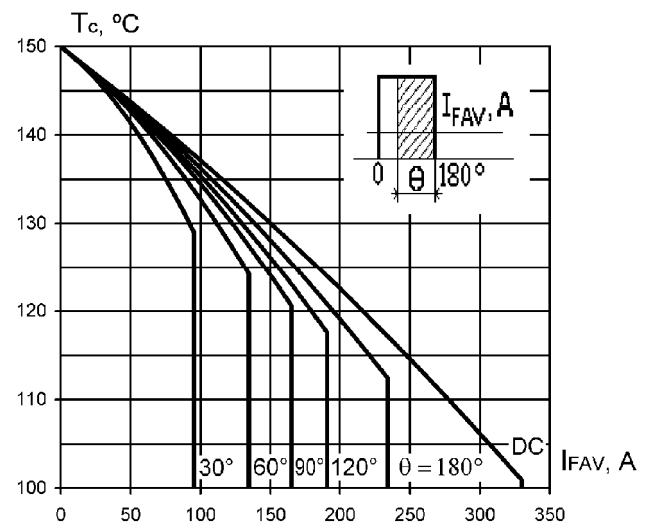


Fig. 6. Maximum allowable case temperature (rectangular pulse)

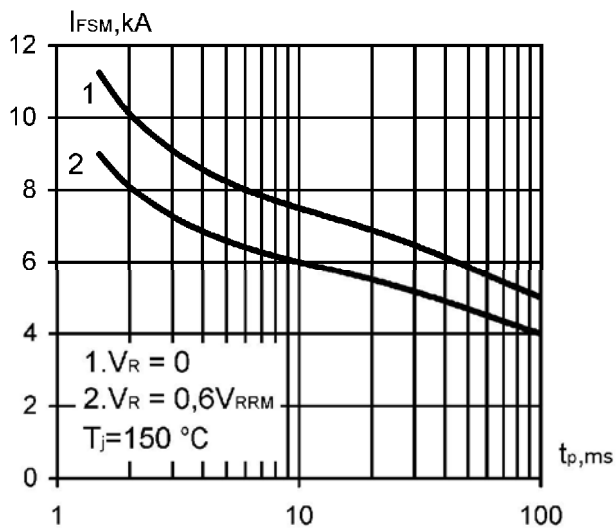


Fig. 7. Dependence of allowable surge current amplitude on pulse duration (half-sine)

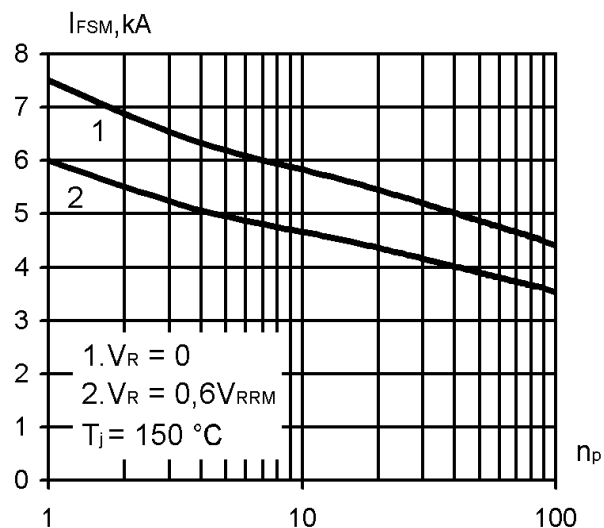


Fig. 8. Dependence of allowable surge current amplitude on number of sinusoidal pulses (10 ms, 50 Hz)

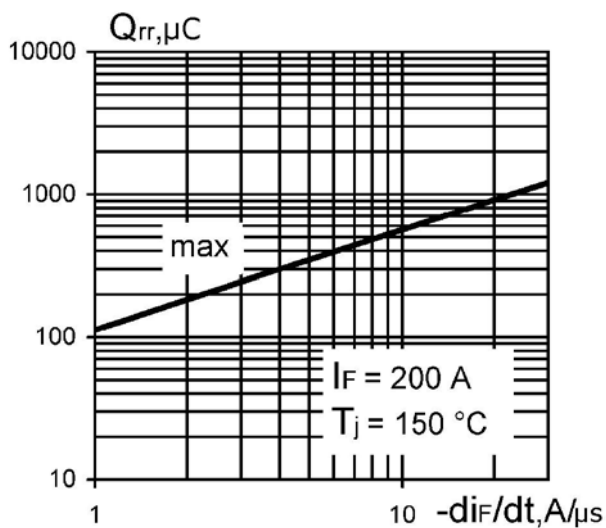


Fig. 9. Dependence of reverse recovery charge on current fall rate

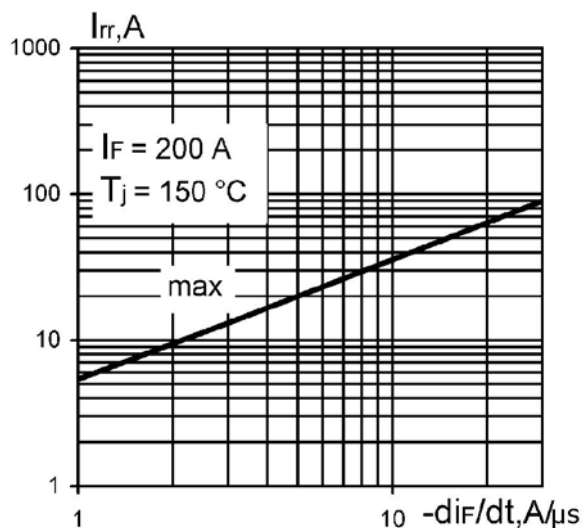


Fig. 10. Dependence of reverse recovery current on current fall rate

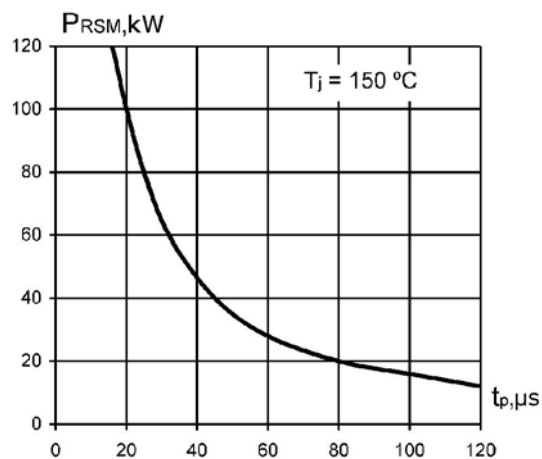


Fig. 11. Dependence of surge reverse power dissipation on pulse duration