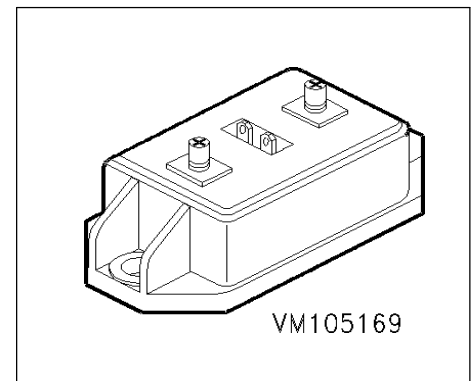


SIMOPAC® MODULE

- Power module
- Single switch
- N channel
- Enhancement mode
- Package with insulated metal base plate



Type	V_{DS}	I_D	$R_{DS(on)max}$	Package	Ordering Code
BSM 101 AR	50 V	200 A	0.003 Ω	SSW MOS 1	C67076-S1018-A20

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain source voltage	V_{DS}	50	V
Drain-gate voltage $R_{GS} = 20 \text{ k}\Omega$	V_{DGR}	50	
Gate source voltage	V_{GS}	± 20	
Continuous drain current $T_C = 105 \text{ }^\circ\text{C}$	I_D	200	A
DC drain current, pulsed $T_C = 105 \text{ }^\circ\text{C}$	I_{Dpuls}	600	
Power dissipation $T_C = 25 \text{ }^\circ\text{C}$	P_{tot}	700	W
Chip temperature	T_{jmax}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-40 ... + 125	

Thermal resistance chip - case	R_{thJC}	≤ 0.18	K/W
Thermal resistance case - heat sink	R_{thCA}	≤ 0.05	
Insulation test voltage, $t = 1\text{min}$	V_{is}	2.5	kV ac
Creepage distance, drain-source		16	mm
Clearance, drain-source		11	
DIN humidity category, DIN 40 040		F	
DIN humidity category, DIN IEC 68-1		40 / 125 / 56	

Electrical Characteristics, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Gate threshold voltage $V_{GS}=V_{DS}, I_D = 1 \text{ mA}$	$V_{GS(th)}$	2.1	3	4	V
Drain-Source on-resistance $V_{GS} = 10 \text{ V}, I_D = 200 \text{ A}$	$R_{DS(on)}$	-	0.0026	0.003	Ω
Zero gate voltage drain current $V_{DS} = 50 \text{ V}, V_{GS} = 0 \text{ V}, T_j = 25 \text{ }^{\circ}\text{C}$ $V_{DS} = 50 \text{ V}, V_{GS} = 0 \text{ V}, T_j = 125 \text{ }^{\circ}\text{C}$	I_{DSS}	- -	50 300	100 1000	μA
Gate-source leakage current $V_{GS} = 20 \text{ V}, V_{DS} = 0 \text{ V}$	I_{GSS}	-	10	100	nA

Reverse Diode

Inverse diode continuous forward current $T_C = 25^\circ\text{C}$	I_S	-	-	200	A
Inverse diode direct current, pulsed $T_C = 25^\circ\text{C}$	I_{SM}	-	-	600	
Inverse diode forward voltage $V_{GS} = 0 \text{ V}, I_F = 400 \text{ A}$	V_{SD}	0.65	1.2	1.6	V
Reverse recovery time $V_R = 30 \text{ V}, I_F=I_S, di_F/dt = 100 \text{ A}/\mu\text{s}$	t_{rr}	-	350	-	ns
Reverse recovery charge $V_R = 30 \text{ V}, I_F=I_S, di_F/dt = 100 \text{ A}/\mu\text{s}$	Q_{rr}	-	3.5	-	μC

Electrical Characteristics, at $T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

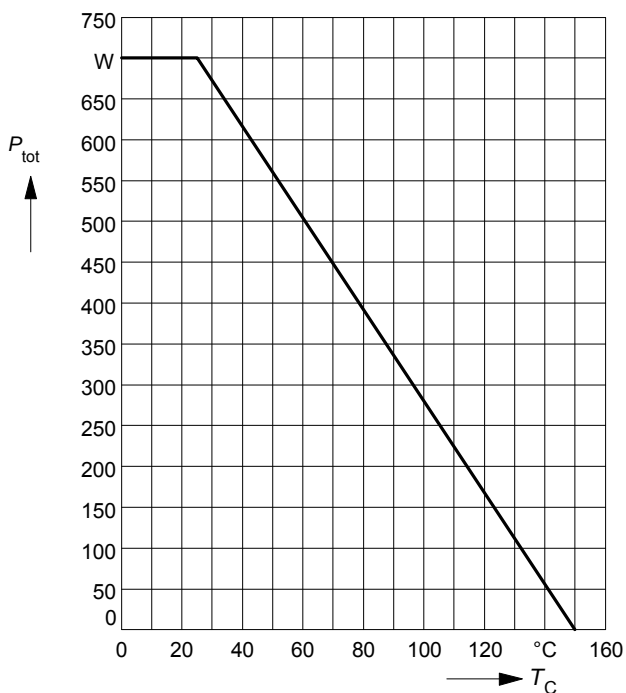
Dynamic Characteristics

Transconductance $V_{DS} \geq 2 * I_D * R_{DS(on)max}$, $I_D = 200\text{ A}$	g_{fs}	180	200	-	S
Input capacitance $V_{GS} = 0\text{ V}$, $V_{DS} = 25\text{ V}$, $f = 1\text{ MHz}$	C_{iss}	-	18	24	nF
Output capacitance $V_{GS} = 0\text{ V}$, $V_{DS} = 25\text{ V}$, $f = 1\text{ MHz}$	C_{oss}	-	9	12	
Reverse transfer capacitance $V_{GS} = 0\text{ V}$, $V_{DS} = 25\text{ V}$, $f = 1\text{ MHz}$	C_{rss}	-	3	4	
Turn-on delay time $V_{DD} = 40\text{ V}$, $V_{GS} = 10\text{ V}$, $I_D = 200\text{ A}$ $R_{GS} = 3.3\ \Omega$	$t_{d(on)}$	-	280	-	ns
Rise time $V_{DD} = 40\text{ V}$, $V_{GS} = 10\text{ V}$, $I_D = 200\text{ A}$ $R_{GS} = 3.3\ \Omega$	t_r	-	220	-	
Turn-off delay time $V_{DD} = 40\text{ V}$, $V_{GS} = 10\text{ V}$, $I_D = 200\text{ A}$ $R_{GS} = 3.3\ \Omega$	$t_{d(off)}$	-	220	-	
Fall time $V_{DD} = 40\text{ V}$, $V_{GS} = 10\text{ V}$, $I_D = 200\text{ A}$ $R_{GS} = 3.3\ \Omega$	t_f	-	60	-	

Power dissipation

$$P_{\text{tot}} = f(T_C)$$

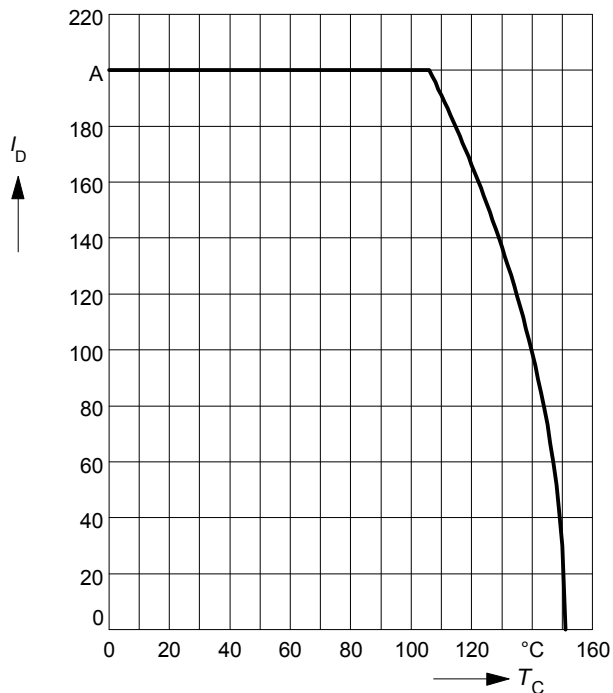
parameter: $T_j \leq 150^\circ\text{C}$



Drain current

$$I_D = f(T_C)$$

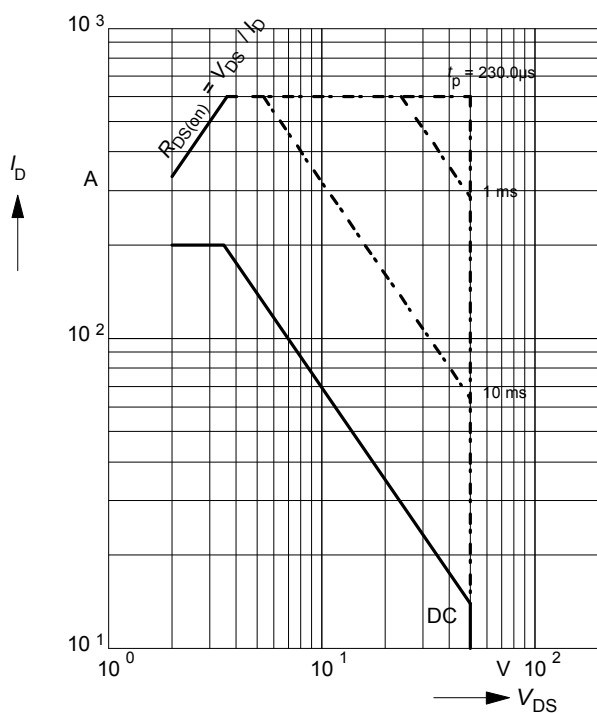
parameter: $V_{\text{GS}} \geq 10\text{ V}$, $T_j \leq 150^\circ\text{C}$



Safe operating area

$$I_D = f(V_{\text{DS}})$$

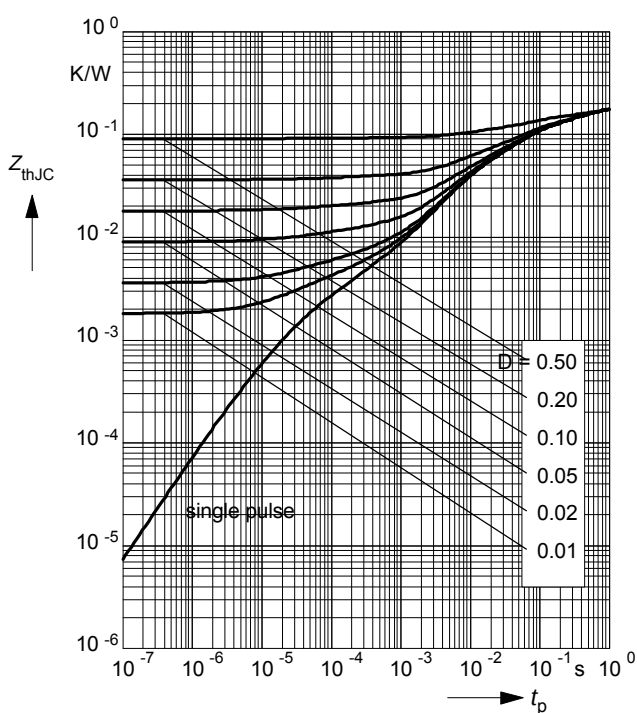
parameter: single puls $T_C = 25^\circ\text{C}$, $T_j \leq 150^\circ\text{C}$



Transient thermal impedance

$$Z_{\text{thJC}} = f(t_p)$$

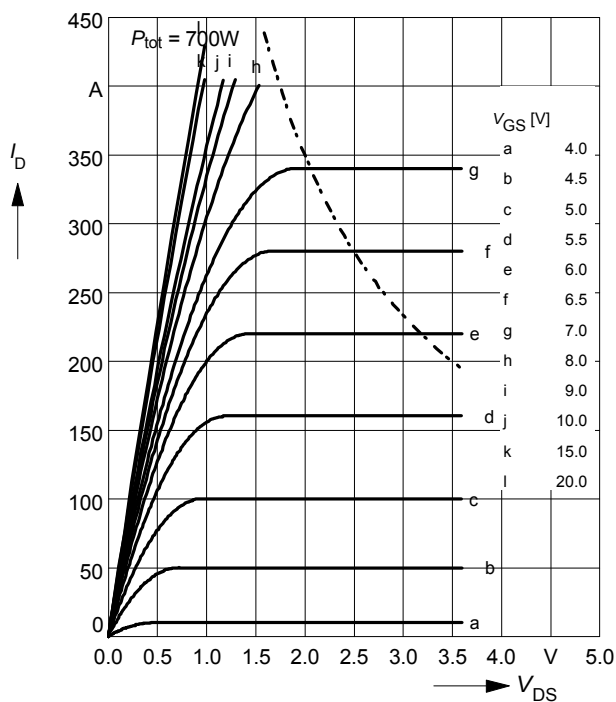
parameter: $D = t_p / T$



Typ. output characteristics

$$I_D = f(V_{DS})$$

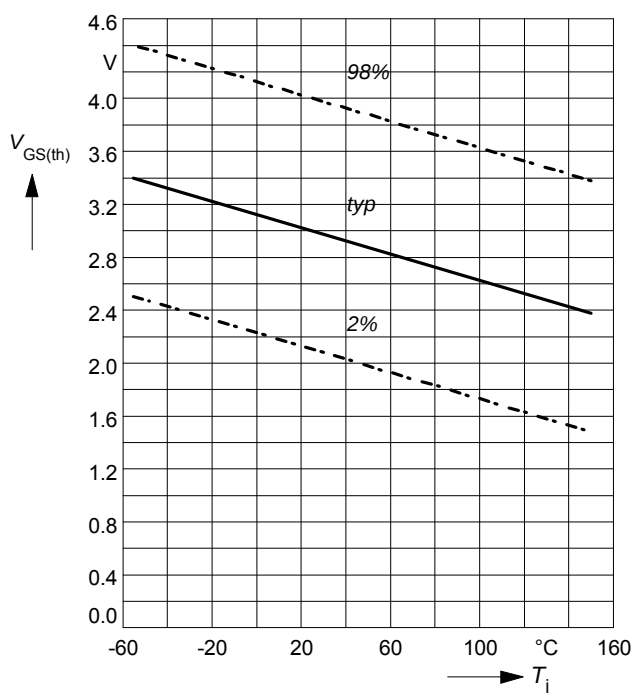
parameter: $t_p = 80 \mu s$, $T_j = 25^\circ C$



Gate threshold voltage

$$V_{GS(th)} = f(T_j)$$

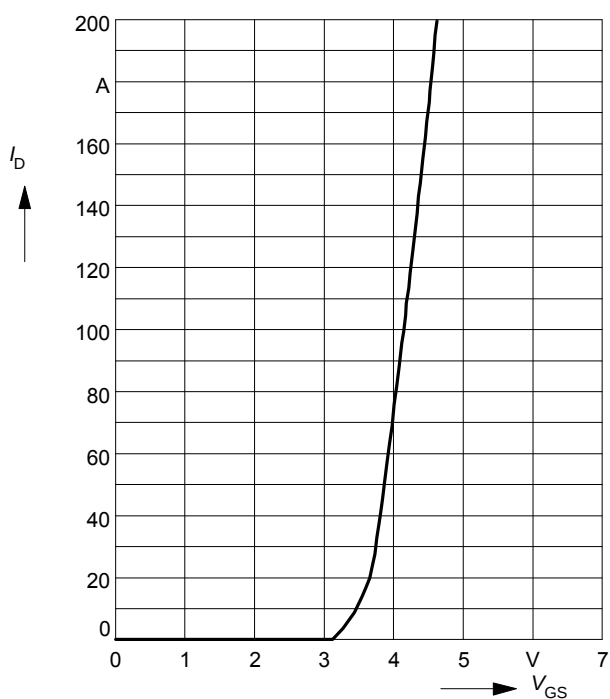
parameter: $V_{GS} = V_{DS}$, $I_D = 1 \text{ mA}$



Typ. transfer characteristic

$$I_D = f(V_{GS})$$

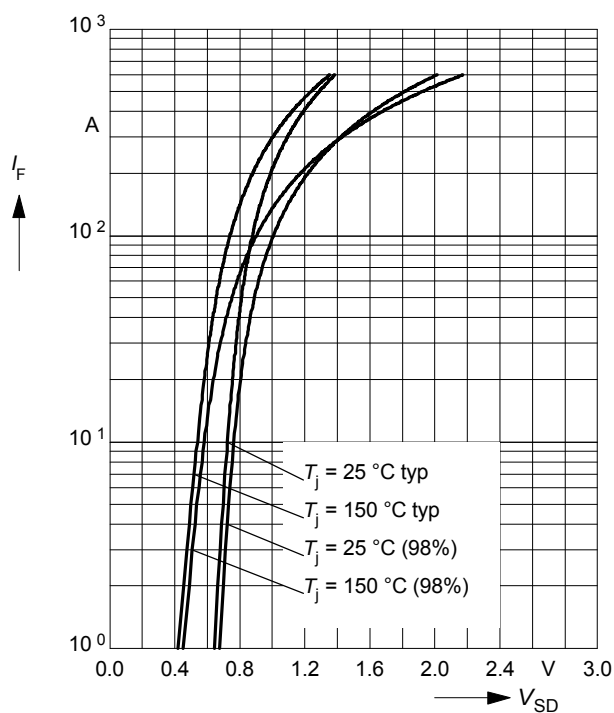
parameter: $t_p = 80 \mu s$, $V_{DS} = 25 \text{ V}$



Forward characteristics of reverse diode

$$I_F = f(V_{SD})$$

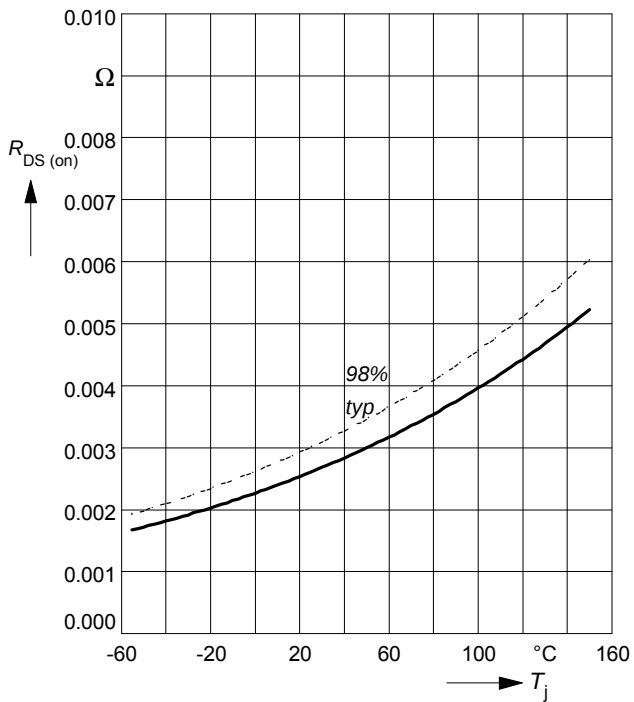
parameter: T_j , $t_p = 80 \mu s$



Drain-source on-resistance

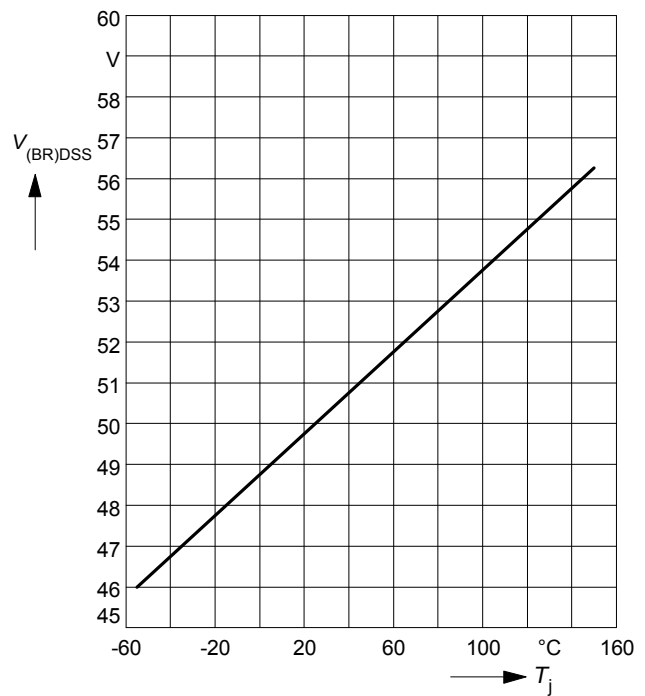
$$R_{DS(on)} = f(T_j)$$

parameter: $I_D = 200\text{ A}$, $V_{GS} = 10\text{ V}$



Drain-source breakdown voltage

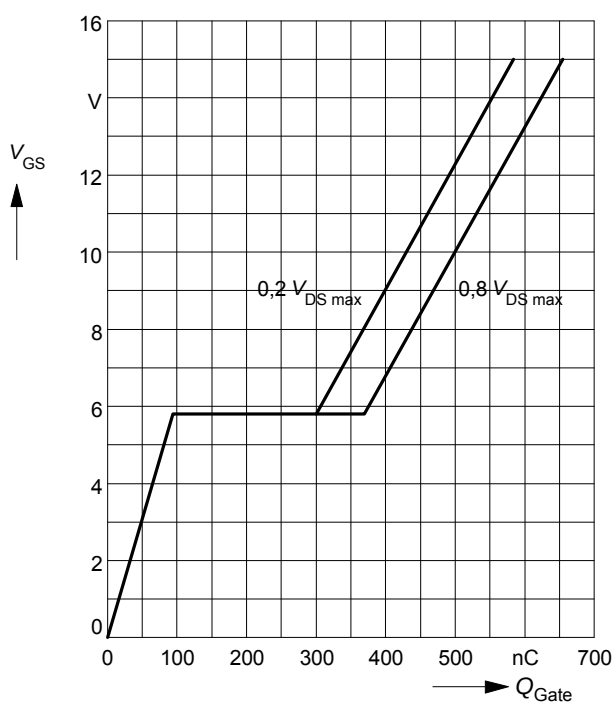
$$V_{(BR)DSS} = f(T_j)$$



Typ. gate charge

$$V_{GS} = f(Q_{Gate})$$

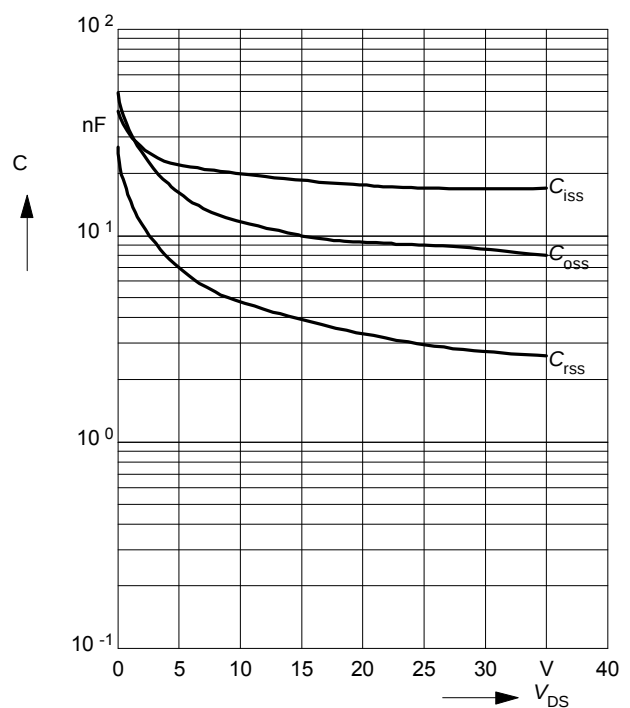
parameter: $I_{D\text{ puls}} = 330\text{ A}$

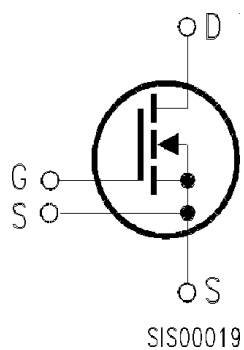


Typ. capacitances

$$C = f(V_{DS})$$

parameter: $V_{GS} = 0\text{ V}$, $f = 1\text{ MHz}$



Circuit Diagramm**Package Outlines**

Dimension in mm

Weight: 130 g

