V_{RSM}	=	2800	V
I_{FAVM}	=	6830	A
I_{FRMS}	=	1073	A
I_{FSM}	=	8700	A
V_{F0}	=	0.80	V
r_F	=	0.050	mW

Rectifier Diode

5SDD 60N2800

Doc. No. 5SYA1155-01 Oct.00

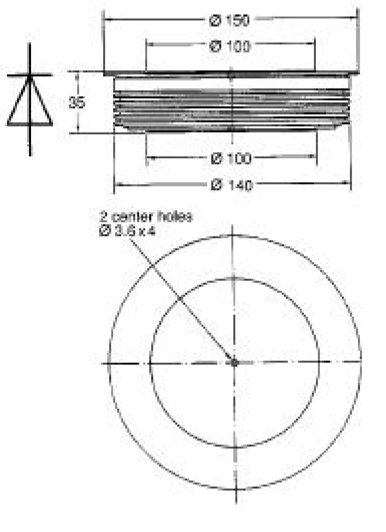
- **Patented free-floating silicon technology**
- **Very low on-state losses**
- **Optimum power handling capability**

Blocking

Part Number	**5SDD 60N2800**	**5SDD 60N2600**	**5SDD 60N2200**	Conditions
V_{RRM}	2000 V	1850 V	1600 V	f = 50 Hz, t_p = 10ms
V_{RSM}	2800 V	2600 V	2200 V	f = 5 Hz, t_p = 10ms
I_{RRM}	≤ 400 mA			V_{RR}, T_j = 160°C

Mechanical data

F_M	Mounting force	nom.	90	kN
		min.	81	kN
		max.	108	kN
a	Acceleration			
	Device unclamped		50	m/s^2
	Device clamped		100	m/s^2
m	Weight		2.9	kg
D_S	Surface creepage distance		56	mm
D_a	Air strike distance		22	mm



On-state

I_{FAVM}	Max. average on-state current	6830 A	Half sine wave, T_C = 90°C		
I_{FRMS}	Max. RMS on-state current	10730 A			
I_{FSM}	Max. peak non-repetitive surge current	87000 A	tp =	10 ms	T_j = 160°C
		95000 A	tp =	8.3 ms	After surge:
I^2t	Limiting load integral	38500 kA^2s	tp =	10 ms	V_R = 0V
		38000 kA^2s	tp =	8.3 ms	
V_F	On-state voltage	1.05 V	I_F =	5000 A	
V_{F0}	Threshold voltage	0.80 V	I_F =	2500 - 7500 A	T_j = 160°C
r_F	Slope resistance	0.050 mΩ			

Switching

Q_{rr}	Recovery charge	min	4400 µAs	di_F/dt = -10A/µs	V_R = 200 V
		max	6300 µAs	I_{FRM} = 4000A	T_j = 160°C

Thermal

$T_{j\ max}$	Max. junction temperature	160°C	
$T_{j\ stg}$	Storage temperature range	-40...175°C	
R_{thJC}	Thermal resistance junction to case	11.4 K/kW	Anode side cooled
		11.4 K/kW	Cathode side cooled
		5.7 K/kW	Double side cooled
R_{thCH}	Thermal resistance case to heat sink	2 K/kW	Single side cooled
		1 K/kW	Double side cooled

Analytical function for transient thermal impedance:

$$Z_{thJC}(t) = \sum_{i=1}^{n} R_i(1 - e^{-t/\tau_i})$$

i	1	2	3	4
R_i(K/kW)	3.4	1.26	0.68	0.35
τ_i(s)	0.8685	0.1572	0.0219	0.0078

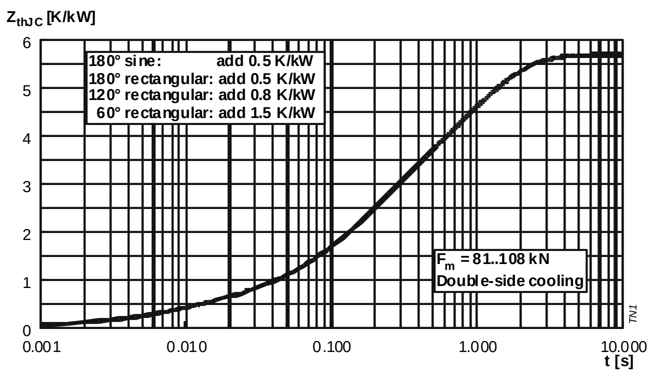


Fig. 1 Transient thermal impedance junction to case.

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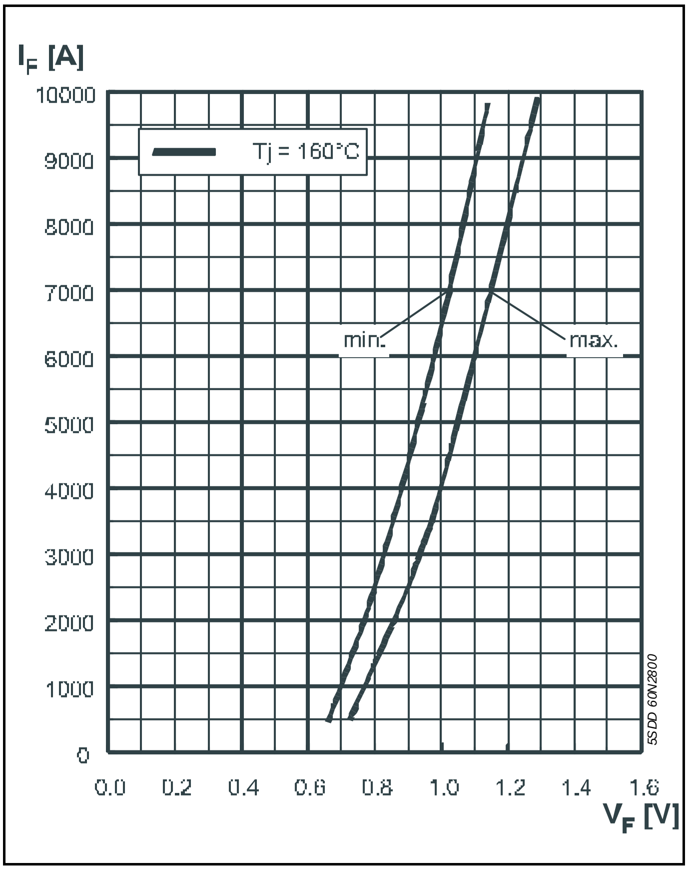

Fig 2. On-state characteristics.

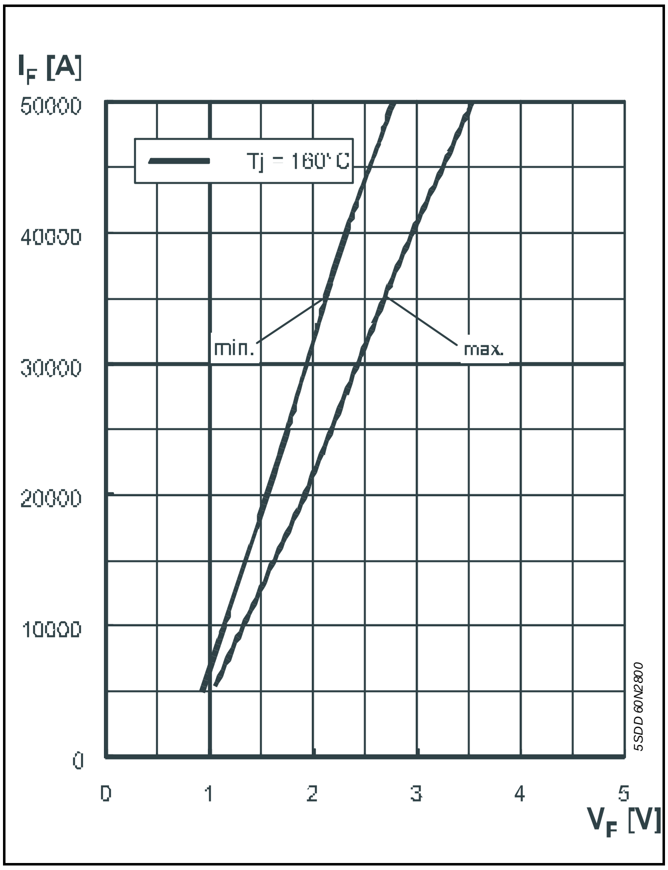

Fig. 3 On state characteristics.

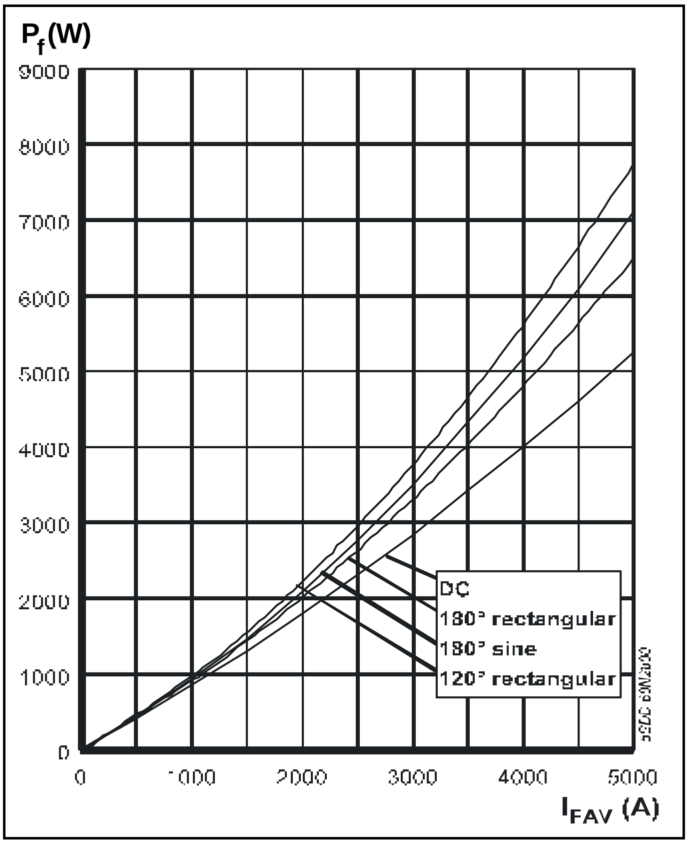

Fig. 4 On-state power dissipation vs. mean on-state current. Turn-on losses excluded.

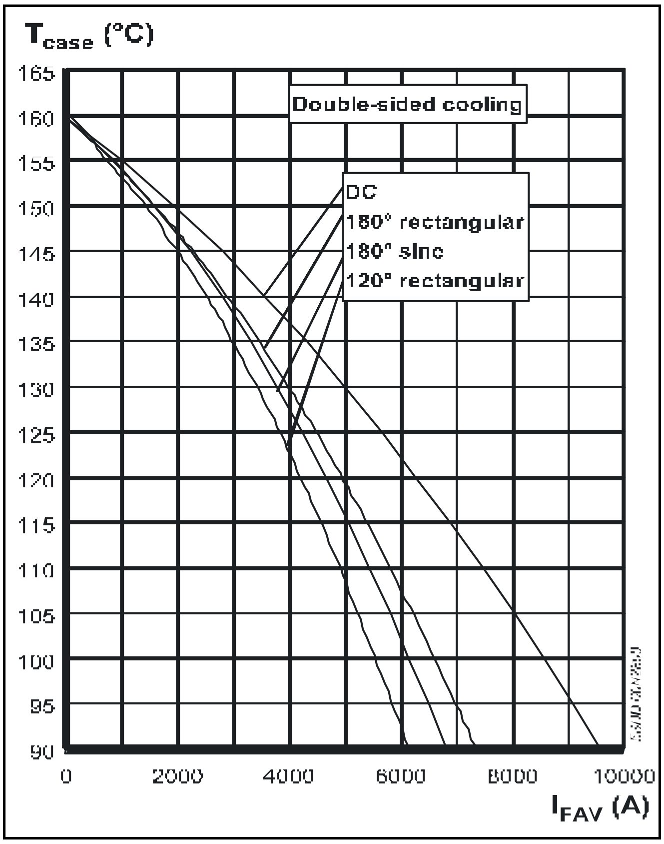

Fig. 5 Max. permissible case temperature vs. mean on-state current.

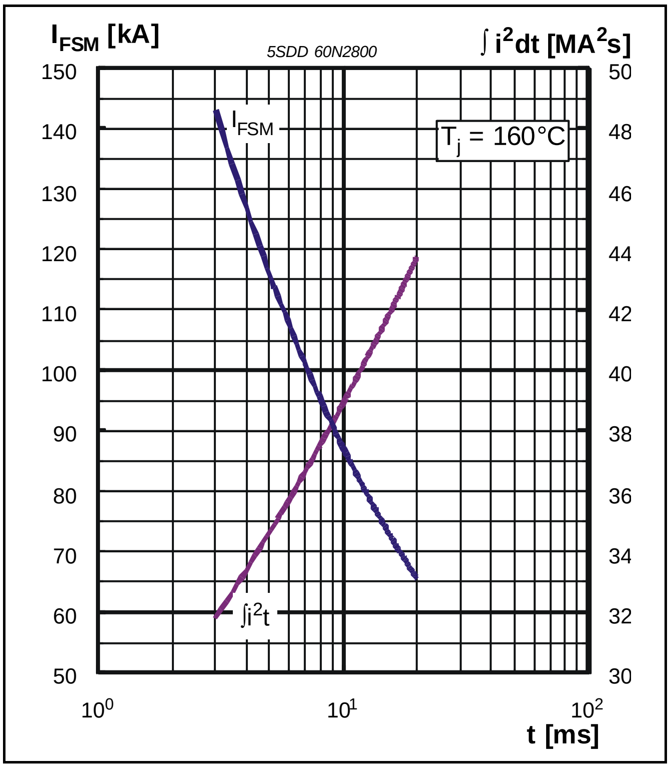

Fig. 6 Surge on-state current vs. pulse length. Half-sine wave.

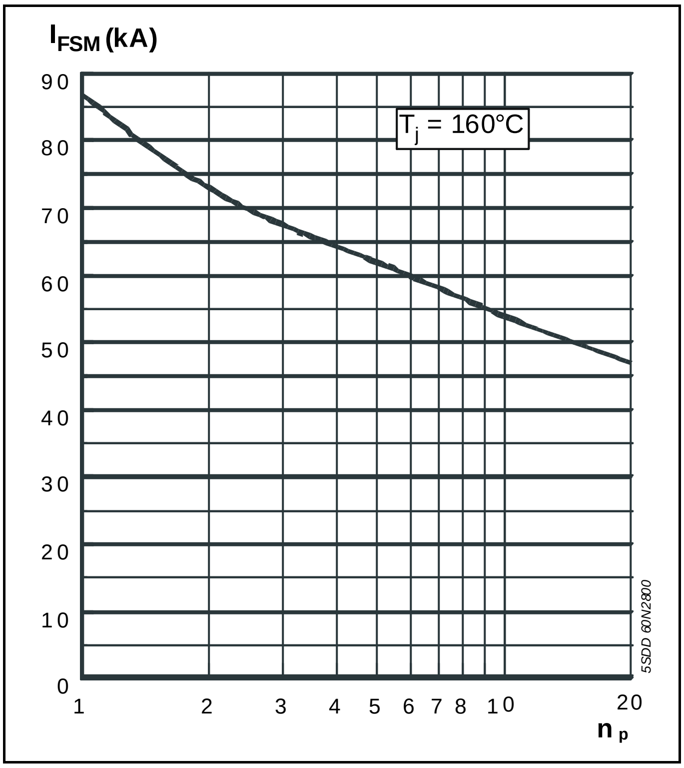

Fig. 7 Surge on-state current vs. number of pulses. Half-sine wave, 10 ms, 50Hz.

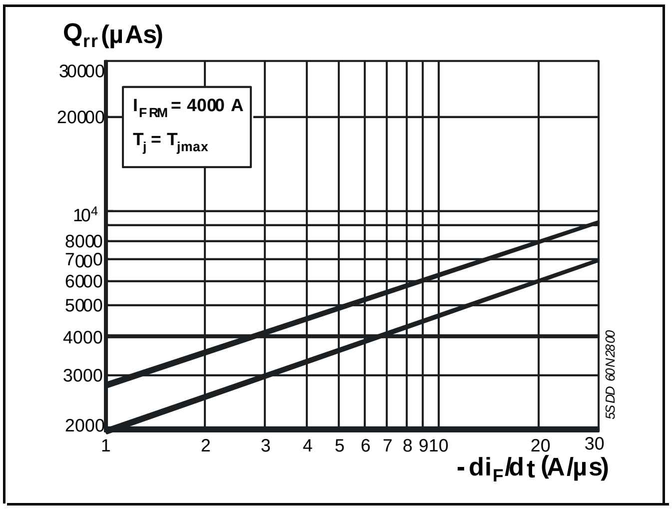

Fig. 8 Recovery charge vs. decay rate of on-state current.

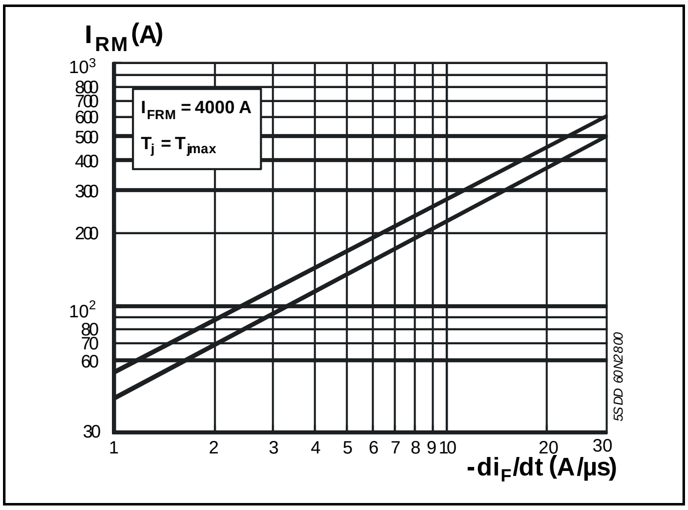

Fig. 9 Peak reverse recovery current vs. decay rate of on-state current.

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ABB Semiconductors AG
Fabrikstrasse 3
CH-5600 Lenzburg, Switzerland

Telephone +41 (0)62 888 6419
Fax +41 (0)62 888 6306
Email Info@ch.abb.com
Internet www.abbsem.com

Doc. No. 5SYA1155-01 Oct.00