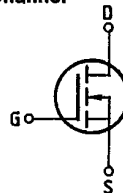


SIEMENS AKTIENGESELLSCHAFT

Main ratings

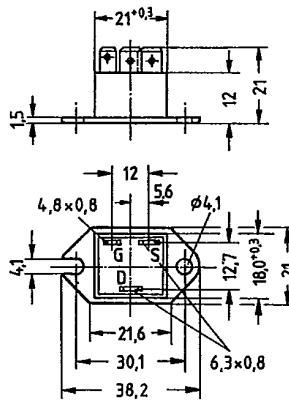
Drain-source voltage  $V_{DS} = 500$  V  
 Continuous drain current  $I_D = 7,8$  A  
 Drain-source on-resistance  $R_{DS(on)} = 0,6 \Omega$

N-Channel



**Description** SIPMOS, N-channel, enhancement mode  
**Case** Plastic package TO 238 AA with insulated metal base plate in accordance with JEDEC, compatible with TO 3; AMP plug-in connections.  
 Approx. weight 21 g

Type	Ordering code
BUZ 48	C67078-A1605-A2



Dimensions in mm

Maximum ratings

Description	Symbols	Ratings	Units	Conditions
Drain-source voltage	$V_{DS}$	500	V	
Drain-gate voltage	$V_{DGR}$	500	V	$R_{GS} = 20 \text{ k}\Omega$
Continuous drain current	$I_D$	7,8	A	$T_C = 25 \text{ }^\circ\text{C}$
Pulsed drain current	$I_{Dpuls}$	31	A	$T_C = 25 \text{ }^\circ\text{C}$
Gate-source voltage	$V_{GS}$	$\pm 20$	V	
Max. power dissipation	$P_D$	83,3	W	$T_C = 25 \text{ }^\circ\text{C}$
Operating and storage temperature range	$T_J$ $T_{stg}$	$-40 \dots +150$	$^\circ\text{C}$	
Isolation test voltage	$V_{is}$	3500	Vdc <sup>1)</sup>	$t = 1 \text{ min}$
DIN humidity category	F			DIN 40040
IEC climatic category		40/150/56		DIN IEC 68-1

Thermal resistance

Chip - case |  $R_{thJC}$  |  $\leq 1,5$  | K/W |

<sup>1)</sup> Isolation test voltage between drain and base plate referred to standard climate 23/50 in accordance with DIN 50014.

## SIEMENS AKTIENGESELLSCHAFT

**Electrical characteristics**(at  $T_j = 25^\circ\text{C}$  unless otherwise specified)

Description	Symbol	Characteristics			Unit	Conditions
		min.	typ.	max.		

**Static ratings**

Drain-source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	$V_{GS} = 0V$ $I_D = 0,25mA$
Gate threshold voltage	$V_{GS(th)}$	2,1	3,0	4,0		$V_{DS} = V_{GS}$ $I_D = 1mA$
Zero gate voltage drain current	$I_{DSS}$	—	20	250	$\mu A$	$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$ $V_{DS} = 500V$ $V_{GS} = 0V$
Gate-source leakage current	$I_{GSS}$	—	10	100	nA	$V_{GS} = 20V$ $V_{DS} = 0V$
Drain-source on-resistance	$R_{DS(on)}$	—	0,55	0,6	$\Omega$	$V_{GS} = 10V$ $I_D = 5A$

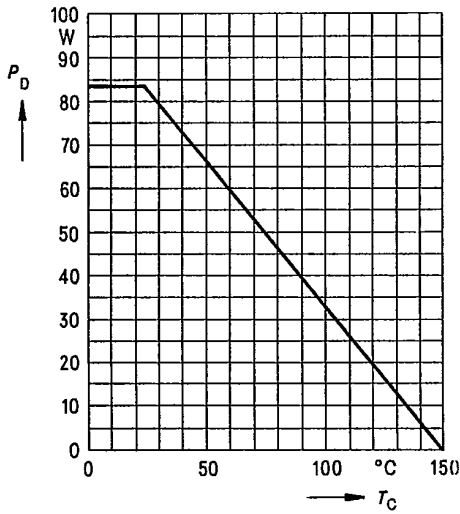
**Dynamic ratings**

Forward transconductance	$g_{fs}$	2,7	5,0	—	S	$V_{DS} = 25V$ $I_D = 5A$
Input capacitance	$C_{iss}$	—	3800	4900	pF	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1MHz$
Output capacitance	$C_{oss}$	—	250	400		
Reverse transfer capacitance	$C_{rss}$	—	100	170		
Turn-on time $t_{on}$ ( $t_{on} = t_{d(on)} + t_r$ )	$t_{d(on)}$	—	50	75	ns	$V_{CC} = 30V$ $I_D = 2,8A$ $V_{GS} = 10V$ $R_{GS} = 50\Omega$
	$t_r$	—	80	120		
Turn-off time $t_{off}$ ( $t_{off} = t_{d(off)} + t_f$ )	$t_{d(off)}$	—	330	430		
	$t_f$	—	110	140		

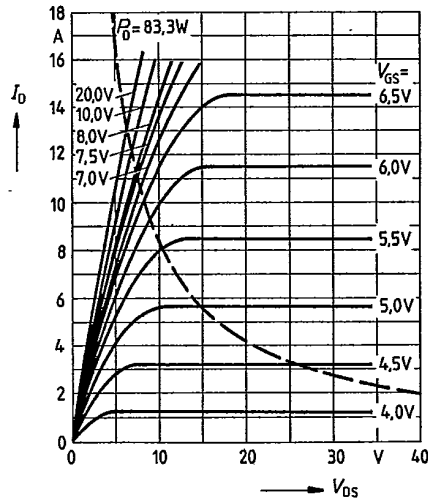
**Reverse diode**

Continuous reverse drain current	$I_{DR}$	—	—	7,8	A	$T_C = 25^\circ\text{C}$
Pulsed reverse drain current	$I_{DRM}$	—	—	31		
Diode forward on-voltage	$V_{SD}$	—	1,3	1,6	V	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V, T_j = 25^\circ\text{C}$
Reverse recovery time	$t_{rr}$	—	1200	—	ns	$T_j = 25^\circ\text{C}$
Reverse recovery charge	$Q_{rr}$	—	12	—	$\mu C$	$I_F = I_{DR}$ $dF/dt = 100A/\mu s$ $V_R = 100V$

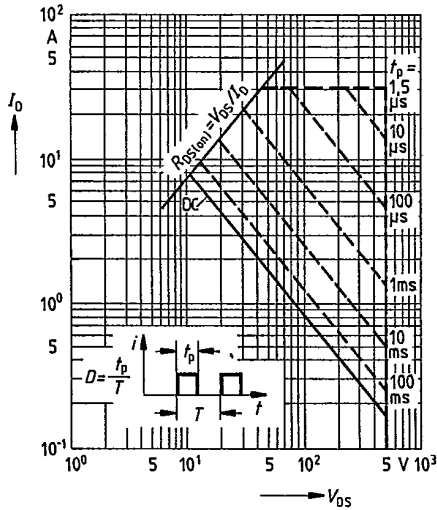
Power dissipation  $P_D = f(T_C)$



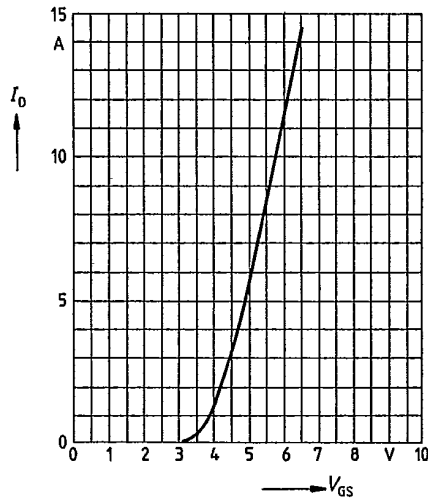
Typical output characteristics  $I_D = f(V_{DS})$   
parameter: 80  $\mu$ s pulse test,  
 $T_J = 25^\circ\text{C}$



Safe operating area  $I_D = f(V_{DS})$   
parameter:  $D = 0.01$ ,  $T_C = 25^\circ\text{C}$

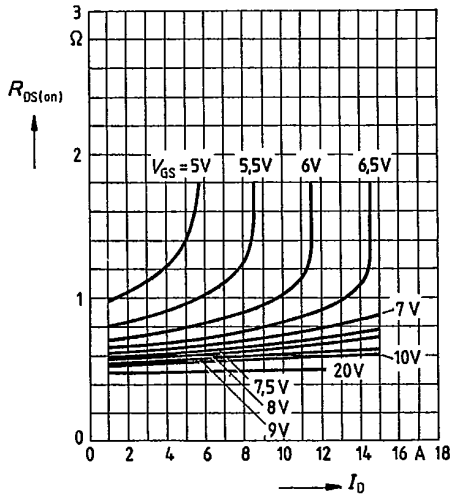


Typical transfer characteristic  $I_D = f(V_{GS})$   
parameter: 80  $\mu$ s pulse test,  
 $V_{DS} = 25\text{V}$ ,  $T_J = 25^\circ\text{C}$



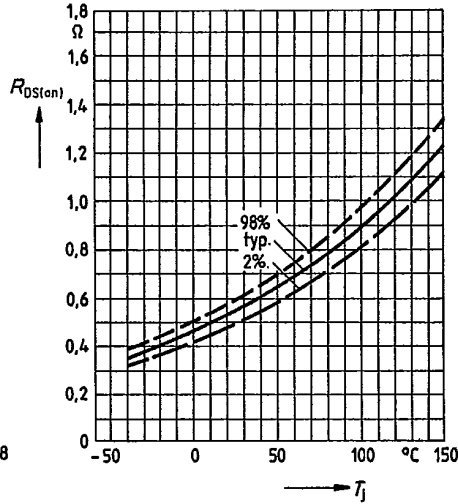
**Typical drain-source on-state resistance**

$R_{DS(on)} = f(I_D)$   
parameter:  $V_{GS} = 10V$ ;  $T_j = 25^\circ C$



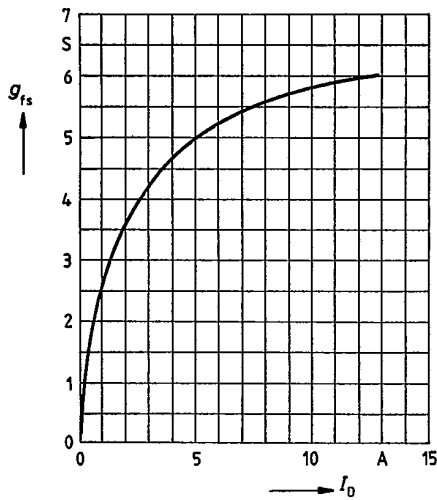
**Drain-source on-state resistance**

$R_{DS(on)} = f(T_j)$   
parameter:  $I_D = 5.6A$ ,  $V_{GS} = 10V$   
(spread)



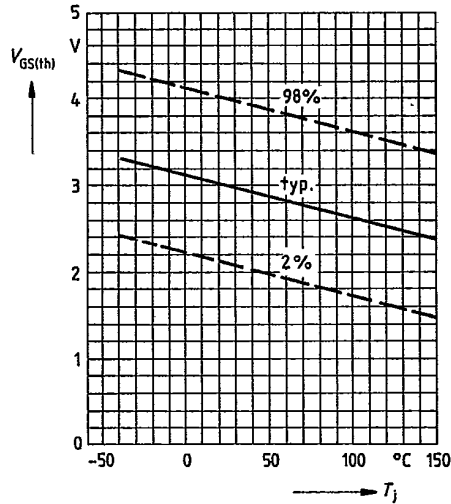
**Typical transconductance**

$g_{fs} = f(I_D)$   
parameter: 80  $\mu s$  pulse test,  
 $V_{DS} = 25V$ ,  $T_j = 25^\circ C$



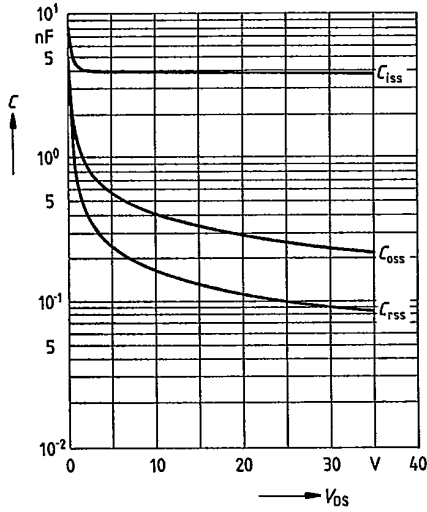
**Gate threshold voltage**

$V_{GS(th)} = f(T_j)$   
parameter:  $V_{DS} = V_{GS}$ ,  $I_D = 1mA$   
(spread)

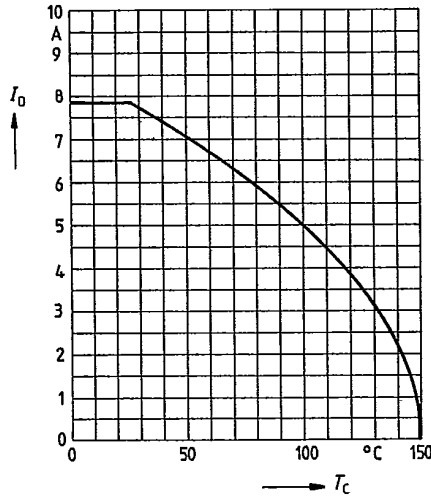


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Typical capacitances  $C = f(V_{GS})$   
parameter:  $V_{GS} = 0, f = 1\text{MHz}$

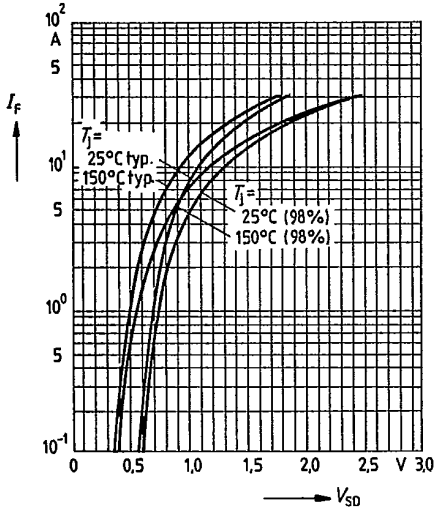


Continuous drain current  $I_D = f(T_C)$   
parameter:  $V_{GS} \geq 10\text{V}$

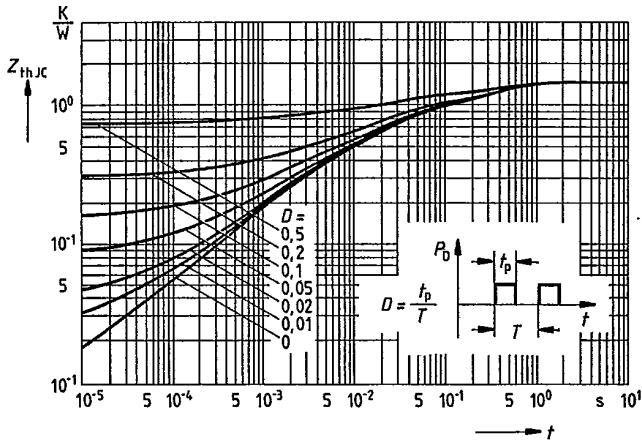


Forward characteristic of reverse diode

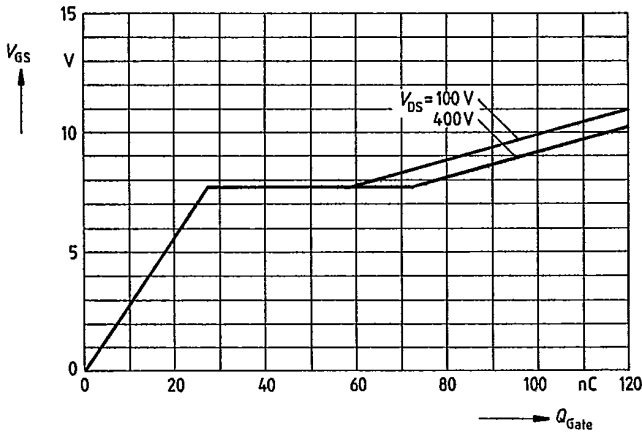
$I_F = f(V_{SD})$   
parameter:  $T_j, t_p = 80 \mu\text{s}$   
(spread)



Transient thermal impedance  $Z_{thJC} = f(t)$   
 parameter:  $D = t_p/T$



Typical gate-charge  $V_{GS} = f(Q_{Gate})$   
 parameter:  $I_{D\ puls} = 14,4A$





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