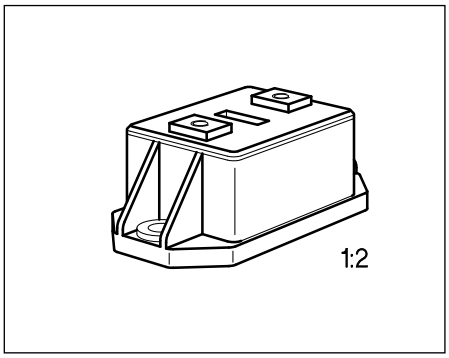
SIEMENS

SIMOPAC® Module

BSM 181
BSM 181 R

V_{DS} = **100 V**
I_D = **200 A**
$R_{DS(on)}$ = **8.5 mΩ**

- Power module
- Single switch
- N channel
- Enhancement mode
- Package with insulated metal base plate
- Package outline/Circuit diagram: 1[1)]



Type	Ordering Code
BSM 181	C67076-A1001-A2
BSM 181 R	C67076-A1016-A2

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain-source voltage	V_{DS}	800	V
Drain-gate voltage, R_{GS} = 20 kΩ	V_{DGR}	800	
Gate-source voltage	V_{GS}	± 20	
Continuous drain current, T_C = 25 ˚C	I_D	36	A
Pulsed drain current, T_C = 25 ˚C	$I_{D\ puls}$	144	
Operating and storage temperature range	T_j, T_{stg}	– 55 … + 150	˚C
Power dissipation, T_C = 25 ˚C	P_{tot}	700	W
Thermal resistance Chip-case	$R_{th\ JC}$	≤ 0.18	K/W
Insulation test voltage[2)], t = 1 min.	V_{is}	2500	V_{ac}
Creepage distance, drain-source	–	16	mm
Clearance, drain-source	–	11	
DIN humidity category, DIN 40 040	–	F	–
IEC climatic category, DIN IEC 68-1	–	55/150/56	

1) See chapter Package Outline and Circuit Diagrams.
2) Insulation test voltage between drain and base plate referred to standard climate 23/50 in acc. with DIN 50 014, IEC 146, para. 492.1.

Electrical Characteristics

at T_j = 25 ˚C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Drain-source breakdown voltage V_{GS} = 0, I_D = 0.25 mA	$V_{(BR)DSS}$	800	–	–	V
Gate threshold voltage V_{DS} = V_{GS}, I_D = 1 mA	$V_{GS(th)}$	2.1	3.0	4.0	
Zero gate voltage drain current V_{DS} = 800 V, V_{GS} = 0 T_j = 25 ˚C T_j = 125 ˚C	I_{DSS}	 – –	 50 300	 250 1000	µA
Gate-source leakage current V_{GS} = 20 V, V_{DS} = 0	I_{GSS}	–	10	100	nA
Drain-source on-state resistance V_{GS} = 10 V, I_D = 23 A	$R_{DS(on)}$	–	0.18	0.24	Ω
Dynamic Characteristics					
Forward transconductance $V_{DS} \geq 2 \times I_D \times R_{DS(on)max.}$, I_D = 23 A	g_{fs}	15	25	–	S
Input capacitance V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz	C_{iss}	–	24	32	nF
Output capacitance V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz	C_{oss}	–	1.3	2.0	
Reverse transfer capacitance V_{GS} = 0, V_{DS} = 25 V, f = 1 MHz	C_{rss}	–	0.5	0.8	
Turn-on time t_{on} (t_{on} = $t_{d\ (on)}$ + t_r) V_{CC} = 400 V, V_{GS} = 10 V I_D = 23 A, R_{GS} = 3.3 Ω	$t_{d\ (on)}$	–	60	–	ns
	t_r	–	30	–	
Turn-off time t_{off} (t_{off} = $t_{d\ (off)}$ + t_f) V_{CC} = 400 V, V_{GS} = 10 V I_D = 23 A, R_{GS} = 3.3 Ω	$t_{d\ (off)}$	–	370	–	
	t_f	–	70	–	

Electrical Characteristics (cont'd)
at T_j = 25 ˚C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Reverse diode					
Continuous reverse drain current T_C = 25 ˚C	I_S	–	–	36	A
Pulsed reverse drain current T_C = 25 ˚C	I_{SM}	–	–	144	
Diode forward on-voltage I_F = 72 A , V_{GS} = 0	V_{SD}	–	1.1	1.4	V
Reverse recovery time $I_F = I_S$, di_F/dt = 100 A/ µs, V_R = 100 V T_j = 25 ˚C T_j = 150 ˚C	t_{rr}	 – –	 1200 –	 – –	ns
Reverse recovery charge $I_F = I_S$, di_F/dt = 100 A/ µs, V_R = 100 V T_j = 25 ˚C T_j = 150 ˚C	Q_{rr}	 – –	 42 50	 – –	µC