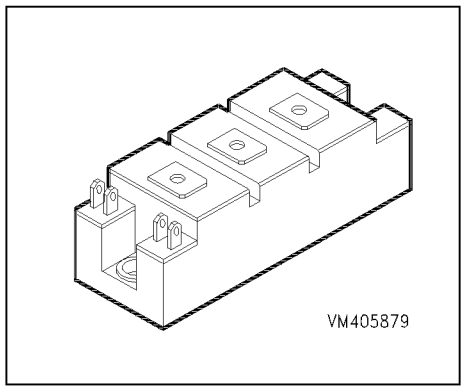
SIMOPAC® MODULE

- Half bridge power MOSFET module
- N channel, enhancement mode
- Avalanche rated
- Package with insulated metal base plate



Type	V_{DS}	I_D	$R_{DS(on)}$max	Package	Ordering Code
BSM 224 A	200 V	81 A	0.03 Ω	HB MOS 1	C67076-S1101-A20

Maximum Ratings

Parameter	Symbol	Values	Unit
Drain source voltage	V_{DS}	200	V
Drain-gate voltage R_{GS} = 20 kΩ	V_{DGR}	200	
Gate source voltage	V_{GS}	± 20	
Continuous drain current T_C = 25 °C	I_D	81	A
DC drain current, pulsed T_C = 25 °C	I_{Dpuls}	250	
Power dissipation T_C = 25 °C	P_{tot}	400	W
Chip temperature	T_{jmax}	150	°C
Storage temperature	T_{stg}	-40 ... + 125	

Thermal resistance chip - case	R_{thJC}	≤ 0.31	K/W
Thermal resistance case - heat sink	R_{thCA}	≤ 0.07	
Insulation test voltage, t = 1min	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	

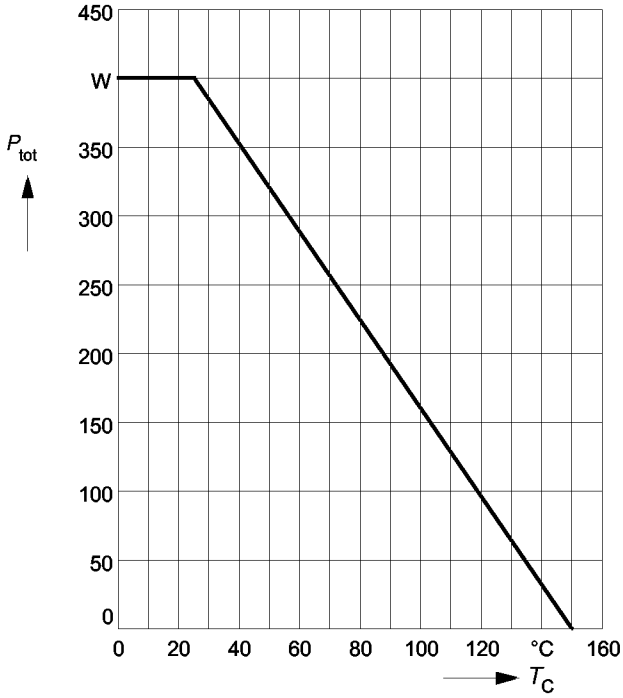
Electrical Characteristics, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Static Characteristics					
Gate threshold voltage V_{GS}=V_{DS}, I_D = 1 mA	$V_{GS(th)}$	2.1	3	4	V
Drain-Source on-resistance V_{GS} = 10 V, I_D = 50 A	$R_{DS(on)}$	-	0.023	0.03	Ω
Zero gate voltage drain current V_{DS} = 200 V, V_{GS} = 0 V, T_j = 25 °C V_{DS} = 200 V, V_{GS} = 0 V, T_j = 125 °C	I_{DSS}	- -	50 300	100 1000	µA
Gate-source leakage current V_{GS} = 20 V, V_{DS} = 0 V	I_{GSS}	-	10	100	nA
Reverse Diode					
Inverse diode continuous forward current T_C = 25 °C	I_S	-	-	81	A
Inverse diode direct current,pulsed T_C = 25 °C	I_{SM}	-	-	250	
Inverse diode forward voltage V_{GS} = 0 V, I_F = 162 A	V_{SD}	0.65	1.2	1.6	V
Reverse recovery time V_R = 100 V, I_F=I_S, di_F/dt = 100 A/µs	t_{rr}	-	320	-	ns
Reverse recovery charge V_R = 100 V, I_F=I_S, di_F/dt = 100 A/µs	Q_{rr}	-	4.3	-	µC

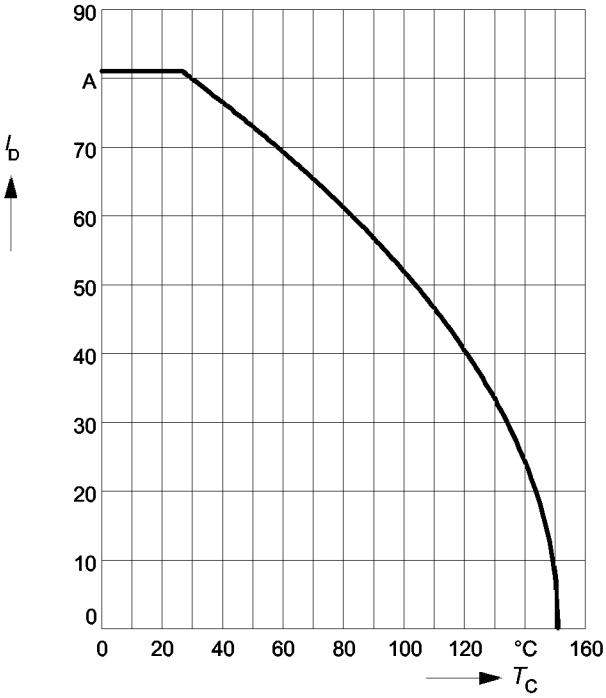
Electrical Characteristics, at T_j = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
Dynamic Characteristics					
Transconductance $V_{DS} \geq 2 * I_D * R_{DS(on)max}$, I_D = 50 A	g_{fs}	40	58	-	S
Input capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{iss}	-	7	9	nF
Output capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{oss}	-	2.5	4	
Reverse transfer capacitance V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz	C_{rss}	-	0.8	1.5	
Turn-on delay time V_{DD} = 100 V, V_{GS} = 10 V, I_D = 52 A R_{GS} = 3.3 Ω	$t_{d(on)}$	-	55	-	ns
Rise time V_{DD} = 100 V, V_{GS} = 10 V, I_D = 52 A R_{GS} = 3.3 Ω	t_r	-	110	-	
Turn-off delay time V_{DD} = 100 V, V_{GS} = 10 V, I_D = 52 A R_{GS} = 3.3 Ω	$t_{d(off)}$	-	220	-	
Fall time V_{DD} = 100 V, V_{GS} = 10 V, I_D = 52 A R_{GS} = 3.3 Ω	t_f	-	35	-	

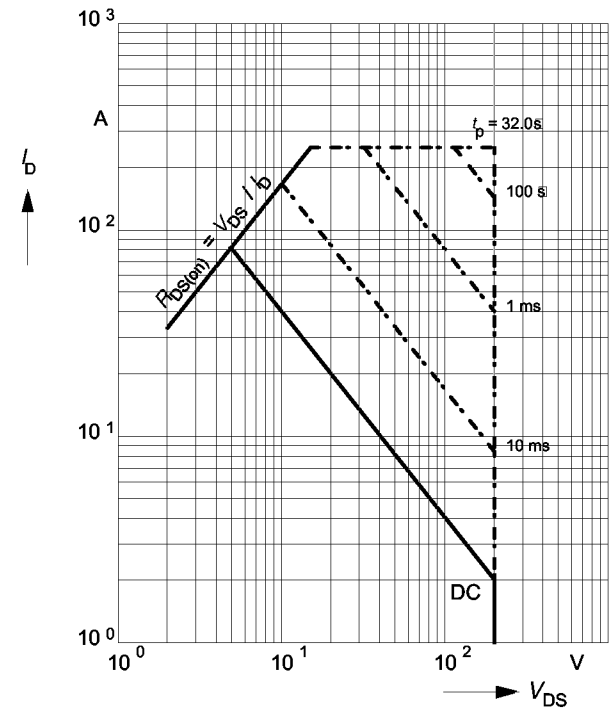
Power dissipation
$P_{tot} = f(T_C)$
parameter: $T_j \leq 150$ °C



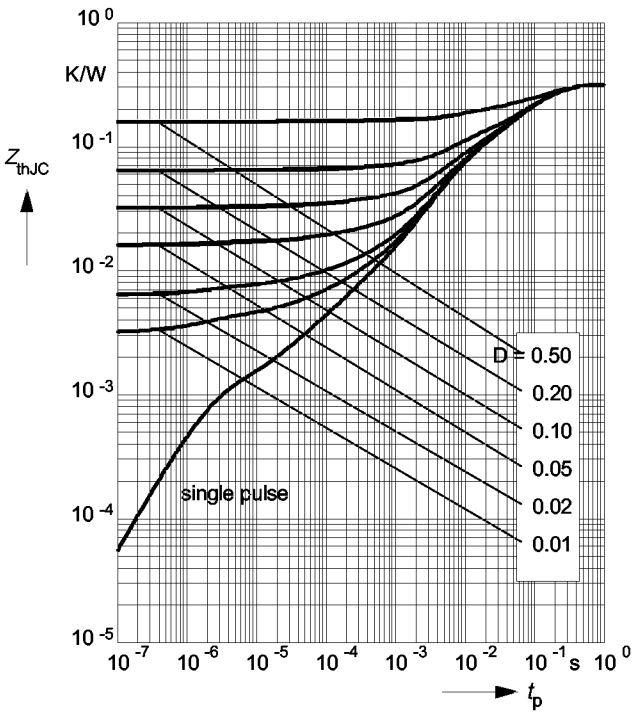
Drain current
$I_D = f(T_C)$
parameter: $V_{GS} \geq 10$ V , $T_j \leq 150$ °C



Safe operating area
$I_D = f(V_{DS})$
parameter: *single puls*, T_C = 25°C , $T_j \leq 150$ °C



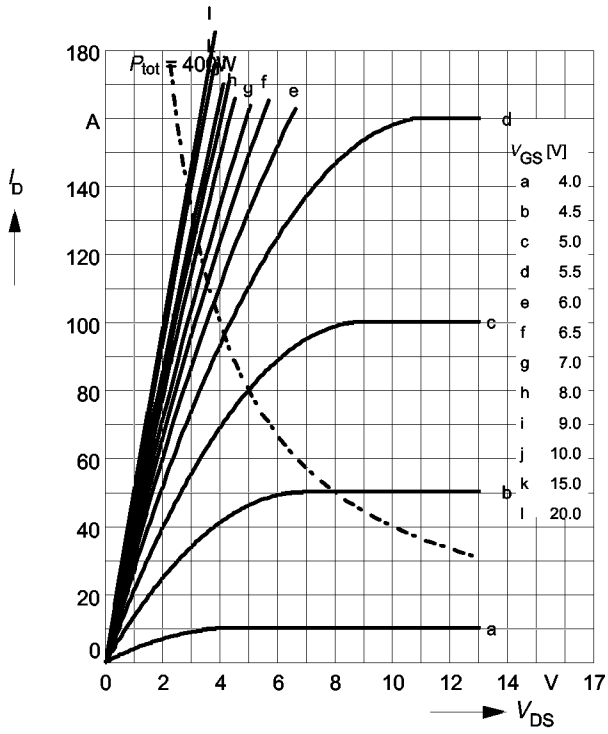
Transient thermal impedance
$Z_{th\,JC} = f(t_p)$
parameter: $D = t_p / T$



Typ. output characteristics

$I_D = f(V_{DS})$

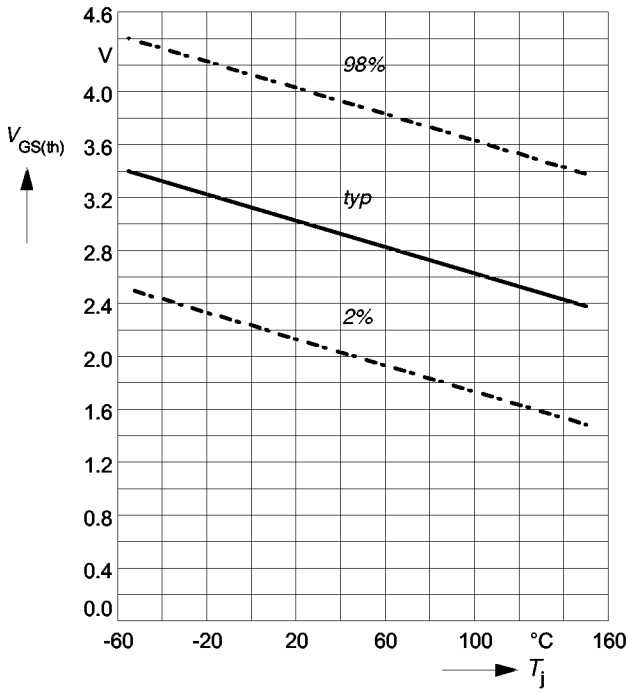
parameter: t_p = 80 µs , T_j = 25 °C



Gate threshold voltage

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

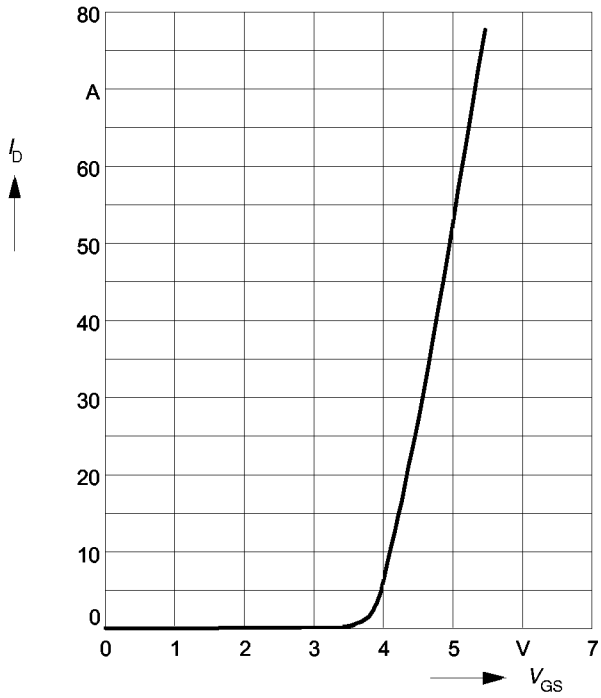
parameter: $V_{GS} = V_{DS}$, I_D = 1 mA



Typ. transfer characteristic

$I_D = f(V_{GS})$

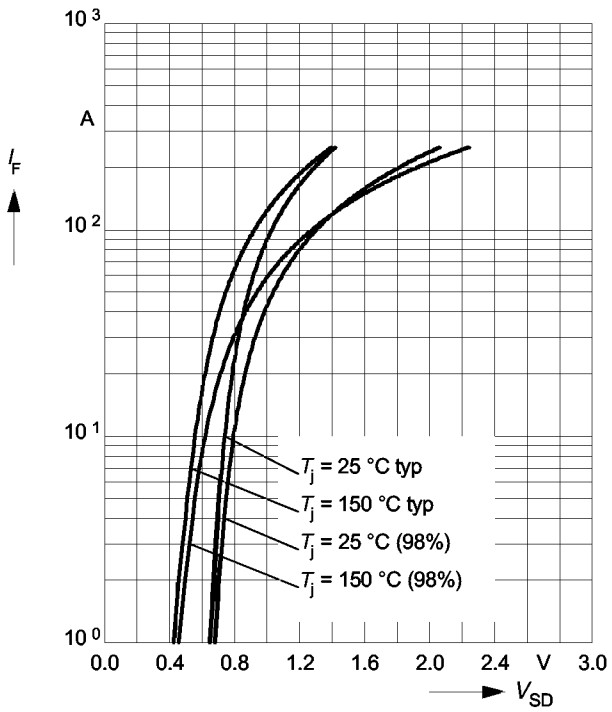
parameter: t_p = 80 µs. V_{DS} = 25 V



Forward characteristics of reverse diode

$I_F = f(V_{SD})$

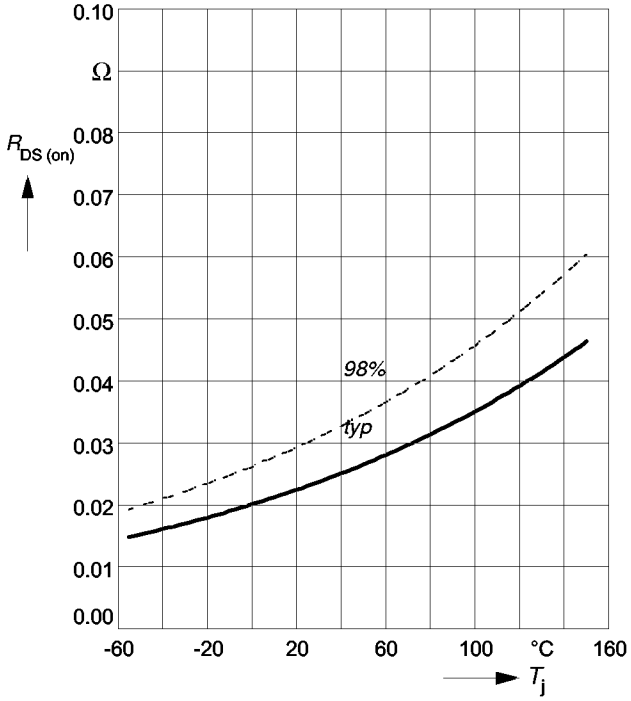
parameter: T_j, t_p = 80 µs



Drain-source on-resistance

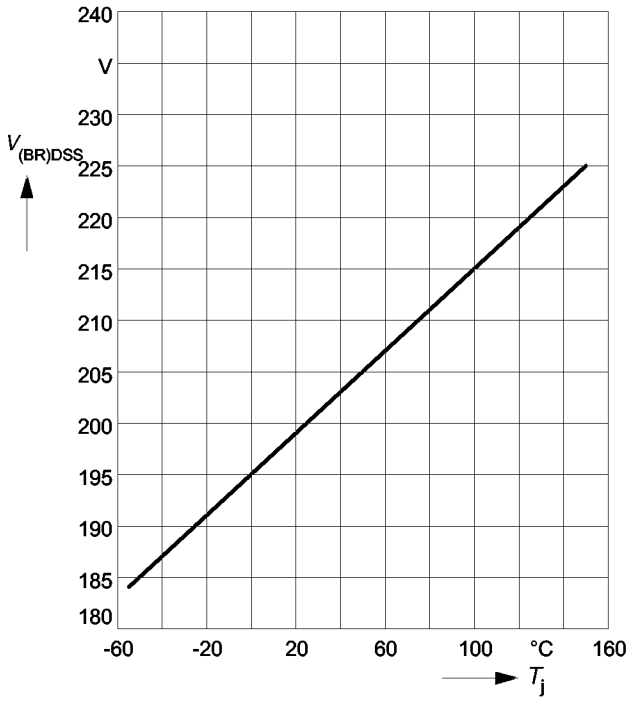
$R_{DS\ (on)} = f(T_j)$

parameter: I_D = 50 A, V_{GS} = 10 V



Drain-source breakdown voltage

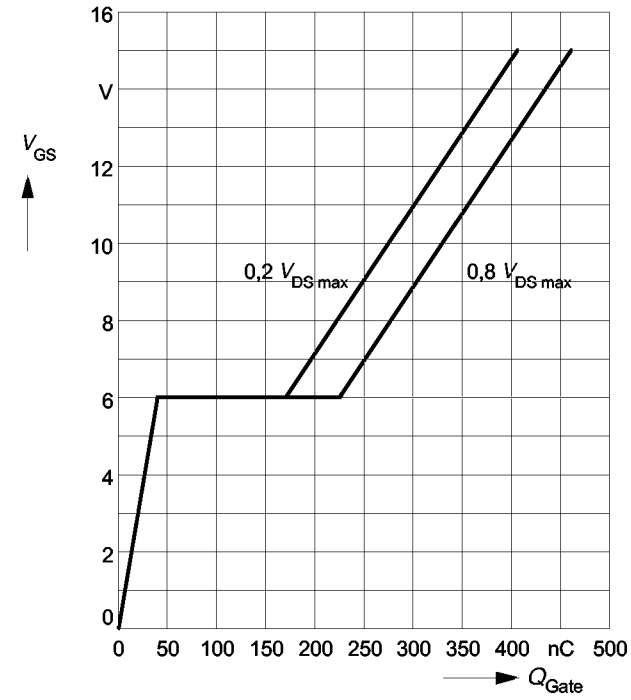
$V_{(BR)DSS} = f(T_j)$



Typ. gate charge

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

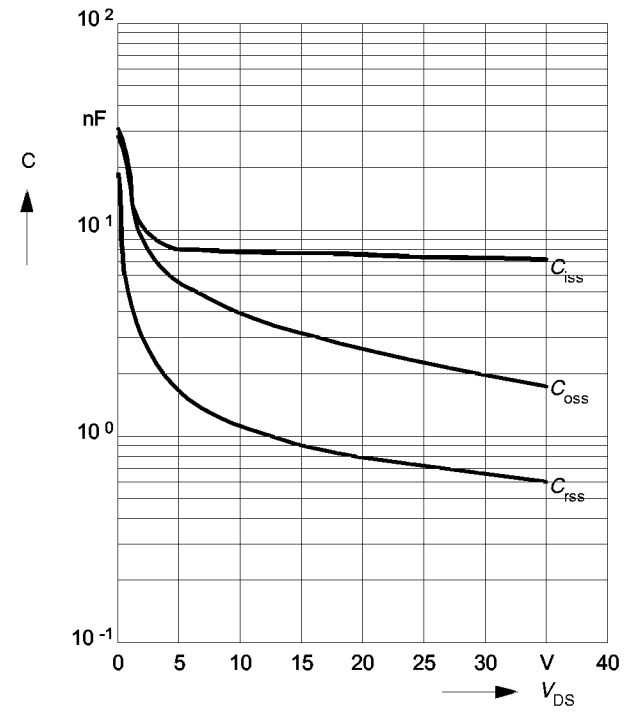
parameter: $I_{D\ puls}$ = 121 A



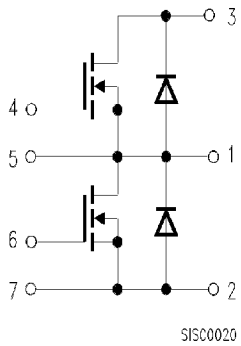
Typ. capacitances

$C = f(V_{DS})$

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



Circuit Diagramm



Package Outlines

Dimension in mm

Weight: 160 g